



OFFICE OF RAIL REGULATION

# Periodic Review 2013: Final determination of Network Rail's outputs and funding for 2014-19

October 2013



## **Front cover photographs**

King's Cross station. Hufton + Crow.

An electrification team using SRS Rail System Limited's road rail vehicles to erect overhead line on the Paisley Canal line, by JasWGillies.

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# Foreword

This determination sets Network Rail's funding and the outputs we expect the company to deliver during the five years from 2014-15 to 2018-19 (control period 5, or CP5). It sets Network Rail stretching but achievable goals in meeting the challenges and opportunities facing the rail industry as a whole: a safe railway, raising standards for customers, improving efficiency, and sustaining growth.



Britain's rail industry has been a great success story over the last decade. On a network which is complex and in key places getting closer to its capacity, passenger numbers are up 45% in the last decade and passenger revenues are up 53%. Freight is growing too – 18% up on 2000-01. Passenger satisfaction is close to record levels, with punctuality generally much improved. Confidence in rail is underpinned by a good recent safety record, with a reduction in underlying risks; though no one should be complacent, the industry is among the safest in Europe. On top of all this, by the end of 2018-19 Network Rail should have improved its efficiency by around 50% since 2004. On the back of this success, and to help to meet rising demand for rail travel, the UK Government is investing £11.4bn in enhancements to the network in the next five years; and the Scottish Government £1.4bn, with other funders including the Welsh Government funding major improvements in their own areas.

To sustain this progress and to retain the support and confidence of its funders and customers, the industry needs to keep improving. It needs to raise efficiency to reduce its dependence on public subsidy, and get more out of the existing network capacity. It needs to keep improving customer satisfaction by meeting the rising expectations of passengers. It needs to improve the reliability of the assets, including their resilience to climate change, and enhance the network efficiently and effectively. Businesses across the industry need to work together in a more commercial way.

All of this is necessary if expansion to meet growing demand is to be financed and delivered in a way which is sustainable.

In this context our final determination for Network Rail is an important step, setting out what the company and its industry partners will deliver between now and 2019 for passengers, freight customers, train operators, taxpayers and suppliers:

- **passengers** are at the heart of this determination, and will benefit from extra capacity through a major programme of enhancements, which allow more and longer trains and more seats, as well as better stations. To make sure passengers see improvements in the aspects of rail travel that matter most to them, they will have more say in how many enhancements are specified and delivered. They will also benefit from high standards of punctuality across all routes, with a focus on the worst-performing services, tighter targets for cancellations and serious lateness for long-distance services, and better information about their journeys;
- **freight customers** and operators will see further investment in infrastructure across Britain, with £277m ring-fenced for freight-specific schemes, and a continued focus on improving the provision of infrastructure services for the freight sector;
- **train operators** will have more say in the specification and effectiveness of enhancement projects and over how punctuality is delivered, and will also benefit from the new targets to improve Network Rail's asset management, which are crucial to improving the performance and resilience of the network;
- **taxpayers** will see the railway grow in a more cost-effective, transparent and sustainable way. Their investment will deliver more capacity into big employment centres; a major expansion of the electrified network providing a faster, more reliable and greener railway; better connectivity across northern England; and £570m in additional renewals to put the network's structures on a more sustainable footing. We have identified nearly £1.7bn of savings compared to Network Rail's strategic business plan – this represents an approximate 30% reduction in the day-to-day cost of the railway per passenger kilometre – with more to follow as efficient plans to deliver the enhancements programme are developed and scrutinised; and
- **the supply chain** will benefit from the large capital programme including: the increased volumes of work on civil structures; more predictable longer-term workbanks into the future and better forward planning as Network Rail improves its asset management; and considerable scope for supplier involvement in scheme design.

This determination is challenging but achievable for Network Rail. It builds on the areas in which the company has done well in the current control period (CP4), and rests on a wealth of analysis specially commissioned for this periodic review which gives us new insights into Network Rail's efficiency and effectiveness in delivery. It finds that Network Rail has the opportunity to improve its efficiency by 19% over CP5.

Our determination is a balanced package for Network Rail as a whole. It gives the company the maximum flexibility to focus resources where they are most needed, allowing it to ensure delivery while maximising value for money. It is an overall settlement, within which Network Rail must prioritise safety, and delivery of outputs for its customers – that is, delivering its core business.

Successful delivery is a major focus for this determination. This is reflected in our approach to the spending profiles we have assumed for the company, and the way we hold it to account. We have looked carefully at Network Rail's record on delivery of its outputs, and on the basis of experience in CP4, we will closely monitor this determination, particularly asset management; while giving the company flexibility in other areas. Better asset management will allow a move from a 'find and fix' approach to maintenance to a 'predict and prevent' approach. Not only does this avoid unnecessary disruption to rail users, it is also more efficient.

We will take a proportionate, risk-based approach to monitoring and targeting Network Rail's progress in CP5, and our framework provides extra and earlier assurance in those areas where the company's recent record suggests there are particular risks to delivery in the next five years. When we are assured that these risks are well managed, we would expect to monitor less. It is sensible that we secure assurances that delivery is well-managed in a determination which gives Network Rail substantial flexibility over its own finances and planning so it can deliver efficient infrastructure services and major investment programmes costing £38bn over CP5.

Our determination introduces a more flexible approach on capital programmes at an early stage of development so that they can be specified and delivered by Network Rail to give the best value for money for taxpayers and consumers. We will apply close scrutiny to these projects through CP5 and expect to identify further efficiencies. Network Rail will also have every reason to improve its management of network capacity, with incentives to supply more to train operators where it is sensible to do so.

This determination helps to underpin rail safety. It challenges Network Rail to achieve excellence in asset management and planning; and allows more time for changes in the way maintenance is managed to make sure new technology and efficiency improvements are implemented safely and sustainably. It sets out what we expect to see in further improvements – including closing 500 level crossings, and better track worker safety.

We have listened carefully to what passengers, freight customers, funders, the wider rail industry and Network Rail itself have told us through the consultation period. Where we have been presented with new and compelling evidence, we have made changes to our draft determination. Overall however we have not made major changes to our balanced package, which is challenging but achievable for Network Rail. It enables the company to meet the challenges of improving efficiency, better delivery, sustainability in managing and delivering the railway – all underpinned by ensuring that the railway operates with the highest



standards of safety. The company has incentives to do even better than the challenge we have set.

In our long-term regulatory statement – published in July – we set this determination in a longer-term context. The statement opens up discussion about: long-term financial sustainability; better use of network capacity and the role of cost-reflective charges; greater responsiveness to customers, and closer alignment of incentives to improve joint working across the industry through both regulatory change and the franchising framework. This will help to set the framework for our next periodic review in 2018, for which preparation starts now.

This determination – with the substantial financial support of Network Rail’s funders in government – helps to put Britain’s rail network onto a sustainable basis by addressing the legacy of decades of under-investment in renewing the system’s earthworks, tunnels and bridges. It equips the network to meet remarkable growth in demand from passengers and freight as well as rising customer expectations. It challenges Network Rail to achieve excellence in its asset management; and to manage changes in the way the railway is maintained to make sure it is safe and that improvements in both cost and quality can be sustained. It means that the efficiency challenge set in the McNulty Review is met for Network Rail itself. It encourages Network Rail to work more closely with its customers and suppliers to raise the efficiency and performance of the rail industry as a whole. It meets the demands of the next five years, and in doing so prepares for the following decades, which will see even more change as new technologies transform the way the network is managed and maintained.

I am immensely grateful for the support and assistance that numerous parties, in the rail industry and beyond, have given us in producing a robust and well-founded review.



**Richard Price**  
Chief Executive  
October 2013

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# Summary

## Introduction

1. Britain's railways have seen a period of remarkable growth and achievement over the last ten years, following decades of 'managed decline'. Since privatisation in the mid-1990s, passenger numbers have doubled and freight traffic has risen by 60%. Last year, even in difficult economic conditions, the number of passenger journeys rose by 4%, and the volume of freight moved by rail saw growth of 3%.
2. Passenger revenues have risen recently by over 7% per year. On a much more congested network, passenger satisfaction and train punctuality are at or near an all-time high. And, while we can never be complacent, the industry has a good recent safety record, and is one of the safest in Europe.
3. The growth of demand for rail – driven partly by demographics and congestion on other modes, but also by the industry's own efforts to raise its standards – is both a great advertisement and opportunity for the railway. But demand growth has also put pressure on a network which, in places, is near its capacity. Further growth of around 14% in passenger demand and, despite likely falls in coal traffic, 4% in freight volumes, is forecast for the next five years<sup>1</sup>.
4. The governments in London and Edinburgh, as well as other funders, have shown great confidence in rail. Both freight and passenger operations contribute to wider economic, social and environmental objectives and, reflecting this, rail is a subsidised industry with current support at around £4bn a year<sup>2</sup>. Over the five year period of this determination, the governments have committed £18bn. That includes investing in a major modernisation of the network where it is most needed. This will constitute the biggest ever single railway infrastructure investment programme in Britain.
5. Within this overall industry picture, Network Rail – Britain's national rail infrastructure provider – is currently on course to deliver a substantial programme of investment projects. It has also significantly reduced disruption to passengers and freight from engineering works, and reduced its costs.
6. Network Rail has made important changes in its internal structure, moving more responsibility away from the centre towards its devolved routes, and making changes

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<sup>1</sup> Source: Initial Industry Plan, September 2011, as used in Network Rail's strategic business plan, for passenger growth and for freight is based on the Freight Market Study. For further information, see <http://www.networkrail.co.uk/improvements/planning-policies-and-plans/long-term-planning-process/market-studies/freight/>.

<sup>2</sup> All numbers in this summary are in 2012-13 prices, unless otherwise stated.

<sup>3</sup> Available at <http://www.rail-reg.gov.uk/pr13/consultations/draft-determination.php>.

to how it works with the wider industry in terms of alliances with train operators and more partnership working with suppliers.

7. But, although more than nine out of ten trains run on time, and over half a million more train services operate on the network each year compared to five years ago, the company has not in recent years met all the performance targets for which it is funded. The challenges it faces will get harder as passenger and freight demand grows further (leading to more intensive use of the network), improvement projects require more engineering work on the network, and passenger expectations rise. And the pressure to reduce the costs of the railway will continue.
8. Our determination sits in this context. We aim to build on the progress that Network Rail has made, while tackling remaining weaknesses and driving the company to prepare for the even tougher environment ahead while reducing costs.
9. The determination sets the outputs, incentives and financial framework for Network Rail for the five years from April 2014, identifying the scope for the company to increase efficiency further and to improve performance.
10. In addition, it reflects the need for investment both in growing the capacity of the network and in addressing historic underinvestment in network assets over many decades. With nearly £13bn of improvement projects to be completed, we have focused on ensuring that Network Rail delivers the right projects in the right way, providing the best possible value for money to taxpayers and the railway's customers.
11. We have also focused on the need for Network Rail to improve its asset management, imposing regulatory targets for the first time. Improved asset management is the key to raising efficiency, managing risks to performance and delivery for customers, the long-term sustainability of the network, and for achieving the highest standards in safety.
12. We want Network Rail to deliver on the outputs we are setting, become more efficient and more commercially responsive to the needs of its customers. This determination gives Network Rail substantial flexibility in the way it uses its funding to deliver its outputs. We also want the company to become more focused on developing the capability and innovation needed to sustain and improve its performance over the longer term.
13. We have carefully reviewed the responses we received to our draft determination and we reference these, and our response, in this summary and in the main document. We received over 70 responses<sup>3</sup> to the draft determination. Specific issues raised by stakeholders have been covered in the relevant section of this document, but in this summary we briefly highlight Network Rail's views and the main themes from the other responses received.

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<sup>3</sup> Available at <http://www.rail-reg.gov.uk/pr13/consultations/draft-determination.php>.



14. We reviewed the consultation responses, focusing on where new evidence had been presented which has led us to make changes to our draft determination. We decided that although no compelling case had been made for a significant change to our overall balanced package, the evidence did require us to make a number of changes to specific elements of it.

## Structure of this summary

15. This summary covers the background to our determination, our decisions and the impacts of our decisions. It:
- (a) explains the PR13 process;
  - (b) sets out our analysis of the affordability of the governments' high level output specifications;
  - (c) describes how the PR13 determination is a balanced package in terms of required outputs, our assumptions on efficient expenditure, the incentives and financial assumptions, and explains the changes in access charges paid by operators;
  - (d) assesses the risks to deliverability;
  - (e) explains what this determination means for Network Rail;
  - (f) explains the impacts on affected stakeholders;
  - (g) explains how we will monitor and report on delivery;
  - (h) summarises the main themes in the consultation responses we received and the main changes we have made;
  - (i) discusses longer term issues; and
  - (j) outlines the next steps.

## The PR13 process

16. PR13 determines the outputs we expect Network Rail to deliver, the income the company will receive and the incentives it will face, for the five years of control period 5 (CP5) which runs from 1 April 2014 to 31 March 2019.
17. Network Rail's revenue comes from access charges which are paid by train operators to use Network Rail's track and stations. Income is also received direct from the governments, as network grants, 'in lieu of' access charges. The company also gets income from other sources such as property. In our PR13 decisions we are assuming around 30% of revenue will be from access charges, 60% from network grant and 10% from other sources.
18. Schedule 4A to the Railways Act 1993 (the Act) sets out the statutory process we must follow in carrying out an access charges review (such as PR13). An important

part of the process involves the Secretary of State for Transport (for England & Wales) and the Scottish Ministers providing us with their requirements in terms of high level output specifications (HLOSs) and statements of funds available (SoFAs), setting out what they want to be achieved during the control period and the public financial resources they are making available. They published these in summer 2012<sup>4</sup>.

19. This final determination sets out our conclusions on PR13. It represents the culmination of over two years of work since we published our first consultation document in May 2011. We have consulted extensively and worked in a transparent way and we would like to thank all those organisations and individuals who have contributed. We have developed a substantial body of evidence to support our decisions. Our analysis is set out in this document, with more detailed supporting reports on our website<sup>5</sup>.
20. Network Rail's PR13 strategic business plan (SBP) was submitted to us in January 2013<sup>6</sup>. It was drawn up by the company following consultation with the industry including train operators and suppliers. An industry plan was published at the same time to set Network Rail's plans in a broader context.
21. We reviewed and assessed the SBP in detail and compiled our own extensive evidence base. We have assessed the quality of the input data Network Rail has used (for example, on its unit costs, its planned volumes of work and proposed efficiencies). The responses to the consultation on our draft determination have been reviewed and assessed. Our decisions are supported by comparisons with how work is carried out in other industries and in other countries, based on studies by independent consultants and our own in-house analysis.
22. This determination sets out the distinct – but linked – set of decisions we have taken for Scotland and for England & Wales. This reflects the separate responsibilities that the two governments have for the strategy and funding of railway infrastructure. However, many parts of the framework are common to both, as Network Rail is one company, operating across the whole of Great Britain.
23. We will implement PR13 by converting our final determination into changes to access contracts and Network Rail's network licence. We consulted<sup>7</sup> on proposed changes in July 2013 following our draft determination and we will issue our 'review notices' setting out the final changes in December 2013.

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<sup>4</sup> Both HLOSs and SoFAs are available from <http://www.rail-reg.gov.uk/pr13/Publications/key-publications-by-stakeholders.php>.

<sup>5</sup> See <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

<sup>6</sup> *Strategic business plan for England & Wales*, Network Rail, January 2013 and *Strategic business plan for Scotland*, Network Rail, January 2013 and associated documentation are available from <http://www.networkrail.co.uk/publications/strategic-business-plan-for-cp5/>.

<sup>7</sup> *Consultation on implementing PR13*, July 2013, available at <http://www.rail-reg.gov.uk/pr13/consultations/pr13-implementation.php>.

## Affordability

24. In a periodic review we have to decide if the HLOSs of the Secretary of State and the Scottish Ministers are affordable given the public funds available, and taking into account industry revenues and costs. In our draft determination, we said that the cost of the Scottish Ministers' specification was slightly above the funds available while the Secretary of State's was slightly below, but at that stage we expected both specifications to be affordable by the time of our final determination.
25. Our analysis shows that the assumptions included for other parts of the industry (e.g. franchised train operators), are reasonable. Since the draft determination we have received further information from Transport Scotland on the likely net public costs of franchising which has allowed us to re-assess the risks around the SoFA calculations made by the Scottish Ministers, and this has increased the level of headroom for Network Rail funding.
26. However, since the draft determination we have increased the amount we have assumed Network Rail is going to spend on renewals and enhancements, and the cost of financing debt will be higher than we assumed – this affects both England & Wales and Scotland. We looked carefully at the impact of these changes on Network Rail's required revenue and on the impact on financial sustainability through the debt to RAB<sup>8</sup> ratio.
27. The affordability position depends on the inflation assumptions used and we have tested the calculation using both the original assumptions from the HLOSs and more recent forecasts, and we have concluded both HLOSs are affordable.
28. We said in the draft determination that, if it appears there will be a surplus at the time of the final determination, we would agree with the relevant government how this should be treated. Depending on the inflation assumptions used, the overall affordability position can be marginal and there can be small deficits in some years. Hence we do not feel able to conclude that there is a material surplus for either England & Wales or Scotland.

## A balanced package

29. Our statutory duties are mostly set out in section 4 of the Act (see Annex K). In reaching our decisions, we have considered all of our statutory duties and reached a judgement about the appropriate weight to give to each of them.
30. All our decisions on the overall PR13 settlement are made as part of a 'balanced package' for CP5. By balanced package, we mean one which considers the outputs to be delivered, the costs, the incentives, the risks and the safety requirements. The package should be considered and judged as a whole.

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<sup>8</sup> The RAB is Network Rail's regulatory asset base.

31. Our considered view is that this determination is challenging but achievable for Network Rail in terms of efficiency, value for money and deliverability. It will improve safety and it takes account of long-term needs as well as the short-term – i.e. it is sustainable. Furthermore, it incentivises Network Rail to efficiently manage costs it can control and provides appropriate protections against risk. We have made specific provisions to provide protections against certain risks, for example the new civils adjustment mechanism. We have also made some specific changes from our draft determination to take account of the evidence from consultation responses and ensure an appropriate balance, for example by increasing assumed spend on track renewals.
32. We have also taken into account the Railways Infrastructure (Access and Management) Regulations 2005<sup>9</sup> which set out the principles we must follow in establishing the framework in which Network Rail sets access charges.
33. The starting point for the package is the outputs that we are requiring the company to deliver.

## Regulated outputs

34. We set outputs in the areas that matter most to passengers, freight customers and the industry.
35. Network Rail must continue to meet its legal safety obligations, improving safety where reasonably practicable. This determination makes specific provision to address significant safety risks. There will be extra funding to reduce the risk at level crossings, for example by enabling the closure of more crossings. There will be new funding to improve the safety of those working with high voltage electricity on the railway, and more funding for civils assets to improve their condition and to reduce the risk from failures of earthworks, bridges and other structures. Maintenance efficiency savings will be phased in to give Network Rail more time to introduce new ways of working.
36. There will be a major programme of improvement works with existing projects such as Crossrail, the Edinburgh – Glasgow improvement programme (EGIP) and Thameslink completed, the completion of new projects such as the electrification of the Welsh Valley Lines and the expansion of the Northern Hub programme centred on Manchester.
37. Although passenger and freight demand will be growing, Network Rail should deliver this programme while ensuring that 92.5% of trains arrive on time nationally by 2019

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<sup>9</sup> Available at <http://www.legislation.gov.uk/ukxi/2005/3049/contents/made>. These regulations were amended in 2009 by the *Railways Infrastructure (Access and Management)(Amendment) Regulations 2009*, available at <http://www.legislation.gov.uk/ukxi/2009/1122/contents/made>.

(as measured using PPM<sup>10</sup>), compared to 90.7% today. It will also reduce disruption to passengers (by 8%) and freight customers (by 17%) from engineering works over the control period, despite the major enhancements programme.

38. There will be a renewed focus on improving the worst performing services, with the performance for all but two franchised operators in England & Wales to reach a minimum of 90% of trains on time by 2019. Two long distance operators, Virgin Trains and East Coast, will have dual PPM and CaSL<sup>11</sup> targets for 2019, because customers on these operators' routes are particularly affected by long delays or cancellations. The PPM minimum will be 88% for both operators with the maximum CaSL set at 2.9% for Virgin Trains and 4.2% for East Coast – these combinations are designed to be equivalent to achieving 90% PPM. First Great Western's 90% PPM minimum includes both its long distance and commuter services, but we are also setting a separate 88% PPM minimum for its long distance services.
39. Setting these targets will benefit customers on routes where train service reliability has been much worse than average. Network Rail and the train operators will have the flexibility to work together to set the 'trajectory' to reach the 2019 outputs, using the industry led joint performance improvement plans (JPIPs) process. We will intervene in certain circumstances, for example if an operator's PPM falls more than two percentage points below its agreed PPM output (this is described further in chapter 23).
40. Our PR08 settlement (which covers control period 4, CP4)<sup>12</sup> was based on 90% PPM being reached for all operators, with specific funding to achieve this; but this target has not been achieved. Through setting new requirements for CP5, we have reaffirmed the importance of these operator level targets.
41. We have set outputs for Network Rail's asset management – its management of the network infrastructure. This is fundamental to the company's ability to improve performance and efficiency, to ensure the longer term sustainability of its assets and deliver its outputs in CP5 and beyond.
42. There will therefore be new outputs for the quality of asset data, outputs to improve its asset management capability, and for the delivery of the ORBIS programme<sup>13</sup> which will increase the effectiveness with which Network Rail deploys its asset knowledge to make decisions. Although Network Rail has improved its asset management during

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<sup>10</sup> Public performance measure (PPM) is the proportion of trains that arrive at their final destination 'on time' (within five minutes for London & South East and regional services; or ten minutes for long-distance services).

<sup>11</sup> CaSL (Cancellations and Significant Lateness) measures passenger trains which are either cancelled (including those cancelled en route), miss one or more scheduled stops, or arrive at their scheduled destination more than 30 minutes late.

<sup>12</sup> CP4 runs from 1 April 2009 to 31 March 2014.

<sup>13</sup> ORBIS stands for 'Offering Rail Better Information Services'.

CP4, the pace needs to quicken to meet the challenges of CP5 and beyond. We will strengthen our focus on this area.

43. In addition to the regulated outputs we will also be expecting Network Rail to improve its approach to the environment, both to reduce its own impact on the environment and to improve the resilience of the network to climate change. It will be producing further plans before the start of CP5 on how it will reduce its own impact, and these will be subject to independent review and challenge. It submitted a revised climate change resilience plan for one route in its response to the draft determination consultation, and will publish plans for all the other routes by the end of September 2014. We will review these plans and monitor progress against the milestones for each route.
44. After a careful assessment of the consultation responses and the evidence presented, we have made four main changes to the outputs we set in the draft determination. We have:
  - (a) increased funding by £32m to reduce risk at level crossings, in addition to the funding in the Secretary of State's HLOS;
  - (b) reduced the required level of PPM in England & Wales for the first three years of the control period, for example from 92.2% to 91.9% in 2014-15, while maintaining the end CP5 requirement of 92.5%. This reduction reflects recent performance being below forecast, affecting what can be realistically delivered in the early years of CP5;
  - (c) changed the way the end CP5 requirement for Virgin Trains and East Coast is expressed, to a combined PPM and CaSL target, and added a minimum requirement for First Great Western long distance services; and
  - (d) reduced the amount by which disruption to passengers and freight from engineering works must fall by the end of CP5, reflecting the scale of challenge from the very large improvement programme.
45. We will be monitoring indicators such as asset condition and asset performance, that give us early warning of possible problems in the future, and more of this monitoring will be at the Network Rail route level which will make it clear how well different parts of the network are performing. We will also monitor progress on enablers, which measure how Network Rail is building its long term capability in areas such as managing capital programmes. All data on indicators and enablers will be published and we will comment on trends in our Network Rail Monitor.
46. The crucial difference in terms of regulation between outputs and enablers / indicators is that if Network Rail is likely to fail to deliver, or fails to deliver, an output we would consider whether this amounts to a licence breach and we may take enforcement action against the company (which is why outputs are often referred to as 'regulated outputs'). A failure to deliver either an enabler or an indicator would not in itself be



considered as a potential licence breach. However, either may indicate trends which raise concern about Network Rail's likely future compliance with an output that we may want to take licence enforcement action to address.

47. Table 1 provides a brief summary of the outputs we have set (a full list of outputs, indicators and enablers is in chapter 3).

**Table 1: Summary of regulated outputs for CP5**

Area	Outputs
Train service reliability	<ul style="list-style-type: none"> <li>• Annual target for the percentage of trains on time (measured by PPM) for England &amp; Wales and Scotland, with 92.5% on time by March 2019.</li> <li>• All franchised operators in England &amp; Wales to reach 90% PPM by March 2019, except Virgin Trains which has a combined target of 88% PPM and 2.9% CaSL and East Coast which has a combined target of 88% PPM and 4.2% CaSL. First Great Western will have a minimum of 88% PPM for its long distance services.</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• Annual target for the percentage of trains cancelled or very late in England &amp; Wales (measured by CaSL), with no more than 2.2% in this category by March 2019.</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• Annual target of 92.5% of freight trains on time (measured by the Freight Delivery Metric<sup>14</sup>).</li> </ul>
Enhancements	<ul style="list-style-type: none"> <li>• Wide range of improvement projects completed. Delivery milestones will be published in March 2014 delivery plan alongside development milestones for early stage projects. Includes funding for initial ETCS<sup>15</sup> cab fitment.</li> </ul>
Safety	<ul style="list-style-type: none"> <li>• Network Rail required to deliver a plan to maximise the reduction in risks of accidents at level crossings, using £99m ring-fenced fund<sup>16</sup>. This fund combines £67m from the DfT HLOS and £32m of further funding.</li> </ul>
Disruption to passengers and freight caused by engineering works	<ul style="list-style-type: none"> <li>• Disruption reduced by 8% for passengers and 17% for freight in 2019 compared to 2014, supported by an extension of funding for '7 day railway' projects.</li> </ul>
Network capability	<ul style="list-style-type: none"> <li>• Track mileage and layout, line speed, gauge, route availability, electrification at least maintained, and improved where there are enhancement works.</li> </ul>

<sup>14</sup> Freight Delivery Metric (FDM) measures the percentage of freight trains arriving at their destination within 15 minutes of scheduled time, covering delays for which Network Rail is responsible.

<sup>15</sup> ETCS is the agreed future train control and command system for the European main line network. It forms part of the European Rail Traffic Management System (ERTMS).

<sup>16</sup> Note that safety is not a devolved responsibility. All safety related outputs, indicators and enablers therefore apply to England & Wales and Scotland.

Area	Outputs
Stations	<ul style="list-style-type: none"> <li>• Average condition maintained.</li> </ul>
Asset management	<ul style="list-style-type: none"> <li>• Asset management capability excellence achieved.</li> </ul>
	<ul style="list-style-type: none"> <li>• Asset data quality standards for all asset types.</li> </ul>
	<ul style="list-style-type: none"> <li>• Milestones for 'ORBIS' data improvement project.</li> </ul>

## Efficient expenditure

48. We have reviewed Network Rail's SBP submission and collected our own evidence. In a number of areas Network Rail's submission was a considerable improvement over PR08, but weaknesses remain. Some documents were submitted late and with significant inconsistencies.
49. However, compared to PR08, Network Rail made much more realistic assumptions about the cost reductions that could be achieved. This is reflected in our determination where in some areas we have only made small changes to Network Rail's SBP assumptions.
50. A high level summary of our determination is shown in Table 2, with a comparison to our PR08 determination and Network Rail's SBP. The first row looks at total expenditure. The second row focuses on Network Rail's day-to-day costs<sup>17</sup> (that is, it excludes items such as electricity costs that it cannot control and enhancement costs, which are not part of day-to-day costs).
51. We have shown two columns for this final determination (FD). For the final determination the costs of ETCS cab fitment work (£194m) are included in enhancements whereas in the SBP and the draft determination (DD) they were included in renewals. To make the final determination numbers more directly comparable we have shown the spend on ETCS cab fitment in renewals in the 'FD comparable to SBP' column.
52. Overall, our analysis shows that the day-to-day costs in CP5 should be £1,827m (£1,995m in our draft determination) less than in PR08 and £1,740m (£1,907m in our draft determination) less than Network Rail asked for in its SBP. Seen in the context of continued growth in passenger demand, this means that the costs of running the railway per passenger km will fall by around 30%.
53. Network Rail proposed efficiencies of 13.8% in its support, operations, maintenance and renewals costs, but our analysis shows that 19.4% efficiencies could be achieved.

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<sup>17</sup> Support, operations, maintenance and renewals, see later text for definitions.

54. The increases in the day-to-day expenditure line in our final determination compared to our draft determination are driven by extra assumed spend on track and signalling renewals and information management, offsetting reductions in the assumed spend on certain specialist road-rail vehicles.
55. The amount Network Rail is funded for (the net revenue requirement) is £1,762m less than the company proposed<sup>18</sup>. This reflects our view that Network Rail needs to spend less money overall and can raise debt at lower interest rates than the company assumed.
56. Although debt levels will rise, this will be manageable for the company as the value of Network Rail's assets (the RAB) will also rise. The debt to RAB ratio will increase but at these levels the company would, everything else being equal, have an investment grade credit rating similar to other utility companies. The debt level will be £2,290m (in nominal prices) higher than we assumed in the draft determination, because compared to the draft determination opening CP5 debt will be higher, capital spend is higher, there is a lower financial sustainability adjustment and market interest rates are higher.

**Table 2: Summary of our determination for CP5 (Great Britain)**

£m (2012-13 prices)	PR08	SBP	DD (comparable to SBP)	FD <sup>19</sup>	FD
Total expenditure	35,721	40,095	37,869	38,293	38,293
'Day to day' expenditure: support, operations, maintenance and renewals expenditure	23,380	23,293	21,385	21,553	21,360
Net revenue requirement	29,119	29,227	27,428	27,465	27,465
Average net debt to RAB	62.7%	68.8%	68.2%	69.8%	69.8%

57. Although we calculate a level of assumed expenditure we do not decide how much money Network Rail should spend in each area of its business. We make assumptions for each main area of costs, as discussed below, but it is for Network Rail to manage its business within the overall framework.
58. We have reviewed **support costs**, which are mainly administrative costs such as finance, human resources and information management, but also other running costs such as utilities and insurance. In its SBP, Network Rail said it would need to spend

<sup>18</sup> The revenue requirement is different from the assumed expenditure because the cost of capital spend is spread over time and the revenue requirement also includes costs such as debt interest.

<sup>19</sup> The difference between the 'FD comparable to SBP' and 'FD' columns is the classification of ETCS cab fitment expenditure. In the latter it is classified as enhancement instead of renewals, hence the fall from £21,553m to £21,360m in row 2.

£2,232m in CP5, which is £508m less than in CP4. Network Rail provided a much better justification of its support costs than it did in PR08.

59. We have assumed that it needs to spend £2,119m (6% of total expenditure), £113m less than it assumed, mainly reflecting that in some areas, such as information management, Network Rail can deliver more efficiencies than it included in its SBP. We expect 19.7% efficiency savings in core support costs compared to Network Rail's 12.3%<sup>20</sup>.
60. Compared to our draft determination we have only made a small change in support costs, increasing the assumed level by £26m.
61. **Operations costs** are those incurred in 'operating' the infrastructure, such as signalling. In its SBP, Network Rail said it would need to spend £2,027m, which is £212m less than in CP4, mainly as a result of deploying new technology to change the way it runs the network. In general, Network Rail's analysis was well founded and we broadly agree with its conclusions.
62. We have assumed spend is £59m lower at £1,968m (5% of total expenditure). Network Rail can make efficiencies of 17% compared to the 13% in its SBP, with the difference mainly reflecting efficiency opportunities which cut across all spend areas and our view of achievable efficiencies in non-signaller costs.
63. We have not made any changes in our assumptions on operations costs compared to the draft determination.
64. **Traction electricity costs** are the costs Network Rail incurs in buying electricity. These costs dropped significantly from the SBP to the draft determination, by £524m, as forecast industry electricity prices fell. Since the draft determination there has been a further fall and we have now reduced the assumed level of funding by another £25m, to £549m, compared to the SBP.
65. **Industry costs** cover items such as Network Rail's contribution to the British Transport Police. We made a small reduction of £19m in Network Rail's assumed spend in this area, compared to the SBP (£32m less than our draft determination).
66. Table 3 shows the renewals and enhancement costs with and without the change to the classification of ETCS cab fitment costs, as described above. The 'FD comparable' numbers also adjust for the way maintenance and renewal spend is classified<sup>21</sup>.

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<sup>20</sup> Efficiency is measured by comparing the last year of CP5 to a restated 2013-14 base year.

<sup>21</sup> In its SBP, Network Rail changed the definition of maintenance to include some 'reactive maintenance' e.g. civils and buildings inspections and examinations costs (some of which were treated as renewals in CP4). We have extended this approach to a wider range of reactive maintenance costs. This has the effect of increasing maintenance spend and reducing renewals spend compared to the SBP. So, for example, our assumption is that Network Rail will need to spend £5,166m in CP5 on

67. Good maintenance of the railway is crucial for safety and high performance. **Maintenance costs** include inspection and repair of the infrastructure. In its SBP, Network Rail said it would need to spend £4,669m on maintenance, which is £884m less than in CP4. The SBP included maintenance efficiencies of 13.8%<sup>22</sup>.
68. We have assumed that Network Rail needs to spend slightly less, £4,645m (12.1% of total expenditure) on maintenance in CP5, using the same definitions as the SBP. We have decided that efficiencies of 16.4% are achievable by the final year of CP5 compared to the final year of CP4 but we have also changed the profile of efficiencies (so the required efficiencies are lower in the early years than Network Rail assumed). This is to allow Network Rail more time to make the required changes in working methods in a safe and effective way.
69. We assume Network Rail will deliver the volumes of maintenance work that it assumed in its SBP.
70. To reach our view on the further efficiencies available we have reviewed the likely resource implications of Network Rail's proposed new ways of working, and the efficiency improvements which might be obtained, for example through carrying out more automated inspections, making sure that the right work is done at the right location at the first visit and making sure that working arrangements allow the most productive use of time.
71. In the draft determination we extended the definition of maintenance to include reactive maintenance of £507m, which had previously been treated as renewals. Our revised estimate of this change is £521m. This increase of £14m is the only change we have made to maintenance spend compared to the draft determination.
72. **Renewals** are where the existing infrastructure, such as the track, is replaced, without changing or enhancing its performance. In its SBP, Network Rail said it would need to spend £14,365m, which is £1,679m more than in CP4. The SBP included renewals efficiencies of 15.8%<sup>23</sup> by the final year of CP5.
73. We have assumed that Network Rail needs to spend £12,822m (33.5% of total expenditure) on renewals in CP5, using the same accounting classifications as the SBP<sup>24</sup> (£1,543m less than Network Rail assumed). To reach this view we have reviewed the volumes and costs of work required before efficiencies and the efficiency opportunities available during CP5.

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maintenance after this change. Where possible, we have presented numbers on a comparable basis to make comparisons easier.

<sup>22</sup> Network Rail's published number is different. We have adjusted it to take into account the extra work required due to the number of assets increasing (e.g. from electrification) and traffic growth.

<sup>23</sup> This is our adjusted number to show clearer comparisons.

<sup>24</sup> After adjusting for the reactive maintenance changes and ETCS cab fitment this is £12,107m.

74. We have made reductions where Network Rail's justification of its plans is not sufficient and where its unit cost calculations were not justified, for example in buildings, information management and the research and development (R&D) fund.
75. We have assumed that efficiencies of 20.0% are achievable by the final year of CP5, with further efficiencies achievable beyond the SBP, for example through improved management of possessions, working more effectively with the supply chain, improved asset management systems and better targeting of work.
76. We have developed a new approach to spending on civil engineering assets. The level of civils spend (on assets such as bridges and tunnels) will rise in the short-term to address the backlog of work and improve the asset base, but the quality of information on civils assets means it is difficult to forecast exactly how much work will need to be done and at what cost. We have made a provision (of £2,368m) based on Network Rail's view of required volumes of work and our view of efficient costs. We have funded the volumes defined by Network Rail in the first two years of the control period and we expect to see this work carried out. The volumes for the remaining three years will depend on our assessment of a plan Network Rail will produce in 2015 when it has better information. This will reduce the risk on Network Rail and improve value for money.
77. We have increased assumed expenditure in three key areas compared to the draft determination, with rises of £104m for track renewals, £21m for signalling renewals and £66m for information management and ORBIS. But we have made a reduction of £61m in the allowance of £71m we previously made for a new design of excavator to replace the existing fleet, reflecting the fact that the project is not well enough developed to implement – the £10m will cover further development work.
78. **Enhancements** are projects that improve the railway. The improvements will involve a major expansion of capacity in London (Crossrail and Thameslink) and in Scotland. There will be increased capacity and quicker journey times between many of our key cities, increased capacity for commuter travel into major urban areas and the improvement of rail links to major ports and airports. There will also be an expansion of electrification, improving service quality and reducing emissions. This will include the Great Western route to Bristol and South Wales, the Welsh Valleys, the North West and an electric spine from the South Coast to the Midlands/ Yorkshire for freight and passenger traffic.
79. Network Rail said it would need to spend £12,388m, compared to £11,294m in CP4. About 30% of this was for electrification, 25% was for Thameslink and Crossrail and 10% was allocated funds to achieve specific purposes such as improving the network for freight. In our draft determination we reduced this to around £11.6bn after reviewing each of the projects: £10.3bn in England & Wales and £1.3bn in Scotland. We then adjusted the total expenditure to allow for some extra costs that were not



included in the SBP, for example increased compensation payments to train operators for the disruption caused by the works, which brought the total to £12.2bn.

80. But since the draft determination we have included nearly £600m of further assumed expenditure for enhancements as set out in paragraph 82 below. Total expenditure on enhancements in Great Britain is now assumed to be £12.8bn, of which £11.4bn is for England & Wales and £1.4bn for Scotland.
81. Around £7bn of projects are at an early stage of development and hence the costs are uncertain. Fixing this cost now could involve paying a large 'risk premium'. So to ensure better value for money we have taken a new approach to setting the efficient level of costs for these projects, building on a proposal made by the Rail Delivery Group (RDG). We have made a provisional cost assessment now but we will finalise the total efficient cost progressively by March 2015 as project plans become more mature.
82. The main changes for enhancements compared to the draft determination are:
- (a) an increase of £312m to fund depots and stabling facilities. This is related to the England & Wales enhancement programme;
  - (b) an increase of £126m to rollover unspent money in CP4 to complete projects in CP5 and provide additional funding to complete 7-day railway initiatives;
  - (c) an increase of £32m for level crossing risk reduction;
  - (d) a reduction of £59m to reflect revised cost estimates for projects in Scotland;
  - (e) a reduction of £25m for Schedule 4 costs; and
  - (f) an increase of £194m from the transfer of ETCS cab fitment from renewals to enhancements expenditure.
83. Table 3 contains a summary of our efficient expenditure assumptions compared to PR08, forecast CP4 outturn (adjusted to make it more comparable to this determination), Network Rail's SBP and our draft determination.

**Table 3: Summary of our CP5 efficient expenditure assumptions**

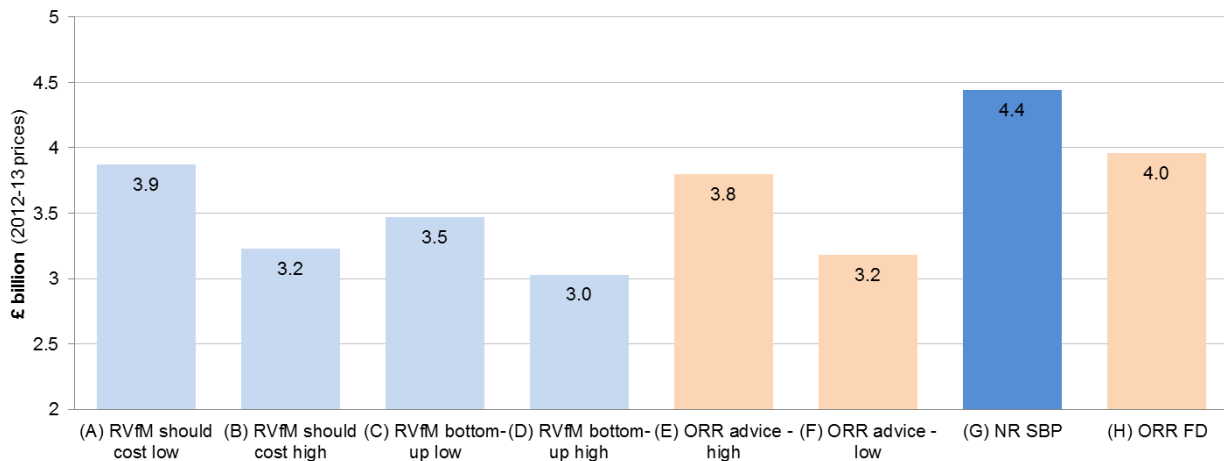
£m (2012-13 prices)	PR08	CP4 (adjusted)	SBP	DD (comparable to SBP)	FD <sup>25</sup>	FD
Support	4,113	2,740	2,232	2,093	2,119	2,119
Operations		2,239	2,027	1,968	1,968	1,968
Traction electricity, industry costs and rates	2,175	2,349	3,701	3,114	3,056	3,056
Maintenance	6,126	5,553	4,669	4,645	4,645	5,166
Schedule 4	870	875	712	1,131	1,058	1,058
<b>Total operating expenditure</b>	<b>13,284</b>	<b>13,756</b>	<b>13,341</b>	<b>12,950</b>	<b>12,846</b>	<b>13,367</b>
Renewals	13,141	12,686	14,365	12,681	12,822	12,107
Enhancements	9,296	11,294	12,388	12,239	12,625	12,818
<b>Total capital expenditure</b>	<b>22,437</b>	<b>23,980</b>	<b>26,754</b>	<b>24,920</b>	<b>25,447</b>	<b>24,925</b>
<b>Total expenditure</b>	<b>35,721</b>	<b>37,735</b>	<b>40,095</b>	<b>37,869</b>	<b>38,293</b>	<b>38,293</b>

84. In 2010, we co-sponsored with DfT the Rail Value for Money (RVfM) study, led by Sir Roy McNulty, which reported in May 2011<sup>26</sup>. This helped to set the context for PR13, and established a broad range of efficiency improvements which could be achieved across the rail industry. We were pleased to see that many aspects of the study were reflected in Network Rail's SBP, so that the company approached PR13 with a better view of the available efficiency opportunities.
85. Figure 1 shows our expenditure (support, operations, maintenance and renewals) assumptions in 2018-19 compared to:
- the RVfM study, which estimated ranges for railway costs based on different methods of calculation ('should cost' and 'bottom up');
  - the advice to ministers ('ORR advice' in Figure 1) we provided in March 2012, which was also provided as a range and was designed to inform the development of the HLOSs; and
  - Network Rail's SBP submission.

<sup>25</sup> This comparability adjustment to the FD column reflects the combined effect of the adjustments in terms of the classification of reactive maintenance and ETCS cab fitment.

<sup>26</sup> *Realising the Potential of GB Rail: Final Independent Report of the Rail Value for Money Study*, May 2011, available at <http://www.rail-reg.gov.uk/server/show/ConWebDoc.10401>.

**Figure 1: RVfM expenditure (support, operations, maintenance and renewals) comparisons 2018-19 (Great Britain)**



86. In financial terms our determination is below Network Rail’s SBP but above the RVfM study and our advice to ministers ranges. It is difficult to compare our findings directly with those of the RVfM study, because that study did not take account of increasing outputs specified in the HLOSs or longer term sustainability issues (such as the extra volumes of civils work we now consider need to be delivered). The RVfM study also said that achieving its high estimates for the industry as a whole depended on wide ranging changes across the industry. We are slightly above our advice to ministers range, reflecting the HLOSs and the better information we now have.
87. In this periodic review we have established and drawn on a much deeper and robust base of studies, with newer evidence and analysis, than was available to the RVfM study or at the time of our advice to ministers. The review sets a strong efficiency challenge and our plans for enhancements efficiency develop this challenge further. Taking all this into account we believe that the efficiency challenge identified in the RVfM study for Network Rail itself will have been fully addressed for CP5. If Network Rail delivers on its CP5 efficiencies then the company’s efficiency will have improved by around 50% in the fifteen years from 2004 to 2019.
88. It should also be noted that the RVfM study identified savings of £0.5bn to £1.2bn that it considered other parts of the industry, mainly train operators through the new franchising programme, could make by the end of CP5.

## Incentives

### Whole industry incentives

89. We want to provide the incentives for the industry to work together to get the right work done and reduce costs.
90. To this end we have taken a new approach for those enhancement projects where the scope, specification and efficient cost are currently uncertain, allowing the decision on the level of efficient costs to be deferred, with a backstop date of March 2015. This will give Network Rail more time to work with train operators, passengers, freight

customers and business groups to get the scope and costs of the projects right, and ensure they are focused on maximising benefits.

91. There is opportunity for the company to reduce enhancement spend by more than we have assumed in this assessment. We want to incentivise Network Rail to work with the industry to 'outperform' this determination, and benefit from this outperformance. We will set the efficient costs for the enhancement programme at the aggregate level by March 2015 to ensure costs are controlled. Network Rail can then decide how much to spend on each project and will be able to enter into commercial arrangements with train operators such that, where the operators can help reduce costs, they can share these savings. Network Rail can include the payments to operators within the efficient cost of the project if certain safeguards are met (such as not compromising longer term considerations). Taxpayers will also share the benefits where the costs of the enhancement projects are reduced.
92. We are also introducing a new efficiency benefit sharing scheme to encourage further savings to be made in the day-to-day running costs of the railway. This will apply at the Network Rail route level. Network Rail is increasingly devolving responsibilities to Scotland and the nine England & Wales operating routes and this new mechanism, called REBS<sup>27</sup>, will build on this. We expect operators to work closely with Network Rail and if Network Rail's costs are lower than we assumed the operators will share the savings but if they are higher then operators will shoulder part of the increase. DfT has said that, for new competitively let franchises, it intends to allow train operators to join REBS (but this is unlikely to apply to negotiated direct awards with existing franchisees). Transport Scotland also intends to allow its new franchises to join REBS.
93. We see REBS as an important option for train operators, but we are aware that many operators may prefer to enter into alliances or other commercial arrangements on a bilateral basis with Network Rail, instead of joining REBS. We support such commercially driven arrangements provided they are transparent and non-discriminatory.
94. Under the existing volume incentive Network Rail receives money if actual growth, as measured by passenger and freight train miles, passenger revenues and freight gross tonne miles, is above a national baseline growth level. We are strengthening this mechanism by adding a downside – Network Rail loses money if growth is below the baseline, and also by disaggregating the baseline to route level. This will give Network Rail more incentive to look for ways to increase passenger and freight travel by working more closely with train operators. The company will need to demonstrate how its decisions take the incentive into account, to improve transparency.

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<sup>27</sup> Route-level efficiency benefit sharing.

95. We are working with Network Rail to develop indicators to measure its 'system operator' capability – how well it plans and timetables the network and balances competing customer needs. This will lay the foundations for better use of network capacity in the future.
96. We have not made any material changes in the area of incentives compared to the draft determination.

### **Incentives to reduce disruption to customers**

97. We have updated the passenger Schedule 4 and Schedule 8 regimes which are in track access contracts. The Schedule 8 regime covers the punctuality and reliability of train services. For example, if the lateness of trains increases above a set benchmark because a Network Rail asset fails, Network Rail makes a payment to the affected train operator.
98. The level of payment is based on the likely revenue loss to the operator and these payment rates have been increased to reflect factors such as the increase in passenger numbers. These payment rates are also used in the Schedule 4 regime which compensates train operators for the disruption caused by engineering works. Schedule 4 costs have therefore also increased. These increased payment rates significantly strengthen the incentive on Network Rail to reduce disruption to passengers, which supports the output requirement to reduce disruption.
99. The amounts to be paid for a given level of disruption are largely fixed in advance. Although this approach means that the compensation payment does not perfectly match the costs in every case, it is more efficient than compensation payments that have to be individually negotiated on the basis of the facts in each case.
100. We will set the benchmarks at levels such that overall payments are zero provided that Network Rail and train operators perform in line with expectations during CP5. The Schedule 8 regime reduces the risk that potential franchised operators face when they bid for franchises. This ultimately feeds through to taxpayers through lower franchise costs.
101. Schedule 8 payments have a different purpose from the passenger compensation schemes, such as delay repay, which compensate passengers when trains are delayed. Schedule 8 payments compensate train operators for the impact of poor performance on their long term revenue. Passenger compensation schemes protect passengers when they do not get the service they pay for. There is no reason why the two schemes should pay out the same amount. In recent years Schedule 8 payments by Network Rail have been higher than delay repay payments, which reflects the fact that Network Rail has not met its performance targets. If Network Rail meets its targets Schedule 8 payments would be zero, but some delay repay compensation could still be paid if an individual train is delayed and passengers are inconvenienced.

102. Data is already published on Schedule 4 and 8 payments to train operators disaggregated at the Network Rail operating route level in the regulatory financial statements<sup>28</sup> and we will also be publishing this through our data portal to improve transparency.
103. As with the Schedule 8 regime for franchised and open access passenger operators, we have set the freight and charter operator Schedule 8 benchmarks such that overall payments are zero provided that Network Rail and train operators perform in line with expectations during CP5. We have set the payment rates so they reflect our best available evidence. The freight Schedule 4 payment rates will remain the same as in CP4, but due to the increase in engineering activity expected to affect freight operators in CP5, the funding requirement for freight Schedule 4 has increased.
104. The main changes to passenger Schedules 4 and 8 since the draft determination are to adjust Schedule 8 payment rates downwards for commuter journeys to London and to incorporate the latest evidence on how passengers respond to delays. This reduction in payment rates also has the knock on effect of reducing Schedule 4 payments.
105. The only changes we have made to the freight Schedules 4 and 8 regimes since the draft determination have been as a result of better data or as a result of changes to passenger Schedule 8 payment rates.

## Financial assumptions

106. We have funded Network Rail for its efficient financing costs. Network Rail has no shareholders and therefore no dividend requirements. Hence its financing cost is the interest it pays on its debt. Interest rates are currently low and are expected to remain low for some time. Network Rail also benefits from a financial indemnity mechanism (FIM) which means that all its debts are guaranteed by the UK Government.
107. We have removed the existing annual 'risk buffers' (of around £250m a year) which Network Rail currently receives to protect it against financial risks. In CP5, Network Rail will be able to use its balance sheet for protection against financial risk. That is, it can raise extra debt in the event that (say) costs are above forecast. But there need to be limits to this process and we are retaining Network Rail's licence condition restricting its level of debt as a proportion of its assets, as it incentivises Network Rail to control its costs<sup>29</sup>, efficiently manage risk and provides important protections to the public purse. The limit on the ratio of debt to assets at the GB level will be 75% for CP5.

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<sup>28</sup> These are available at <http://www.networkrail.co.uk/browseDirectory.aspx?dir=%5CRegulatory%20Documents%5CRegulatory%20Compliance%20and%20Reporting%5CRegulatory%20Accounts&root&cd=7>.

<sup>29</sup> This is because, unless we have consented otherwise, Network Rail could be in breach of its network licence if it does not use reasonable endeavours to ensure that its total financial indebtedness does not exceed the limits specified in that licence.



108. Table 4 below describes how we arrive at Network Rail's revenue requirement, showing how we combine our expenditure and financial assumptions.
109. Operating costs<sup>30</sup> are added to an allowance for amortisation (depreciation) which is the average long run level of renewals required to keep the network in steady state. We then calculate the return that shareholders would require if Network Rail was funded by equity (the cost of capital multiplied by the asset base) before deducting the 'equity surplus'<sup>31</sup> as the company is not funded by equity. We calculate the cost of capital as it is still important to identify Network Rail's cost of capital to encourage Network Rail to invest efficiently and ensure a level playing field (between Network Rail and potential competitors) for the delivery of enhancements. Following an analysis of recent decisions in other regulated industries, market rates and the particular risks facing Network Rail, we are setting the cost of capital at 4.31%<sup>32</sup>.
110. The adjusted allowed return of £6,320m (the forecast actual cost of finance including the FIM fee) in our determination is £2,056m lower than Network Rail's SBP. This is primarily due to our assumption of a lower cost of nominal debt and a lower FIM fee<sup>33</sup>, although it is higher than in our draft determination because, for example, forecast opening CP5 debt has risen.
111. We then look at financial indicators and adjust the level of amortisation so that Network Rail's financial sustainability is not unduly affected by this approach (hence the term 'financial sustainability adjustment'). This gives the gross revenue requirement. But Network Rail earns income from 'other single till income' sources such as property. This money is deducted from the gross revenue requirement to leave the net revenue requirement, which is the amount that needs to be recovered from access charges or network grant. We have assumed Network Rail can generate £92m less income from property than we assumed in the draft determination, reflecting new evidence we received from Network Rail.

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<sup>30</sup> Operating costs are support, operations, traction electricity/industry costs and maintenance.

<sup>31</sup> The real equity surplus is the difference between the allowed return and the adjusted allowed return.

<sup>32</sup> The cost of capital for the investment framework is 4.93% on an annual basis.

<sup>33</sup> This is the fee Network Rail pays to the UK Government to reflect the benefit it receives from having its debt backed by the UK Government through the financial indemnity mechanism.

**Table 4: Our determination of Network Rail's CP5 revenue requirement (Great Britain)**

<b>£m (2012-13 prices)</b>	<b>PR08</b>	<b>SBP</b>	<b>DD</b>	<b>FD</b>
Operating costs (including Sch 4 and 8)	13,284	13,341	13,456	13,367
Amortisation (based on long-run steady state renewals)	8,903	10,540	9,794	9,909
Tax allowance	-	-	18	6
Release of opex memorandum account <sup>34</sup>	-	138	115	172
<b>Gross revenue requirement before cost of capital</b>	<b>22,187</b>	<b>24,019</b>	<b>23,384</b>	<b>23,455</b>
Allowed return (real cost of capital)	10,455	13,092	11,267	11,337
Less: Real equity surplus	-	(4,716)	(5,280)	(5,018)
Adjusted allowed return (efficient financing costs)	10,455	8,376	5,987	6,320
<b>Gross revenue requirement pre-sustainability adjustments</b>	<b>32,642</b>	<b>32,395</b>	<b>29,371</b>	<b>29,775</b>
Additional amortisation (financial sustainability adjustment)	-	970	2,379	2,000
<b>Gross revenue requirement</b>	<b>32,642</b>	<b>33,365</b>	<b>31,749</b>	<b>31,775</b>
Less: Other single till income	(3,523)	(4,138)	(4,321)	(4,310)
<b>Net revenue requirement</b>	<b>29,119</b>	<b>29,227</b>	<b>27,428</b>	<b>27,465</b>

112. Network Rail's net revenue requirement in CP5 is, overall, £5.5bn per annum in Great Britain, £4.9bn per annum in England & Wales and £0.6bn per annum in Scotland.

113. The main changes compared to the draft determination are:

- (a) an increase in amortisation (based on a long run steady state level of renewals) primarily because of a revised estimate of the efficiency of track renewals;
- (b) a higher allowed return because the RAB has increased compared to our draft determination as capital expenditure has increased;
- (c) a reduction in the real equity surplus as our forecast of Network Rail's efficient financing costs (adjusted allowed return) has increased since our draft determination because of higher forecast opening CP5 debt and higher assumed interest rates, partly offset by the effect of more index-linked debt which reduces Network Rail's costs in CP5; and
- (d) a reduction in the level of additional amortisation (financial sustainability adjustment) as we have finalised our approach for CP5.

<sup>34</sup> The income from certain sources, e.g. the volume incentive, is paid into this account and paid to Network Rail over time.

114. Overall, the net revenue requirement for Great Britain has increased by £37m. This is largely because the adjusted allowed return has increased by £333m due to an increase in our forecast of Network Rail's efficient financing costs. This is offset by a net reduction in other costs of £296m, of which the largest change is the reduction in total amortisation of £264m, largely due to a change to the calculation of the financial sustainability adjustment. We have also balanced the impact of higher assumed spend by allowing a limited increase in debt.

## Access charges

115. As part of PR13 we set the framework for access charges, with Network Rail having the responsibility for setting the specific charges. We are seeking to improve the extent to which charges reflect costs and in so doing we can improve the incentives for Network Rail to manage the provision of network capacity more efficiently, and for its customers to use that capacity efficiently. In our view, exposing franchised train operators to changes in charges at a periodic review<sup>35</sup> would strengthen their incentives to work with Network Rail to reduce its costs. This would further improve value for money for funders and users.
116. There are two main types of track access charges<sup>36</sup>. The first type, reflecting costs directly incurred, includes the variable usage charge (which covers infrastructure wear and tear costs) and the capacity charge (which covers Schedule 8 costs that vary with traffic). Costs directly incurred essentially cover short-run marginal costs. The second type of charge, 'mark-ups' above costs directly incurred, allow more of Network Rail's costs to be recovered when the market can bear it<sup>37</sup>, and include the current freight only line charge and fixed charges. Not all rail traffic pays every charge – for example only franchised passenger operators pay the fixed charge.
117. It is our role to set the framework within which Network Rail has responsibility for calculating its track access charges. It undertook a major programme of work with extensive consultation and industry engagement. In broad terms this analysis pointed to substantial increases in charges in some areas, particularly in variable usage charges for bulk traffic and capacity charges, to reflect the latest information on costs.
118. One mark-up charge already exists – for freight only lines. We are introducing a new freight specific charge (FSC) covering coal for the electricity supply industry, spent nuclear fuel and iron ore, so that the charges cover more of the costs incurred. These are the commodities that are able to bear a mark-up. The latest information on freight

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<sup>35</sup> At present, franchised operators are largely protected from any changes.

<sup>36</sup> There is also a station access charge called the station long term charge.

<sup>37</sup> There are various legal requirements for a mark-up including that the charge does not price market segments off the network.

avoidable costs<sup>38</sup> suggested that these commodities should face a significant mark-up.

119. Since the publication of the draft determination there has been further very helpful discussion with the industry on the capacity charge, including input from RDG, which we have drawn on to reach our decisions.
120. We have decided that franchised passenger operators' existing services will pay CP5 capacity charge rates (but because existing services are protected from any changes under the franchise agreements, they effectively pay CP4 rates), and additional services will pay the CP5 rates. Existing open access passenger operators will pay CP4 rates on existing services and CP5 rates on new services. Any new entrant open access operators will pay CP4 rates on services below a threshold (set to provide broadly equivalent treatment with existing open access operators) and CP5 rates above the threshold.
121. We are supporting improvements in energy efficiency and reductions in CO<sub>2</sub> emissions by refining the traction electricity charging regime to encourage further on-train metering of electricity. We are also funding some further fitment of meters. And we are introducing financial incentives for Network Rail to manage transmission losses better.
122. In summary, we estimate that the impact of our determination will be that in real terms, average total freight charges will increase by around 21% on current levels by 2018-19, equivalent to 4% a year on average. For commodities not affected by the FSC, the corresponding increases are 6% on current levels by 2018-19 and 1% a year on average. Increases in charges will be phased in to give businesses more time to adjust. The variable usage charge increases and the FSC will be phased in from April 2016, reaching the full capped level only in 2018-19. These numbers are largely unchanged from our draft determination.
123. Average total franchised passenger variable charges will increase by 36% from CP4 to CP5 in real terms, as a consequence of the substantial increase in the capacity charge. In our draft determination, the equivalent figure was 1% as we were consulting on retaining the CP4 capacity charge rates. Franchised operators are largely protected from this increase under the terms of their franchise agreements. For open access operators, due to the measures we are taking to mitigate the impacts of increases in the capacity charge, average variable charges will stay approximately constant from CP4 to CP5 in real terms.
124. Our conclusions on charges and Schedule 8 payments for charter operators will improve consistency between charter track access contracts and those of other passenger and freight operators, and ensure that the prices charter services will pay

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<sup>38</sup> Freight avoidable costs are the reduction in infrastructure costs that would occur long term if commercial freight traffic did not use the network.

to Network Rail are more reflective of cost. On average, our analysis shows that this package will result in charter operators being better off financially than they have been in CP4.

125. The actual prices paid by each operator will vary by (for example) type of vehicles and in the case of freight, commodity. Network Rail published detailed draft price lists in July 2013, consistent with our draft determination and will now publish final charges in December 2013 consistent with this final determination.
126. Fixed charges in CP5 will be £2,379m compared to £5,279m in CP4. Fixed charges cover Network Rail's remaining costs after variable charges, other single till income and network grants. The reduction of nearly £3bn reflects two main factors, a lower net revenue requirement and higher other single till income, with a smaller impact from higher capacity charges. For accounting reasons, the governments pay direct grant (called 'network grant') to Network Rail in lieu of fixed track access charges, and the total network grant in CP5 will be £19,586m compared to £20,186m in CP4.
127. Shortly after publication of the draft determination we consulted on options to allow open access passenger operators greater access to the network in return for some contribution to fixed costs. There was little support for the options from open access operators and some issues of concern to funders. Reflecting the responses, we have decided not to implement any of the options so there will be no significant changes to the open access regime. However, we will explore possible improvements to the way the NPA<sup>39</sup> test works, in response to suggestions from open access operators.

## Deliverability

128. We have considered the risks to this overall determination. We have reviewed whether the outputs can be delivered and whether our assumed levels of efficiency are achievable. A number of those who responded to our draft determination questioned both whether Network Rail could deliver the settlement and our role in monitoring and enforcing delivery. We have taken steps in both areas to strengthen the robustness of the settlement.
129. We also assessed whether the total programme of engineering work (for maintenance, renewals and enhancements) can be delivered. Although the overall volume of work is likely to be higher than in CP4, the main risks are around the mix of work and its location.
130. On the mix of work, signalling volumes will almost double compared to CP4 and the electrification programme is much bigger. The implementation of ERTMS<sup>40</sup> raises

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<sup>39</sup> The NPA ('not primarily abstractive') test is a form of economic evaluation, which ensures that a proposed new open access service will generate an acceptable level of new-to-rail business, rather than merely taking business from existing operators.

<sup>40</sup> European Rail Traffic Management System.

technology and operational challenges. There are concentrations of work on the Great Western Main Line out of Paddington and on the Thameslink route, making access more difficult.

131. We have focused our work on risks to ERTMS implementation, the resourcing of the electrification work, the Great Western Main Line work and on Network Rail's programme management of many sub-projects (as in the Northern Hub work). We have noted that Network Rail is improving how it works with the supply chain.
132. The early stage of development of many enhancement projects adds a layer of uncertainty to the analysis, but overall we have concluded the work is deliverable, although strong programme and risk management will be crucial. Network Rail will update its deliverability assessment on a regular basis.

## **What does the determination mean for Network Rail?**

133. There is no doubt that this settlement represents a sizeable challenge for the company. And it is right that it should. But it is in everyone's interest that Network Rail delivers this challenging determination and hence it includes checks and balances, which are designed to give Network Rail, and the industry, flexibility to respond.
134. While the overall output requirements are demanding, we have provided some flexibility. For example, we have set the output for reducing disruption to passengers for the end of the control period, so that Network Rail and the industry can decide the most sensible trajectory to reach that point, taking into account the large investment programme.
135. We have taken a different approach to civils spend and to enhancements at an early stage of development, reducing risks to the company, as described above.
136. We have also carefully considered the lessons of CP4. When Network Rail first tried to make efficiency savings in maintenance in CP4, it did not manage the change well in some respects. We have reduced the level of efficiency improvement required at the start of the control period for maintenance compared to Network Rail's SBP to give the company more time to plan the necessary changes and implement them effectively. Effective delivery is essential if longer term efficiency gains and service quality improvements are to be secured and locked-in for the future.
137. Compared to the draft determination we have increased Network Rail's assumed expenditure on track renewals and information management and given the company more freedom to 'spend to save', which further increases the company's ability to deliver the settlement. We have provided extra funding for R&D compared to CP4. We have also clarified and simplified the asset management outputs the company must deliver.



138. If there has been or is likely to be a material change in the circumstances of Network Rail or in relevant financial markets, there is provision for the determination to be re-opened. This provides further protection against risk to Network Rail.
139. Network Rail is implementing changes that should put the company in a better position to meet the challenges. These include devolving more responsibility to its routes, collaborating more effectively with customers and suppliers and taking forward programmes to change the culture within the organisation.

## **The impact of this determination**

140. Network Rail's delivery of this settlement will result in significant benefits to passengers, freight customers, train operators, taxpayers and suppliers.

### **Passengers and freight customers**

141. Passengers will benefit from the increases in capacity which will allow new services to be introduced, from improving levels of train service reliability including improvements on the worst performing services, and from improvements at stations based on the ring-fenced funds made available. We expect safety to improve, particularly at level crossings.
142. We will publish a wider range of data to help passengers better understand railway finances and performance and passenger groups will be more involved in the development of enhancement projects. We will monitor levels of passenger satisfaction through the National Passenger Survey and customer research.
143. Freight customers will benefit from extra capacity, better performance, reduced disruption and the Strategic Freight Network.

### **Train operators**

144. Train operators will be able to benefit from the new incentives to work with Network Rail to reduce costs and the opportunity to work with Network Rail to improve the specification and effectiveness of the enhancement programme. The improvements in capacity and performance will help drive further revenue growth.
145. Freight operators will benefit from the continued investment in the Strategic Freight Network and the new output for freight performance. Increases in access charges have been capped and phased in, as described in the access charges section of this summary.
146. The changes we have made to the draft determination, providing over £100m more for track renewals and £126m of rollover funding for projects, including further funding for 7-day railway schemes, will provide benefits to operators across the country. Funding is provided for ETCS cab fitment for 'first of class' design and for wider fitment for non-franchised operators, including driver training. Network Rail's planned expenditure on renewal of depot plant has been maintained, to reflect operator priorities.

147. We will monitor the impact on train operators through direct feedback, the new customer satisfaction measures that Network Rail is developing, and the new 'system operator' indicators.

### **Taxpayers**

148. Taxpayers will see the railway grow in a more cost effective and sustainable way, with more transparency over what it delivers and for how much money. Overall, we have balanced the affordability of the package with sustainability and this has provided the basis for the industry to move forward in difficult economic times. This is good news for taxpayers and customers.
149. The improvements in performance and to the network will also facilitate economic growth and greater competitiveness.

### **Supply chain**

150. The supply chain will benefit from the large capital programme, including the increased volumes of work on civils and signalling, and given the early stage of development of the programme there will be considerable scope for supplier involvement in scheme design. The scale and duration of the work programme will give greater confidence to invest and innovate. There will be longer term benefits through the funding for research. We have also funded Network Rail to develop CP5 projects during the remainder of CP4 to avoid any 'hiatus' in orders between control periods, with Network Rail planning to spend £65m on developing new CP5 projects in 2013-14. Work has already started on the delivery of a number of new HLOS projects, including East West Rail.

## **Monitoring and reporting**

151. We will continue to monitor Network Rail, taking a forward looking risk based approach. That means we assess whether Network Rail is likely to deliver its obligations, intervening where necessary to ensure the obligations are delivered, focusing on the major risks.
152. We will be changing some aspects of our CP4 approach. We will need to expand our monitoring to include the new areas introduced by this determination, such as the asset management outputs. And we will need to develop the new mechanisms we are putting in place for assessing civils spend and early stage enhancement projects, to make sure these deliver value for money.
153. We are also working jointly with Network Rail on an improved financial monitoring process for the next control period. There have been strong differences of view between ourselves and Network Rail on the extent to which the company has financially performed in CP4. These have been caused by factors such as there being no shared view on the most appropriate approach to measuring financial performance, and how Network Rail provides evidence supporting its analysis given issues with data quality. We intend to put this on a firmer footing for CP5; the new

process will be explained and published in our revised regulatory accounting guidelines by March 2014, with a draft by 1 February 2014. The new process is intended to be more predictable and transparent, with a plain English guide accompanying the accounting guidelines. There will be improvements in financial reporting for Scotland.

154. We will continue to report regularly on Network Rail's delivery, but there will be wider benefits from the extra transparency this determination will bring. We will publish more information at a greater level of geographical disaggregation (at Network Rail route level) to help local decision makers. We will also be encouraging the industry to publish more detailed information to enable passengers to get a better understanding of the service they are getting (including more disaggregated information on 'right time' performance and the extent of use of buses instead of trains during engineering works). Passengers, business groups and operators will be more involved in the development of enhancement projects and in decision making processes such as how the ring-fenced enhancement funds are spent.

## Summary of consultation responses and changes to our draft determination

155. Apart from Network Rail's response, there was general support for the overall draft determination package including its benefits for passengers and freight customers, and strong support for certain aspects, such as the increased focus on improving Network Rail's asset management.
156. Network Rail said that '...taken in the round, the Draft Determination is not sufficiently balanced and is based on unrealistic assumptions'. The company focused on six main concerns:
- (a) our proposed trajectory to improve **performance** in England & Wales as measured by PPM was not realistic;
  - (b) the assumed level of spend on **track and signalling renewals** was too low;
  - (c) we had set the level of spend on **information management** too low;
  - (d) our assumptions on the amount of money Network Rail could generate from **property** were too aggressive;
  - (e) our assumed **cost of financing** for Network Rail was too low; and
  - (f) overall, the proposed **regulatory regime** would be too intrusive and complicated.
157. The company provided evidence which has led us to making changes in all six areas, although the evidence did not support changes on the scale the company proposed.
158. Recognising the evidence that the level of PPM is now likely to be lower at March 2014 (the exit point from CP4) than we assumed in our draft determination, we have reduced the required level of PPM in England & Wales for the first three years of the

control period, while maintaining the 92.5% output for 2019. This gives the company more time to deliver the improvements required to meet the targets.

159. We have increased assumed spend levels for track, signalling and information management by £191m. Network Rail sought another £759m beyond this, but did not make a strong case. Similarly, we accepted that our property income forecast was £92m too high, but not the £251m the company claimed.
160. We have increased the assumed level of efficient financing costs by £333m, for example to reflect the latest information on market rates. This is £356m less than the £689m in additional funds that Network Rail requested in its draft determination response.
161. We disagree with Network Rail's arguments on the regulatory regime that we have set too many outputs and indicators. Network Rail said there would be 3,700 measures under regulatory scrutiny. In fact all these measures are ones which any well managed railway infrastructure company would want to collect and analyse. The actual number of outputs (i.e. regulatory obligations which we will hold the company to account for) for CP5 is less than a hundred, to cover a total spend of over £38bn. Our monitoring approach is based on lessons learnt from CP4 and we are not changing the scope of the plans set out in the draft determination. But we have stressed to the company that this does not necessarily reflect our longer term approach – it could be changed provided Network Rail's delivery record improves sufficiently to warrant this.
162. While we are not changing our approach on outputs, we have reflected on comments made by Network Rail and train operators about how to encourage normal commercial relationships between them. We accept that we should give the company more freedom to manage how it delivers for customers and so we have made a number of detailed changes – for example, to provide a stronger incentive for it to spend to save.
163. Other stakeholders raised issues or asked questions about our draft determination in terms of:
  - (a) overall **deliverability** – whether it is a deliverable package;
  - (b) the impact on **safety** – whether it can be delivered safely;
  - (c) the level of **funding of enhancement projects**;
  - (d) the **take up of REBS** (route level efficiency benefit sharing);
  - (e) changes to the **Schedules 4 and 8** regimes;
  - (f) concerns about our **process** to determine freight charges and the capacity charge;
  - (g) specific concerns about issues affecting **Scotland**; and

- (h) whether there would be **certainty on the levels of investment** at the start of CP5.

### **Deliverability**

164. Deliverability was raised as a concern in terms of whether Network Rail could deliver the overall package and our role in ensuring that the company does deliver the package. We need to strike a fine balance on deliverability – the package should be challenging but not unrealistic. The changes we have made, specifically to the PPM trajectory and providing extra funding in areas that impact most on the operational railway, are designed to improve that balance. We expect that the company's stronger focus on improving asset management will have a major positive impact on deliverability.
165. We will adapt our approach to monitoring in CP5, with the emphasis on monitoring the basics – such as volumes of work delivered and the improvements in asset data quality. This will identify potential threats to good performance before assets fail and passengers and freight customers are affected.

### **Safety**

166. Union responses expressed concern that the efficiency assumptions we have made could compromise safety. We have considered safety issues in all areas of our work and reviewed lessons from CP4. As a combined economic and safety regulator we have built our safety assessment into each stage of our review, and there is nothing in our balanced package which would prevent Network Rail running a safe railway. We have learnt the lessons of CP4 and given Network Rail more time to make maintenance savings so these can be well planned.

### **Enhancements**

167. We received many proposals that further enhancement projects should be funded, or that funding levels should be increased for certain projects, particularly the Northern Hub. Although we recognise that other enhancement projects may provide good value for money, they are not required by the HLOSs. For most projects, including the Northern Hub, we are only making a funding assumption at this stage, with the final efficient cost being determined by March 2015.
168. But we have addressed concerns that a number of projects with important implications for passengers and freight customers would be jeopardised unless we allowed the rollover of unspent money from this control period. These are projects which should have been delivered but are already running late. Although this is far from ideal, we do not want to compound this by stopping the projects, so we have agreed to rollover funding.
169. We were also asked by the DfT to provide additional funding in Network Rail's settlement for further depots and stabling facilities. In our affordability calculation for the draft determination we had assumed the funding would be through franchised

operators, but the timing of the franchise programme makes this difficult and DfT considers funding Network Rail for the work would provide better value. This work is essential, for example to allow new electric services to run once the electrification of a particular route is complete. We have funded Network Rail for £312m of spend, but we recognise that the scope of the works is not clear at this stage, and we will adjust Network Rail's funding later to reflect efficient costs incurred.

## REBS

170. Many consultees felt that take up of REBS would be limited and that alliancing should be the preferred way forward. As described in the draft determination, we strongly support bespoke commercial arrangements – such as alliancing - between Network Rail and operators, and we see REBS as providing a default for operators if they choose not to negotiate individual deals.

## Schedules 4 and 8 regimes

171. There were differing views on Schedules 4 and 8 for passenger operators. The passenger Schedule 8 regime is a benchmarked one – payments are only made if performance is above or below a benchmarked amount. The benchmarks reflect the PPM outputs we set and we also set the payment rates (which are based on the likely impact of changes in performance on revenues). Some consultees thought the payments rates had been set too high, while others disagreed and there was a more general call for reassurance that the overall regime would be robust.
172. A robust Schedule 8 regime depends first of all on setting an appropriate PPM trajectory and the changes we have made to this trajectory since the draft determination will increase confidence in its deliverability. The second step is to ensure a clear link between that PPM trajectory and the benchmarks and we have worked with Network Rail and the wider industry to establish a transparent process with the opportunity for all operators to comment on draft numbers and debate changes. It is the open and consultative nature of this process which should give everyone assurance on this. Thirdly, the payment rates must be well evidenced. Although these rates have increased compared to CP4, over half the increase reflects the fact that the rail industry has been a success and revenues have grown (so a change in performance leads to a bigger change in revenues) and with the remainder of the increase reflecting the latest evidence from industry technical studies on how passengers respond to delays. There are differing views on the robustness of this work, but the fact remains that this is the best available evidence.
173. Network Rail was content with the decision in our draft determination regarding Schedule 8 for freight operators. Freight operators have expressed concern regarding the updated benchmarks and payment rates outlined in our draft determination. We have not changed our approach in setting the benchmarks and payment rates: the only changes compared to the draft determination have been as a result of better data or changes to the passenger Schedule 8 payment rates.



## Concerns about the process for setting freight charges and the capacity charge

174. The scale of the possible overall increase in freight charges and the impact of possible increases in the capacity charge on all operators led to an extended debate with the industry. We are very aware of the impact this has had not only on the ability of businesses to plan but also the time spent on debating the issues. We will be reviewing the lessons learnt from this and we have put considerable resource into ensuring our final decisions reflect input from the industry.

## Scotland

175. The concerns raised relating to Scotland included the affordability gap for Scotland, which we said in the draft determination that we believed would be closed and has now been closed. Another significant concern was the way fixed track access charges are allocated to cross border services. Currently First ScotRail does not pay fixed track access charges for using the network in England and DfT specified franchised operators do not pay fixed track access charges in Scotland. Although we are not changing this for CP5, we will lead a piece of work, within our PR18 development programme, working with Transport Scotland, DfT and the industry to assess options for CP6 and we will decide on any changes in the allocation. This work will begin early in 2014.
176. We were asked to establish a journey time metric for Scotland to measure and monitor changes over time, and an improved industry process for assessing options to improve journey times. We support these changes and a new metric and industry process will be established for CP5. We were also asked to clarify the position on cross border route availability. The strategic importance of planning to have at least one cross border route open is recognised and Network Rail must use all reasonable endeavours to achieve this and ensure that its planning processes fully reflect this aim.

## Certainty on investment

177. While suppliers welcomed the scale of investment funded in the determination, there was still concern about the possibility of an investment hiatus at the start of the control period, reflecting the experience of the start of CP4 when Network Rail cut renewals volumes, and over the development and authorisation of new enhancement projects.
178. Network Rail's new asset policies imply a certain level of maintenance and renewals volumes and the company would have to justify a material departure from these volumes. In addition Network Rail is planning to spend £65m in 2013-14 developing new CP5 enhancement projects, illustrating the scale of the commitment to the programme. We have also worked with Network Rail to refine the process by which early stage enhancement project costs are approved by us in the course of the first year of CP5, to make sure there is a steady flow of decisions rather than a logjam at the end of the first year.

## The longer term

179. Many of the changes will have a longer term impact, in particular moving Network Rail to a position where it has excellent asset data so it can make well informed decisions, including planning its maintenance and renewals work efficiently. Network Rail and the industry in general will also benefit from the innovation funding provided in the Secretary of State's HLOS which should drive cost reduction and quality improvements in the future. Recognising the importance of investing for the longer term to reduce costs and improve service quality, we have decided to introduce a further incentive for Network Rail to invest in R&D and innovation. If Network Rail uses money from third parties or outperformance to invest in R&D and innovation we will provide matched funding of up to £50m. The HLOS fund and this matched funding send strong signals for Network Rail to respond to.
180. Our determination does not stop risk capital, such as unsupported debt, from being introduced into Network Rail in the future. Nor does it obstruct the development of further alliances or an infrastructure concession. In the event of future industry reforms or other significant changes, we will consider any adjustments to the determination, on a case-by-case basis. Material changes would lead us to consider re-opening the determination, whereas the impact of small changes could be handled through a subsequent financial adjustment.
181. Network Rail's net debt is forecast to rise from £31.7bn (in nominal prices) at the end of 2013-14 to £49.6bn (in nominal prices) by 2019<sup>41</sup>, although its assets will also grow in value. The rise in debt largely reflects the funding of the large enhancement programme, which will deliver substantial benefits. We forecast that Network Rail will spend on average around £1,264m (in 2012-13 prices) a year servicing the debt in CP5. Under reasonable assumptions, debt could continue to rise in future control periods and there will need to be a debate within the governments and industry about how sustainable this is.
182. In July 2013, we published our long-term regulatory statement<sup>42</sup> to set PR13 in the context of a longer term time frame, looking at issues such as financial sustainability and the further alignment of incentives to deliver even greater value for money. In our view, our determination provides a good basis on which to develop the regulatory regime and encourage the evolution of the industry to address the issues set out in our long-term regulatory statement.

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<sup>41</sup> In real terms, debt will rise from £30.7bn to £41.5bn over CP5.

<sup>42</sup> *Opportunities and challenges for the railway - ORR's long-term regulatory statement*, July 2013 available at <http://www.rail-reg.gov.uk/upload/pdf/long-term-regulatory-statement.pdf>.

## Next steps

183. Table 5 shows the timetable for the remaining key milestones in PR13. Network Rail's delivery plan will include milestones for all the enhancement projects, following a consultation which will start in December 2013.
184. We will publish success criteria before 1 April 2014, against which we will measure the delivery of PR13, and we will also commission an independent review of our PR13 process.

**Table 5: Timetable for the remaining key milestones in PR13**

Date	Milestone
December 2013	Network Rail publishes draft delivery plan for consultation.
20 December 2013	Final access charges (price lists/charge schedules) produced by Network Rail are audited and approved by us.
20 December 2013	Review notices are served which start the formal implementation of PR13. The review notices set out the proposed changes to track and station access contracts and the network licence.
31 January 2014	Close of Network Rail's consultation on its draft delivery plan.
7 February 2014	Network Rail will then have until 7 February 2014 to object to the review notice. If it objects, then we would either issue a revised notice or make a reference to the Competition Commission.
February 2014	If Network Rail does not object, we will issue a 'notice of agreement' shortly after 7 February 2014. This will give beneficiaries to track and station access contracts (e.g. train operators) 28 days within which to give notice that they wish to terminate their access contracts, should they wish to do so.
March 2014	Assuming we issue a notice of agreement in February 2014, we would then expect to issue our review implementation notice in March. This confirms that the periodic review will be implemented on 1 April 2014.
By 31 March 2014	Network Rail publishes its delivery plan for CP5.
1 April 2014	Our PR13 determination is implemented and CP5 begins.

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# 1. Introduction

## Purpose of this document

- 1.1 The 2013 Periodic Review (PR13) is the process through which we determine the outputs that Network Rail is expected to deliver, the efficient cost of delivering those outputs, and the access charges the company can levy on train operators for using its network to recover those costs.
- 1.2 It covers the period from 1 April 2014 to 31 March 2019, which is called CP5 (control period 5). PR13 also establishes the wider 'regulatory framework' for CP5. This includes the financial framework within which Network Rail will operate and the incentives that will act on both it and train operators (and through them on suppliers and rolling stock companies) to deliver and outperform our determination.
- 1.3 This document sets out our final determination on PR13. It includes our overall judgements and decisions on:
  - (a) the outputs that Network Rail must deliver in CP5;
  - (b) how much Network Rail needs to spend to deliver its outputs and its other commitments, including the interest it must pay on its debt;
  - (c) the financial framework within which Network Rail will operate in CP5;
  - (d) the incentive mechanisms to encourage Network Rail and its industry partners to deliver and outperform our determination; and
  - (e) the affordability of what the Scottish Ministers and the Secretary of State want the railway to deliver in Scotland and England & Wales respectively, as set out in their high level output specifications (HLOSs).
- 1.4 This document has been informed by the responses we received to our draft determination, on which we consulted in June 2013. We would like to thank all those who submitted a response to us. We have considered all the responses carefully in developing this final determination<sup>43</sup>.

## Structure of this document

- 1.5 The structure of this document is shown in Table 1.1 below.

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<sup>43</sup> <http://www.rail-reg.gov.uk/pr13/consultations/draft-determination.php>.

**Table 1.1: Structure of this document**

Chapter & Title		Description and purpose
<b>Introduction and background</b>		
1	Introduction	Gives an overview of the purpose and structure of this document.
2	Background and context	Sets out the legislative and regulatory background to PR13 and the wider context for the industry.
<b>Outputs, efficient expenditure, deliverability and health &amp; safety</b>		
3	Output framework	Sets out the outputs that Network Rail will be required to deliver during CP5 and the framework of enablers and indicators.
4	Overview of efficient expenditure	Gives a brief overview of how we assess efficient expenditure, and sets out the crosscutting issues and assumptions that apply across different areas of expenditure.
5	Support expenditure	Describes our assumptions on the level of efficient expenditure for Network Rail's support costs (e.g. human resources and insurance).
6	Traction electricity, industry costs and rates	Describes our assumptions on what Network Rail will need to spend on purchasing the electricity it uses and that it sells on to train operators (e.g. to power trains) and the costs of funding industry groups and rates.
7	Operations expenditure	Describes our assumptions on the level of efficient expenditure required for Network Rail to operate and control its network infrastructure (e.g. through the signalling system).
8	Asset management: maintenance and renewals expenditure	Sets out our review of Network Rail's asset management proposals and our assumptions on the level of efficient expenditure required for Network Rail to maintain and renew its network efficiently.
9	Enhancements expenditure	Provides our decisions on the efficient enhancements required to deliver the high-level outputs set by the two governments, and our assumptions on costs. It also sets out the arrangements for the specific funds that the governments are making available.
10	Deliverability of engineering work	Sets out our decisions on Network Rail's ability to carry out the engineering work required to deliver its maintenance, renewals and enhancement programme.
11	Health and safety	Explains how we have ensured that our overall decisions on PR13 are consistent with Network Rail's obligations to maintain and improve health and safety.

Chapter & Title		Description and purpose
<b>Financial framework and revenue requirement</b>		
12	Financial framework	Explains our decisions on the financial framework that Network Rail must work within.
13	Impact of the financial framework on financial parameters	Sets out our assumptions on Network Rail's cost of capital, its financing costs, the level of the regulatory asset base (RAB) and net debt levels at the start of CP5 and other important financial information. These assumptions are used to calculate Network Rail's revenue requirement.
14	Network Rail's revenue requirement	Summarises the revenue that Network Rail will require in CP5 to deliver its outputs in England & Wales and Scotland.
<b>Incentives framework, access charges and other income</b>		
15	Overall incentives	Gives an overview of the importance of the incentive framework that we put in place through PR13 which will apply to Network Rail and other industry parties.
16	Access charges	Sets out the decisions we have made on the charging framework for CP5, including the overall level of particular charges.
17	Network grant	Explains the level of network grant payment that we will allow Network Rail to receive from DfT and Transport Scotland in lieu of fixed track access charges.
18	Other single till income	Sets out our assumptions on the amount of income we expect that Network Rail will be able to receive from sources such as commercial property.
19	Financial incentives	Sets out our decisions and proposals on financial incentives to encourage greater efficiency and innovation and incentivise Network Rail to be more responsive to demand from its customers for additional network capacity.
20	Possessions and performance regimes	Provides our decisions on the financial compensation regimes in Schedules 4 and 8 of track access contracts.
<b>Affordability, implementation, monitoring and impacts</b>		
21	Affordability of the HLOSs	Explains our assessment of the affordability of the two governments' high-level output specifications (HLOSs) in relation to the statements of funds available (SoFA).
22	Implementation of our determination	Describes the process for how we will implement the decisions in our determination.
23	Monitoring, enforcement and reporting	Sets out our approach to monitoring in CP5, covering the delivery of Network Rail's outputs and its health and safety and financial performance. It also outlines our approach to enforcement.



Chapter & Title		Description and purpose
<b>24</b>	Review of wider impacts	Sets out our assessment of how the overall package in the final determination would impact on key stakeholder groups beyond Network Rail.
<b>Annexes</b>		
<b>Annex A</b>	Respondents to the draft determination	Lists the parties who responded to our draft determination.
<b>Annex B</b>	Decision on a freight specific charge for biomass	Describes our consideration of the responses to our February 2013 consultation on whether to apply a freight specific charge to biomass and our further analysis of the issues (see chapter 16 on access charges).
<b>Annex C</b>	Summary of other single till income	Reconciles the total other single till income Network Rail will receive – totalling up the access charges paid by freight and open access operators (set out in chapter 16) with the other single till income in chapter 18.
<b>Annex D</b>	Route-level data	Sets out our assumptions on route-level expenditure requirements and indicative route level revenue requirements.
<b>Annex E</b>	Funding of enhancement projects	Summarises our conclusions on the funding of enhancement projects.
<b>Annex F</b>	Further detail on the effect of the financial framework on the level of access charges	Sets out the level that access charges would be if we had not allowed any payment of network grant and the revenue requirement if we had not used the adjusted weighted average cost of capital approach (i.e. if we had used the cost of capital in the calculation of access charges).
<b>Annex G</b>	Comparison of PR13 to the Rail Value for Money study	Compares our determination to the levels of expenditure and savings projected by the Rail Value for Money study.
<b>Annex H</b>	Process for re-opening the price control	Sets out the procedure that we would expect to follow in carrying out an 'interim review' of access charges, should any of the criteria in chapter 12 providing for this be triggered.
<b>Annex I</b>	List of consultancy and independent reporter studies	Lists the reports by our consultants and the independent reporters that have fed into this determination.
<b>Annex J</b>	PR13 stakeholder engagement	Sets out the consultations we have carried out in connection with PR13 since May 2011 and the main stakeholder engagement associated with these.
<b>Annex K</b>	ORR's statutory duties	Lists the statutory duties that we must have regard to when carrying out our functions.
<b>Abbreviations and acronyms</b>		

## Consultancy and reporter studies

1.6 A full list of associated reports by consultants and the reporters that we have used to inform our decisions is set out in Annex I and the reports themselves (or executive summaries of them) are either already on our website or will be made available shortly after publication of this final determination<sup>44</sup>.

## Price base

1.7 All values in this document are in 2012-13 prices unless otherwise stated.

## Process for the remainder of PR13

1.8 Table 1.2 below sets out the remaining high-level milestones for PR13.

**Table 1.2: Timetable for the remainder of PR13**

Implementation phase	
November 2013	We issue a statutory consultation on our proposed modifications to Network Rail's network licence to update it for CP5. (Note that 'core PR13' licence changes relating to conditions 3 and 4 of the licence are being made through a separate process – see chapter 22.)
By 8 November 2013	We circulate to passenger train operators the Schedules 4 and 8 values that we plan to include in their track access contracts for CP5. This will give them the opportunity to advise us if there are any errors before we implement them.
21 November 2013	Deadline for Network Rail and those freight train operators with a market share of 5% or more of total freight train miles run to submit agreed levels of Schedule 8 liability caps to us for inclusion in their track access contracts
December 2013	Network Rail publishes its draft delivery plan for consultation.
20 December 2013	Final access charges (price lists/charge schedules) produced by Network Rail are audited and approved by us.
20 December 2013	Review notices are served which start the formal implementation of PR13. The review notices set out the proposed changes to track and station access contracts and the network licence.
31 January 2014	Close of Network Rail's consultation on its draft delivery plan.
7 February 2014	Network Rail will then have until 7 February 2014 to object to the review notice. If it objects, then we would either issue a revised notice or make a reference to the Competition Commission.

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<sup>44</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

Implementation phase	
February 2014	If Network Rail does not object, we will issue a 'notice of agreement' shortly after 7 February 2014. This will give beneficiaries to track and station access contracts (e.g. train operators) 28 days within which to give notice that they wish to terminate their access contracts, should they wish to do so.
March 2014	Assuming we issue a notice of agreement in February 2014, we would then expect to issue our review implementation notice in March. This confirms that the periodic review will be implemented on 1 April 2014.
By 31 March 2014	Network Rail publishes its delivery plan for CP5.
1 April 2014	Our PR13 determination is implemented and CP5 begins.

- 1.9 On 20 December 2013, we will publish review notices setting out the changes to access contracts and the network licence that we propose to make to give effect to this determination. On or around this date, Network Rail will issue the final price lists setting out the exact access charges to be paid. This reflects the legal responsibilities for ORR to set the charging framework (and the specific charging rules governing the determination of charges) and for Network Rail as the infrastructure manager to set the access charges based on this framework. Chapter 22 sets out further detail on the arrangements for implementing PR13.
- 1.10 By 31 March 2014, Network Rail must publish its delivery plan for CP5. This will include an enhancements delivery plan which contains outputs and milestones for the planned enhancement programme and information relating to every output, enabler and indicator in our determination. In parallel with the publication of this final determination, we have published a notice specifying the requirements for this plan<sup>45</sup>. Network Rail intends to consult on a draft of its delivery plan in December 2013.

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<sup>45</sup> This notice is issued under condition 1 of Network Rail's network licence, which requires it to prepare a delivery plan in line with such format and structure, and to such standard and level of detail and in accordance with such requirements as we set out in a notice or in guidelines. In accordance with condition 1, we consulted Network Rail on the content of the notice before issuing it. The notice is available at <http://www.rail-reg.gov.uk/pr13/publications/legal-notices.php>.

## 2. Background and context

### Key messages in this chapter

- The PR13 process and our decisions have to reflect legal requirements and our statutory duties. In reaching our decisions we have considered all our statutory duties and weighed them as we consider appropriate.
- We established our PR13 objective at the outset of PR13 and set out the wider impacts we expected our review to have.
- PR13 consists of a number of ‘building block’ calculations and decisions, which together make up a package.
- We have made two separate determinations, one for England & Wales and one for Scotland, reflecting the different responsibilities for setting strategy and for funding, although the two are linked as Network Rail is a GB-wide company.
- Our PR13 work has been part of a broader programme of industry reform and will help to push forward further reform.
- Our work on PR13 has involved a substantial amount of consultation and discussion across the industry and more widely, and we have received helpful inputs across all areas of our work.

### Introduction

2.1 This chapter provides background to the overall PR13 process, including our objectives, the legal framework and our broader regulatory approach.

### Legislative framework

2.2 PR13 follows the statutory procedure for conducting an access charges review set out in Schedule 4A to the Railways Act 1993 (the Act)<sup>46</sup>. Schedule 4A requires the Scottish Ministers (for Scotland) and the Secretary of State for Transport (in respect of England & Wales) to provide us with information about what they want to be achieved by railway activities in Scotland and England & Wales during the control period and the public financial resources that are, or are likely to be, available for the achievement of those activities. They do this by each producing a ‘high level output specification’ (HLOS), setting out what they want the railway to deliver, and a ‘statement of funding available’ (SoFA), setting out how much public funding they intend to commit to the railways in the period.

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<sup>46</sup> The Railways Act 1993, available at <http://www.legislation.gov.uk/ukpga/1993/43>.

- 2.3 We have to decide if there is enough funding to deliver the outputs sought by the two governments.
- 2.4 Network Rail has a legal obligation under the Health and Safety at Work etc. Act 1974 to maintain and, where reasonably practicable, improve safety and we must be satisfied that it will be able to meet these obligations given our settlement. Where relevant we have also taken into account the Railways Infrastructure (Access and Management) Regulations 2005<sup>47</sup> (the “Access & Management Regulations”) which set out the principles we must follow when we establish the framework in which Network Rail must set access charges.
- 2.5 We must have regard to our public interest statutory duties which are mostly set out in section 4 of the Act (see Annex K). These include duties to have regard to any general guidance given by the Scottish Ministers and Secretary of State (statutory guidance). Our duties are not in any order of priority and it is for us to decide how to weigh these when reaching our decisions. In reaching our decisions, we have considered all of our statutory duties and weighed them as we considered appropriate.
- 2.6 All our decisions on the overall PR13 settlement are made as part of a ‘balanced package’ for CP5. We consider that our duties point us to delivering a package that:
- (a) is challenging but achievable for Network Rail in terms of efficiency, value for money and deliverability;
  - (b) works for the long-term as well as the short-term – i.e. is sustainable;
  - (c) improves health and safety; and
  - (d) provides appropriate protections in respect of risk.
- 2.7 The package also balances the short and longer term needs of passengers, freight customers and train operators.

## Our PR13 objective

- 2.8 Following our May 2011 consultation, we confirmed our PR13 objective in May 2012<sup>48</sup>. This is:

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<sup>47</sup> Available at <http://www.legislation.gov.uk/ukxi/2005/3049/contents/made>. These regulations were amended in 2009 by the Railways Infrastructure (Access and Management)(Amendment) Regulations 2009, available at <http://www.legislation.gov.uk/ukxi/2009/1122/contents/made>.

<sup>48</sup> *Setting the financial and incentive framework for Network Rail in CP5*, May 2012, available at <http://www.rail-reg.gov.uk/upload/pdf/financial-incentive-framework-cp5.pdf>.

**To protect the interests of customers and taxpayers by:**

ensuring our determination enables Network Rail and its industry partners to deliver or exceed all the specified outcome and output requirements safely and sustainably at the most efficient levels possible comparable with the best railways in the world by the end of the control period.

- 2.9 We also recognised the importance of industry reform in helping to deliver our objective, and that PR13 would itself be an important facilitator of industry reform, through:
- (a) providing a **clear focus on what matters to passengers, freight customers and taxpayers** – particularly improving value for money;
  - (b) encouraging a **more disaggregated approach** – increasing transparency and access to information, facilitating greater localism, and supporting more disaggregation in the industry (for example through Network Rail devolution) will allow a more comparative approach to regulation and a better understanding of costs, revenues and subsidy across the industry;
  - (c) **alignment of incentives** – improving the interfaces between the different players in the industry, for example, by facilitating alliances, efficiency benefit sharing at the route-level and bespoke arrangements where these improve whole industry working, will drive greater value for money for customers and taxpayers; and
  - (d) **greater contestability** – ensuring that there is more effective use of market mechanisms in the industry will deliver further efficiencies.
- 2.10 It is important to see the periodic review in the context of our broader ongoing regulation and regulation beyond CP5. Our five strategic goals apply across all of ORR's functions including PR13<sup>49</sup>. They are consistent with our PR13 objective, particularly in relation to moving towards a more dynamic and commercially sustainable industry.
- 2.11 At the beginning of PR13, we said that if we were successful in achieving our PR13 objective, the outcome should be a railway in CP5 and beyond that:
- (a) is safer than ever before, and provides consistently good levels of service reliability across the network;
  - (b) achieves a better match of the available supply to the demand and more efficient use of available capacity, supporting both the reduction of crowding and greater

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<sup>49</sup> ORR *Business Plan 2013-14*, April 2013, available at <http://www.rail-reg.gov.uk/upload/pdf/business-plan-2013-14.pdf>.



convenience for passengers, and providing increased flexibility and reliability for freight customers;

- (c) has levels of efficiency comparable with the best railways internationally, providing value for money for taxpayers and fare-payers; and
- (d) supports the development of a more dynamic economy and contributes to the achievement of national commitments to reduce carbon emissions, through both greater energy efficiency and by encouraging greater use of rail for travel and freight haulage by those that would otherwise use less environmentally friendly transport modes.

2.12 It is important to measure whether PR13 has been a success in terms of delivering its intended outputs and outcomes. Accordingly, before April 2014, we will set out success measures for PR13 against which we will track progress in CP5. We will also commission an independent review of PR13.

## Progress with PR13

2.13 We began PR13 in May 2011, with a wide ranging consultation on our objective and general approach to PR13. Since then we have carried out a substantial amount of work across all areas covered by the review. This has included extensive stakeholder engagement, including specific consultations on particular policy areas and workshops, which have informed our thinking. Annexes I and J set out the documents we have published and the main stakeholder engagement activity we have carried out. We are very grateful for the time people have spent in helping inform our work, in responding to consultations, attending events, in bilateral discussions and in terms of analytical work.

2.14 In September 2011, Network Rail and its industry partners published the Initial industry plans (IIPs)<sup>50</sup>. These set out what the industry considered should be delivered in CP5 and beyond, and at what cost. After reviewing these, in March 2012 we issued our 'advice to ministers' to the Secretary of State and Scottish Ministers<sup>51</sup>. This, in particular, provided the governments with our view on how much the railway was likely to cost in CP5 and helped to inform their HLOSs and SoFAs.

2.15 Following this, the HLOSs and SoFAs were published in the summer of 2012. Network Rail then developed its strategic business plan (SBP) for CP5 setting out how it would deliver the HLOSs and how much this would cost. The SBP documentation (which included separate plans for England & Wales and Scotland, as

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<sup>50</sup> *Initial industry plan: Proposals for Control Period 5 and beyond*, September 2011, for both England & Wales and Scotland are available at <http://www.networkrail.co.uk/iip.aspx>.

<sup>51</sup> *Advice to Scottish Ministers on Network Rail's costs and outputs in CP5*, ORR, March 2012, available at <http://www.rail-reg.gov.uk/pr13/pdf/pr13-advice-to-ministers-scotland.pdf>. *Advice to Secretary of State on Network Rail's costs and outputs in CP5*, ORR, March 2012, available at <http://www.rail-reg.gov.uk/pr13/PDF/pr13-advice-to-ministers-ew.pdf>.

well as plans for the devolved routes) was submitted to us in January 2013<sup>52</sup>. We then carried out our detailed assessment of it to inform our determination. To aid our analysis, we sought stakeholders' views on the SBP and received around 170 responses in total<sup>53</sup>. We are grateful to those who took the time to respond.

- 2.16 Alongside the main SBP documentation, Network Rail and its industry partners published two industry strategic business plans (ISBPs) – one for England & Wales and one for Scotland<sup>54</sup>. These were the culmination of work by the industry to present a more joined-up approach to planning which we were keen to see following PR08. As well as providing valuable wider industry context, the ISBPs set out the industry's formal response to the HLOSs and how it would respond to the challenges it faces in CP5, including how it will deliver greater value for money.
- 2.17 In June 2013, we published our draft determination setting our proposed overall decisions on Network Rail's outputs and funding for CP5 following our review of the SBP.

## Regulatory approach

### How we determine access charges

- 2.18 Through the periodic review, we assess the efficient level of expenditure that Network Rail needs to run its business and deliver the regulated outputs. We determine how much revenue it needs, including an allowed return on its regulatory asset base (RAB). The net revenue requirement takes into account other income that Network Rail receives (such as commercial income from property). Net revenue is received from access charges and network grant from government. It is then for Network Rail to determine the exact charges to be levied on users of its network based the charging framework and rules we set.
- 2.19 The access charges paid by Network Rail's customers that are within the scope of PR13 include<sup>55</sup>:
- (a) track access charges by franchised passenger train operators, open access passenger train operators and charter passenger train operators;
  - (b) track access charges paid by freight train operators; and

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<sup>52</sup> Network Rail's strategic business plan documentation, and the industry strategic business plans are available at <http://www.networkrail.co.uk/publications/strategic-business-plan-for-cp5/>.

<sup>53</sup> See <http://www.rail-reg.gov.uk/pr13/Publications/strategic-business-plan.php>.

<sup>54</sup> *Industry strategic business plan (England & Wales / Scotland): Industry's response to the high level output specification for CP5*, January 2013, available at <http://www.networkrail.co.uk/publications/industry-strategic-business-plan-for-cp5/>.

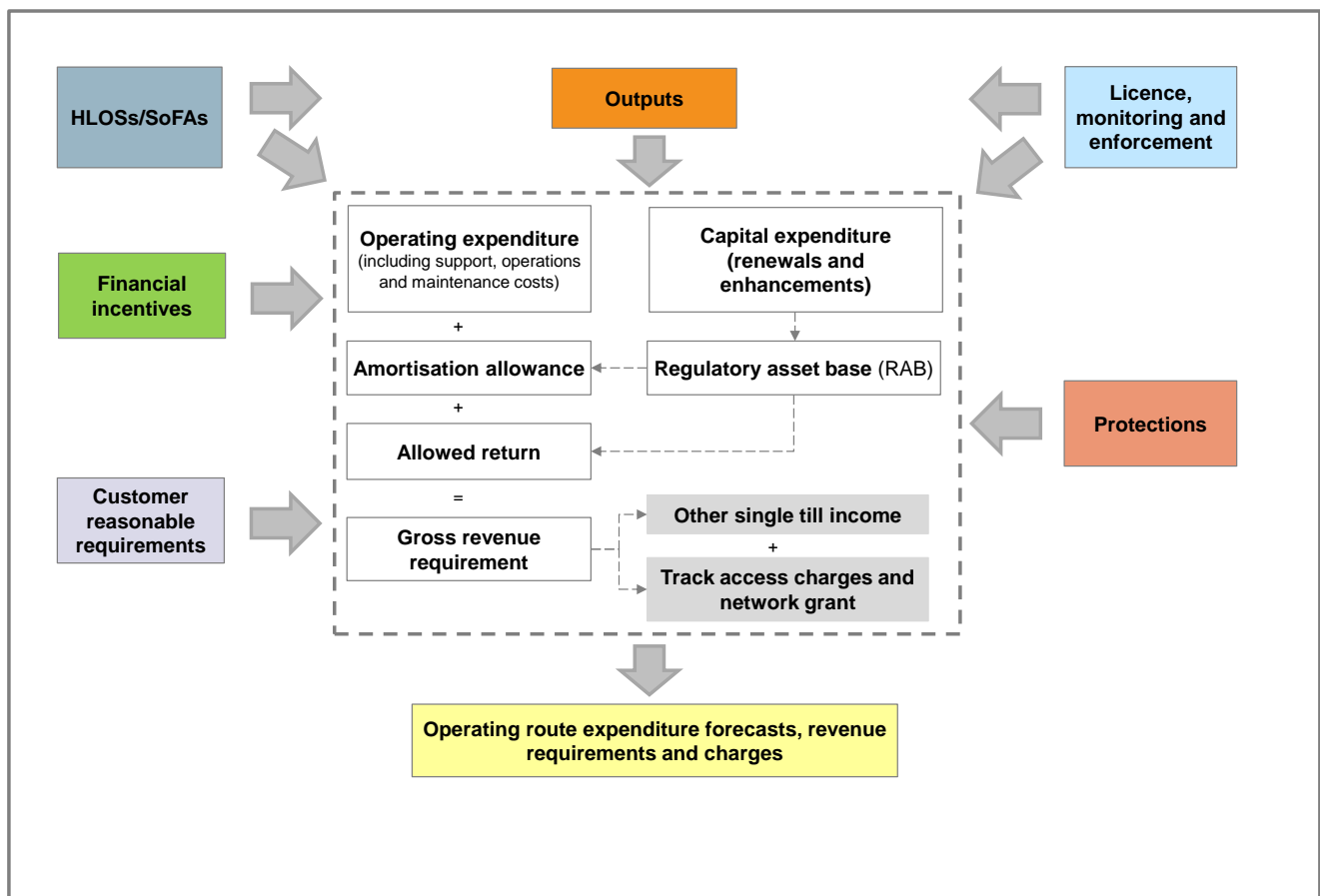
<sup>55</sup> Access charges not within the scope of PR13 are those in access contracts either exempt from regulation (such as the non-stopping Paddington to Heathrow services operated by Heathrow Express) or those that do not contain a contractual reopener permitting a periodic review by ORR of the charges (such as depot access agreements and connection contracts).

- (c) station long term charges paid by the users of franchised stations<sup>56</sup> and the 17 Network Rail ‘managed’ stations.

## Building block methodology

2.20 Our approach to establishing the regulatory framework is based on the standard ‘building block’ methodology widely used by regulators. The periodic reviews/access charges reviews undertaken for Network Rail (and Railtrack) in 2000, 2003 and 2008 have used this broad approach. Figure 2.1 illustrates the overall regulatory framework and the building block model.

Figure 2.1: Overview of the regulatory framework



2.21 The key features of the building block methodology are:

- (a) we assess what Network Rail needs to spend on **operating** and **maintaining** the railway for each year of the control period. Network Rail receives income for this on a ‘pay-as-you-go’ (PAYG) basis. This means that for each pound it needs to spend each year it receives a pound in income;

<sup>56</sup> The exception to this is those stations managed by the Greater Anglia franchise which are outside the scope of PR13. This follows the transfer of responsibility of maintenance and repair from Network Rail to the franchise during CP4.

- (b) we assess the capital expenditure on **renewals** and **enhancements** that Network Rail needs to undertake in the control period. This expenditure is added to the RAB in the year in which it is incurred. But the income Network Rail receives is not on a PAYG basis. Instead Network Rail receives an **amortisation** allowance (which covers the depreciation on the assets); and
- (c) the **allowed return on the RAB** that we calculate and allow Network Rail to recover through access charges. This therefore covers, amongst other things, the cost of financing the company's **capital expenditure** programme<sup>57</sup>.

2.22 Adding up all the income needed by Network Rail to fund these elements produces what we call the '**gross revenue requirement**'.

2.23 In PR13, we are using the 'single till' approach. This means that income (which we call 'other single till income') that we expect Network Rail to earn on activities such as commercial property is deducted from the total costs of the network (i.e. from the gross revenue requirement)<sup>58</sup>. This then leaves us with the '**net revenue requirement**'.

2.24 With the exception of the fixed track access charges, the regulated track and station access charges paid by train operating companies to Network Rail are set to recover particular costs. Most track access charges are set to reflect the costs that vary with traffic, the exception currently being the 'freight-only line' charge, which recovers some additional costs associated with freight traffic. The regulated station charges recover costs for station maintenance, repair and renewal.

2.25 The fixed track access charges, paid only by franchised passenger operators, are set to recover Network Rail's net revenue requirement, i.e. Network Rail's revenue requirement net of other track access charges and other single till income.

2.26 However, the arrangements in CP4 provide for both governments to pay money directly to Network Rail (through 'network grant') to reduce the amount of access charges paid by franchised train operators. We have discussed the pros and cons of

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<sup>57</sup> In PR13, we are calculating the allowed return using the adjusted weighted average cost of capital ('adjusted WACC') approach as explained in detail in chapter 12. In simple terms, this approach recognises that Network Rail's debt is government-backed and it does not pay dividends. Therefore, for CP5 we fund our forecast of Network Rail's efficient financing costs. Also, recognising financial sustainability issues, we provide further revenue to Network Rail by including additional amortisation. In CP5, the efficient financing costs will include a payment to government for the financial guarantee Network Rail receives on its debts.

<sup>58</sup> The alternative 'dual till' approach would involve a separate price control for Network Rail's activities in each market that it operates in – effectively treating each of these as a separate business. After consultation, we decided that there was not a strong case for establishing separate 'tills' as we felt it was unlikely to drive improvements in Network Rail's performance. We were also concerned about unnecessary complexity and the potential to distract the industry from maximising the benefits to the industry of Network Rail's commercial activities. Our decision to retain the single till approach is set out in paragraphs 3.46-3.56 of *Setting the Financial and Incentive Framework for Network Rail in CP5*, May 2012, available at <http://www.rail-reg.gov.uk/upload/pdf/financial-incentive-framework-cp5.pdf>.

network grant in a number of our PR13 publications<sup>59</sup> and we concluded in December 2012 that we would, in principle, allow network grants to be paid in England & Wales and Scotland<sup>60</sup>.

## Duration of the control period

2.27 We confirmed in 2012<sup>61</sup> that we intended to retain a five year control period. CP5 will therefore run from 1 April 2014 to 31 March 2019. This followed a consultation<sup>62</sup> which considered the merits of shorter and longer periods in terms of incentives for Network Rail, certainty for customers and funders as well as the reliability of long-term forecasts of revenues. We concluded that five years provided an appropriate balance between planning, uncertainty, incentives and risk.

## Disaggregation of price controls within Great Britain

2.28 In PR13 we make a distinct – but linked – set of decisions for Scotland and for England & Wales. This broadly means:

- (a) we make a separate determination of the outputs and revenue requirement for each (in the context of the separate HLOSs and SoFAs). This includes separate RABs and notionally separate debt (and financing costs) and corporation tax calculations for the purposes of determining the revenue requirements;
- (b) separate determination of access charges (though retaining a GB-wide variable usage charge price list);
- (c) separate provisions for dealing with risk and uncertainty (the main difference is that there is a separate ‘re-opener’ for Scotland);
- (d) outperformance or underperformance<sup>63</sup> is ultimately retained or borne entirely separately by customers and funders in each area (although not necessarily within the control period); and
- (e) some separate monitoring and enforcement, e.g. separate financial assessments.

2.29 At present, the Welsh Government is not a principal funder in the same way that the Scottish Ministers and Secretary of State are under the existing statutory process for an access charges review. Therefore, we cannot make a separate set of decisions for

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<sup>59</sup> *Periodic review 2013: first consultation*, May 2011, paragraphs 6.42-6.44, available at <http://www.rail-reg.gov.uk/pr13/consultations/orr013.php>.

<sup>60</sup> *Financial issues for Network Rail in CP5: decisions*, December 2012, available at <http://www.rail-reg.gov.uk/pr13/PDF/pr13-financial-issues-decisions-dec12.pdf>.

<sup>61</sup> Paragraphs 3.23-3.38 of *Setting the financial and incentive framework for Network Rail in CP5*, May 2012, available at <http://www.rail-reg.gov.uk/upload/pdf/financial-incentive-framework-cp5.pdf>.

<sup>62</sup> *Periodic review 2013: first consultation – annexes*, paragraphs E.39-E.50, available at <http://www.rail-reg.gov.uk/pr13/PDF/PR13-first-consultation-annexes.pdf>.

<sup>63</sup> See chapter 23 for an explanation of out and underperformance.

Wales as we do for Scotland. We have however engaged with Welsh ministers and officials during PR13 on issues relating to the Welsh rail network and specific matters of concern to them relating to CP5.

- 2.30 Whilst we are not carrying out separate determinations for the nine Network Rail routes in England & Wales, we have carried out much of our analysis at the route level. In this document, we are publishing a substantial amount of route level data, partly to explain our analysis, partly because some of it has an impact on the new route level efficiency benefit sharing mechanism, and partly to improve transparency. It is of course for Network Rail, as the regulated company, to manage the delivery by its routes and other business units.

## Assumptions about Network Rail

- 2.31 Network Rail is a company limited by guarantee (CLG) and has members instead of shareholders. These members do not have any significant equity capital<sup>64</sup> and hence are not as strongly incentivised as shareholders would be to drive Network Rail's financial performance. This has an important bearing on the incentives and protections for risk that we put in place for Network Rail. We have assumed in our determination that this CLG status will continue throughout CP5.
- 2.32 Network Rail currently benefits from the 'financial indemnity mechanism' (FIM). This provides that Network Rail's debt is guaranteed by the UK Government (effectively transferring risk from Network Rail to the UK Government)<sup>65</sup>. Network Rail pays a fee to the UK Government (the 'FIM fee') to reflect the benefit it receives from the FIM.
- 2.33 In PR08, we provided for Network Rail to begin to raise unsupported debt (i.e. without the benefit of the FIM), which would provide stronger incentives and increase external scrutiny (as unsupported debt holders would want to assure themselves that Network Rail could deliver). However, Network Rail has not raised any unsupported debt in CP4 and we have not assumed that the company will raise unsupported debt in CP5.

## Re-openers

- 2.34 Re-openers are mechanisms that can be used to re-open the price control (i.e. our determination) in certain situations to allow changes to be made to the revenues that Network Rail is allowed to recover. For example, where material events have happened that are beyond reasonable management control or could not have reasonably been foreseen. Hence, through re-openers financial consequences of some elements of the risks that Network Rail faces are transferred to Network Rail's funders and customers.

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<sup>64</sup> Each member has a nominal investment of £1.

<sup>65</sup> This guarantee enhances Network Rail's credit, allowing it to raise debt at gilt rates (i.e. UK Government interest rates) plus a relatively small margin.



2.35 We have consulted on the re-openers that should apply in CP5. Our general approach is to retain two of the re-openers from PR08<sup>66</sup>. The first would permit the determination to be re-opened if there are material changes in circumstances for Network Rail or in relevant financial markets. This re-opener applies to events in England & Wales and Scotland. The second applies to Scotland only and permits a re-opening if Network Rail's expenditure in Scotland is forecast to be more than 15% higher than our determination over a forward looking period of three years. In each case we would need to determine whether the terms of the relevant re-opener had been met and, if so, we would then consider whether there is a compelling case for an interim review in light of our statutory duties.

## PR13 and the wider context

### The Rail Value for Money study

2.36 Around the time that we began PR13, the conclusions of the Rail Value for Money (RVfM) study, that we commissioned jointly with DfT, were published<sup>67</sup>. This identified a number of barriers to efficiency in the industry, which if addressed could lead to savings of between £2.5bn (the 'low' end) and £3.5bn (the 'high' end) by 2018-19 (in 2008-09 prices). Of these potential savings, between £1.8bn and £2.8bn were identified as being within the control of Network Rail to achieve, and between £0.6bn and £1.2bn for the rest of the industry (2008-09 prices).

2.37 The issues that needed to be addressed to deliver these efficiencies included: sub-optimal interfaces between industry parties and processes; poorly aligned incentives; the way in which major players in the industry had operated – for example, Network Rail's centralised approach and insufficient focus on the needs of its customers; the legal and contractual frameworks; supply chain management; insufficient emphasis on whole-system approaches; and the relationships and culture within the industry<sup>68</sup>.

2.38 The RVfM study was clear that to achieve the greater efficiencies, it would be necessary for the whole industry to play its part. This included ORR and the governments who would each need to facilitate the changes necessary to enable the industry to operate more efficiently.

2.39 The RVfM study informed our approach to PR13. In our first consultation, while we noted that PR13 could not address all the challenges faced by the industry, we were clear that it would provide a vehicle to achieve a number of improvements to deliver a

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<sup>66</sup> The precise wording of the re-openers was consulted on in our July 2013 consultation on the changes required to access contracts and the network licence to implement PR13.

<sup>67</sup> *Realising the Potential of GB Rail: Final Independent Report of the Rail Value for Money Study*, May 2011, available at <http://www.rail-reg.gov.uk/server/show/ConWebDoc.10401>

<sup>68</sup> Pages 8-10, *Realising the Potential of GB Rail: Report of the Rail Value for Money Study – Summary Report*, May 2011, available at <http://www.rail-reg.gov.uk/server/show/ConWebDoc.10401>

better railway. We emphasised the need for greater alignment of incentives and the right approach to risk and reward, along with more joined-up industry planning and decision making across the supply chain.

## Progress following the RVfM study

- 2.40 Since then, in parallel with PR13, the industry has acted on the RVfM study recommendations. In late 2011, the cross-industry Rail Delivery Group (RDG) was established, bringing together the owners of the passenger and freight train operating companies and Network Rail to provide leadership for the rail industry and drive forward reform. RDG is coordinating a number of workstreams through its working groups set up to find more innovative, efficient and joined-up ways of working. Alliances between train operators and Network Rail have been developed on a case-by-case basis, providing a framework for greater alignment between industry parties and improved decision making.
- 2.41 Overseen by RDG, the industry has produced the ISBPs for CP5 and the Rail Technical Strategy. These were developed respectively by the cross-industry Planning Oversight Group (POG) and the Technical Strategy Leadership Group (TSLG). These set out the industry's overall approach for CP5, including on crosscutting issues such as the roll-out of new technology, the need for innovation and further integration of the different elements of the supply chain, as well as how the industry will respond to climate change.
- 2.42 DfT has announced a new approach to franchising and a new franchising timetable, with 12 franchises scheduled to be let during CP5<sup>69</sup>. Transport Scotland has confirmed its approach to its next round of franchising, with two separate ScotRail and Caledonian Sleeper franchises due to begin in March 2015.
- 2.43 Network Rail itself has taken significant steps to reform, most notably devolving responsibility from its centre to its ten operating routes. This was a fundamental and welcome change which provides the foundation for further reform. It enables closer working relationships between each route and its customers, more local decision making and also scope for better regulation.

## The importance of continuing industry reform

- 2.44 Demand for rail is forecast to continue growing. This is good news for the industry. However, the challenge will be for it to provide the extra capacity required to accommodate this demand whilst at the same time driving down costs and providing a better service, both to give customers the value for money that they expect and to put the industry on to a more financially sustainable footing.

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<sup>69</sup> *Rail franchise schedule*, DfT, March 2013, available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/170565/rail-franchise-schedule.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/170565/rail-franchise-schedule.pdf).

- 2.45 Given Network Rail's central role in the industry, its continuing transformation will be essential to securing this outcome. In CP5, we want to see it build on the changes it has already made to forge more responsive relationships with its core customers, the train operators. Train operators have a key role to play in the delivery of Network Rail's outputs and satisfying the needs of train operators will be central to Network Rail delivering successfully in CP5. This will require a more commercial and collaborative approach to its engagement with its industry partners to unlock whole industry efficiency and better performance.
- 2.46 One example of where this will be crucial will be the CP5 enhancements programme. By working more closely with its customers and suppliers on the specification of enhancement projects, the costs of delivering improvements to the network should be minimised. At the same time, it will help ensure that ultimately those enhancements deliver infrastructure over which Network Rail's customers wish to operate more services, increasing Network Rail's income and providing a better service to passengers and freight customers.
- 2.47 For this to happen, it is vital that Network Rail and its train operator customers have effective and aligned incentives – to encourage them to work together to reduce costs and to make the most of the capacity available. Improving the cost reflectivity of access charges paid by train operators to Network Rail is particularly important in this respect. Where the costs incurred in delivering a service are reflected in the charges paid, the price signals provide information that leads to more efficient behaviour. This should lead to more efficient usage – e.g. train operators will be encouraged to reduce the wear and tear their trains cause to the network.
- 2.48 Further disaggregation and transparency will also drive better outcomes because decision making will be closer to the customer.
- 2.49 Greater transparency in respect of the operational and financial performance of Network Rail's devolved routes will provide a reputational incentive to improve. It will also enable a greater understanding of performance, costs and subsidy, empowering Network Rail's customers to hold it to account. This in turn should facilitate greater local involvement in the funding and specification of the railway – such as through devolution of franchising, and decision making more attuned to the needs of customers.
- 2.50 Further disaggregation will also allow us to make greater use of comparative techniques in the way we regulate, enabling us to compare the different business units within Network Rail and opening up a wider range of comparators beyond this.

## **Beyond PR13**

- 2.51 We have been clear that CP5 will act as a stepping stone – a period during which Network Rail, with its industry partners, follow-up recent reforms with further transformation to lay the foundations of a more 'normal' and sustainable industry in CP6 and beyond. As well as working with the industry to implement our PR13

determination, we will work with Network Rail, RDG and others to support and facilitate further reform in CP5.

- 2.52 In PR13, we have taken account of the limited extent to which the incentives we set through a periodic review are felt by franchised passenger operators because of the provisions protecting them from regulatory changes which are set out in their franchise agreements with DfT and Transport Scotland. Whilst we understand the rationale for this protection, ideally franchised passenger operators would be more exposed to changes in charges made during a periodic review – in the same way that freight and open access passenger operators are. The decision to relax this protection is for the franchising authorities to make and we have engaged with DfT and Transport Scotland to discuss how this could be brought about.
- 2.53 Early in 2014, we will be taking forward with RDG and the industry a more fundamental review of the structure of charges which will inform the next periodic review. This will take account of reforms in the industry such as route-level disaggregation.
- 2.54 The ISBPs developed for CP5 were underpinned by the route utilisation strategies that have been developed by the industry over recent years. We will support Network Rail and its industry partners in building on this progress with the next generation of route strategies and the integration of this with the cross-industry work on technical strategy.
- 2.55 Our long-term regulatory statement, published in July 2013, considered how the industry (and our regulatory approach) might evolve beyond CP5<sup>70</sup>.

## **Relationship between PR13 and High Speed 2**

- 2.56 The UK Government has committed to the staged construction of a high-speed rail line (HS2). The first stage (London to Birmingham) is expected to open in 2026. Further stages have been proposed beyond this to Manchester and Leeds (which would open during the 2030s), and to Scotland. Construction of the first stage is expected to start during CP5.
- 2.57 There were no HLOS requirements relating to the construction of HS2, hence our final determination does not specify such outputs in respect of the construction of HS2. It does, however, specify a development fund for enhancements in CP6 that is intended to include, in part, necessary development work for the linkage of the existing network to HS2. We would expect Network Rail in CP5 to ensure that, when renewing and enhancing its network, it takes account of potential connections and interfaces with HS2 to ensure that costs in the longer term are minimised. Network Rail will also need

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<sup>70</sup> *Opportunities & challenges for the railway: ORR's long-term regulatory statement*, July 2013, available at <http://www.rail-reg.gov.uk/upload/pdf/long-term-regulatory-statement.pdf>.

to ensure that the industry's strategic planning processes are sufficiently integrated with planning for HS2, to support a joined up industry approach.

## 3. Output framework

### Key messages in this chapter

- The output framework consists of outputs which Network Rail must deliver for the money it receives, indicators which we use for monitoring purposes and ‘enablers’ which assess the capability of the company in both the short and long-term.
- The crucial difference in terms of regulation between outputs and enablers / indicators is that if Network Rail is likely to fail, or fails, to deliver an output we would consider whether this amounts to a licence breach and we may take enforcement action against the company (outputs are often referred to as ‘regulated outputs’). A failure to deliver either an enabler or an indicator would not in itself be considered as a potential licence breach. However, either may indicate trends which raise concern about Network Rail’s likely future compliance with an output that we may want to take licence enforcement action to address.
- We have set challenging but achievable outputs in areas that matter most to passengers and freight customers.
- There will be a new health and safety output that will reduce risk at level crossings and more level crossings will be closed.
- We are significantly strengthening the requirements on Network Rail to improve the management of its assets. There will be specific quality standards for the company’s knowledge of its assets and requirements to improve its asset management capability.
- A major programme of improvement works will transform travel in and between urban areas, with existing major projects such as Crossrail, the Edinburgh to Glasgow improvement programme and Thameslink completed and the completion of new projects such as the electrification of the Welsh Valley Lines (covered in detail in chapter 9).
- There will be an output to achieve 92.5% of passenger trains on time by 2019, despite growing passenger and freight demand. The focus will be on improving services in the worst performing areas, with a new output for all but two franchised train operating companies in England & Wales to have at least nine out of ten trains on time by 2019. Two companies, Virgin Trains and East Coast will have a dual PPM and CaSL target, reflecting concerns about the impact of long delays on passengers on these routes. We have also added a minimum 88% PPM requirement for First Great Western high speed services, in addition to the nine out of ten output for all the services it runs.
- There will be a new output for freight train service performance, with 92.5% of freight trains to be on time, as measured by the freight delivery metric.



## Key messages in this chapter (continued)

- Disruption to passengers will fall by 8%, and disruption to freight customers will be 17% lower at the end of the control period than it is today. Because of the large programme of improvement works on the network, there may be increased local and short-term disruption, but this will be kept to a minimum.
- We expect Network Rail to set itself ambitious environmental targets, with challenging carbon reduction trajectories and a greater focus on making assets resilient to climate change and extreme weather.
- There will be new enablers which will help us assess Network Rail's customer service, its management of large investment programmes and its 'system operator' capability - how well it plans capacity and manages the use of capacity on the infrastructure.
- We will monitor new indicators, including right time performance, average lateness, asset condition, passenger satisfaction, journey time (average speed) and the availability of a cross-border service between England and Scotland.
- We are introducing a change control mechanism to potentially adjust Network Rail's passenger train service performance outputs if franchises are let with train service performance requirements that are materially inconsistent with the outputs we set.
- This determination will considerably improve transparency by requiring more and better quality information to be made publicly available in an accessible format.
- The output framework is extensive, reflecting the complexity of the rail network, the scale of the investment being made and the expectations of its customers and funders that what they are paying for will be delivered. Compared to CP4, we have decreased the number of performance outputs (removing sector level outputs) and added asset management outputs (to strengthen the requirement on Network Rail to improve the management of its assets).
- We have set 58 outputs and given passenger operators and Network Rail the flexibility to agree further annual outputs for punctuality (PPM) and cancellations (CaSL). We do not consider that our monitoring of indicators presents a burden on Network Rail, as we would expect that it would already be collecting this information. The indicators for CP5 will help us to identify emerging issues with the delivery of outputs in time to take appropriate steps where necessary.

## Structure of this chapter

3.1 This chapter is structured as follows:

- (a) the **introduction** explains the choices and considerations involved in setting outputs, the wider framework, and the process for setting the framework in CP5. It then summarises the main outputs we have set;

- (b) the **HLOS** section very briefly summarises the requirements that the governments set out in 2012;
- (c) the **outputs consultation** section explains the rationale behind the output framework we consulted on in August 2012, and the differences from the CP4 output framework;
- (d) the **responses to our outputs consultation** section summarises the feedback we received on our outputs consultation;
- (e) the **Network Rail's proposals** section outlines how the output framework put forward in Network Rail's SBP differed from that in our consultation;
- (f) the **our decisions** section outlines our draft determination proposals and consultation feedback, and confirms the outputs, indicators and enablers we are setting for CP5; and
- (g) the **next steps** section explains how the periodic review process concludes.

## Introduction

### Choices around outputs

- 3.2 We need to decide what Network Rail should deliver – what are the company's outputs in return for the money it receives? Currently these outputs are set in terms of areas such as train service reliability (including the percentage of trains arriving on time), the delivery of enhancement projects and reducing disruption to passengers from engineering work.
- 3.3 Having decided what areas we should set outputs for, we then need to decide the level at which the output should be set and the time period for which the output should apply (e.g. should there be a different requirement for each year?). There is a further choice about the level of disaggregation – do we set outputs for, say, the whole of England & Wales, or should we also set outputs at the level of the route or train operator. Finally, we need to decide whether there should be a change control process to allow outputs to be amended during CP5 in certain circumstances.
- 3.4 We want to set outputs in the areas that matter most to passengers and freight customers, but we also need to take into account wider factors. Just setting more and more outputs is not necessarily a good thing as it may constrain Network Rail so far that it increases the risk the company faces and potentially increases costs. We also want to give Network Rail flexibility to work with the industry to deliver in a way which maximises value for money.

### The output framework

- 3.5 In this control period, CP4, we have defined outputs but we have also defined indicators which we use for specific monitoring purposes. For example, we have asset

condition indicators to make sure that Network Rail is not meeting its outputs by storing up problems for the future by 'sweating the assets'.

- 3.6 In CP4 we also defined 'enablers' which assess the company's capability to deliver future improvements (i.e. not just within, but beyond, the current control period) in outputs and / or efficiency.
- 3.7 It is this combination of outputs, indicators and enablers that we call the output framework.
- 3.8 The crucial difference in terms of regulation between outputs and enablers / indicators is that if Network Rail is likely to fail, or fails, to deliver an output we would consider whether this amounts to a licence breach and we may take enforcement action against the company (outputs are often referred to as 'regulated outputs'). A failure to deliver either an enabler or an indicator would not in itself be considered as a potential licence breach. However, either may indicate trends which raise concern about Network Rail's likely future compliance with an output that we may want to take licence enforcement action to address.
- 3.9 In its response to our draft determination consultation, Network Rail said "The volume of output, indicators and enabler measures being monitored in the proposed framework is extensive. ORR describes the draft determination as a package but ORR proposes to regulate each element of the package. In total, we estimate that around 3,700 measures will be monitored by ORR on a routine basis".
- 3.10 The output framework is indeed extensive. This reflects the complexity of the rail network, the scale of the investment being made and the expectations of its customers and funders that what they are paying for will be delivered. Compared to CP4, we have decreased the number of performance outputs (removing sector level outputs) and added asset management outputs (to strengthen the requirement on Network Rail to improve the management of its assets).
- 3.11 We do not consider that our monitoring of indicators presents a burden on Network Rail, as we would expect that it would already be collecting this information. The indicators for CP5 will help us to identify emerging issues with the delivery of outputs in time to take appropriate steps where necessary. We take a proportionate, risk based approach to monitoring and where we are assured risks are well managed during CP5 we would expect to monitor less.

## **The process for setting the output framework**

- 3.12 The process for setting the output framework started with the advice we provided to the Scottish Ministers and the Secretary of State in March 2012. Following this:
- (a) in June/July 2012, the HLOSs were published;
  - (b) in August 2012, we published our outputs consultation;
  - (c) in January 2013, Network Rail published its SBP;

- (d) in June 2013, we published our draft determination;
- (e) in October 2013, this final determination was published;
- (f) in December 2013, Network Rail will publish its draft delivery plan; and
- (g) in March 2014, Network Rail will publish its final delivery plan.

## Brief summary of the CP5 outputs

- 3.13 Because this has been an extended process, in some ways it is easier to briefly describe our decisions, and then describe each stage for getting to this point. For CP5 we have again developed a framework based on outputs, indicators and enablers. Our decisions are summarised in Tables 3.1 and 3.2 (the full output framework is shown in Table 3.12).
- 3.14 The rest of this chapter describes each stage of the process for setting outputs, leading to more detail on our decisions, then describes how the process concludes.
- 3.15 All national outputs include franchised and open access operators.

**Table 3.1: Summary of our decisions on CP5 outputs**

Area	Outputs
Train service reliability	<ul style="list-style-type: none"> <li>• PPM<sup>71</sup> for England &amp; Wales (annual<sup>72</sup> and CP5 exit of 92.5%), Scotland (annual 92% and CP5 exit of 92.5%) and franchised TOCs in England &amp; Wales (rolling annual output JPIP<sup>73</sup>, no TOC to exit CP5 below 90%, except East Coast and Virgin who must not exit CP5 with PPM below 88% or CaSL above 4.2% and 2.9% respectively). In addition First Great Western high speed services must not exit CP5 with PPM below 88%</li> <li>• CaSL<sup>74</sup> for England &amp; Wales (annual and CP5 exit of 2.2%) and rolling annual output JPIP</li> <li>• Freight Delivery Metric<sup>75</sup> (National annual 92.5%)</li> </ul>
Enhancements	<ul style="list-style-type: none"> <li>• Enhancement projects to be delivered. Scheme delivery milestones (set in an enhancements delivery plan). Milestones for delivery of projects in ring-fenced funds.</li> <li>• Development milestones for early stage projects</li> </ul>

<sup>71</sup> Public performance measure (PPM) is the proportion of trains that arrive at their final destination on time. A train is defined as on time if it arrives within five minutes of the planned destination arrival time for London & South East and regional services; or ten minutes for long distance services.

<sup>72</sup> See Table 3.5 for annual PPM outputs.

<sup>73</sup> JPIPs are joint performance improvement plans.

<sup>74</sup> CaSL (Cancellations and Significant Lateness) is a combined measure of punctuality and reliability. It is a percentage measure of scheduled passenger trains which are either cancelled (including those cancelled en route), miss one or more scheduled stops or arrive at their scheduled destination 30 or more minutes late.

<sup>75</sup> Freight Delivery Metric (FDM) measures the percentage of freight trains arriving at their destination within 15 minutes of scheduled time. It only covers delay caused by Network Rail.

Area	Outputs
Health and safety	<ul style="list-style-type: none"> <li>Network Rail required to deliver a plan to maximise the reduction in risks of accidents at level crossings, using a £99m ring-fenced fund<sup>76</sup></li> </ul>
Network availability <sup>77</sup>	<ul style="list-style-type: none"> <li>PDI-P (National CP5 exit of 0.58)</li> <li>PDI-F (National CP5 exit of 0.73)</li> </ul>
Network capability	<ul style="list-style-type: none"> <li>Base requirement at start of CP5 in terms of track mileage &amp; layout, line speed, gauge, route availability, electrification type<sup>78</sup></li> </ul>
Stations	<ul style="list-style-type: none"> <li>Station Stewardship Measure (SSM) by station category, and Scotland (annual)<sup>79</sup></li> </ul>
Asset management <sup>80</sup>	<ul style="list-style-type: none"> <li>Asset management excellence model (AMEM) capability for each core group at National level</li> <li>Asset data quality for each asset type at National level</li> <li>Milestones for ORBIS (Offering Rail Better Information Services)</li> </ul>

3.16 The differences between our draft and final determination are:

- (a) Annual PPM (England & Wales) – our draft determination proposed the annual PPM outputs outlined in Table 3.4. In our final determination we have decided to set the annual PPM outputs outlined in Table 3.5; a reduction in the PPM required in the first three years of CP5.
- (b) TOC PPM – our draft determination proposed no TOC should exit CP5 with PPM below 90%. In our final determination we have decided this output will exclude East Coast and Virgin, who must not exit CP5 with PPM below 88% or CaSL above 4.2% and 2.9% respectively. We have also added a minimum 88% PPM output for First Great Western high speed services.
- (c) PDI – our draft determination proposed a PDI-P target of 0.539 and a PDI-F target of 0.593. In our final determination we have decided to set a PDI-P target of 0.58 and a PDI-F target of 0.73 at the end of CP5.
- (d) Health and safety – our draft determination proposed that Network Rail should deliver a plan to maximise the reduction in risks of accidents at level crossings,

<sup>76</sup> Note safety is not a devolved responsibility so all safety related outputs, indicators and enablers apply to England, Wales and Scotland.

<sup>77</sup> The Possession disruption index – passenger (PDI-P) and Possession disruption index – freight (PDI-F) measure the level of disruption caused by planned engineering possessions over a period of time.

<sup>78</sup> This output provides for a minimum level for the whole network. The capability of some parts of the network will improve during CP5 as a result of the enhancement programme.

<sup>79</sup> See Table 3.5 for outputs.

<sup>80</sup> See 'Our decisions on asset management' section for outputs.

using a £67m ring-fenced fund. In our final determination we have decided to increase this ring-fenced fund to £99m.

3.17 The reason for each change is explained in the ‘our decisions’ section.

**Table 3.2: CP5 output framework – summary of indicators and enablers**

Area	Indicators	Enablers (these support all output areas)
Train service reliability	<ul style="list-style-type: none"> <li>• PPM: sector and sub-operator<sup>81</sup></li> <li>• Right-time performance<sup>82</sup>: England &amp; Wales, Scotland, sector, TOC and sub-operator</li> <li>• Average lateness<sup>83</sup>: England &amp; Wales, Scotland, sector, TOC and sub-operator</li> <li>• CaSL: Scotland, sector and sub-operator</li> <li>• Delay minutes, split by category (including Network Rail on TOC, TOC on self and TOC on TOC): for National, England &amp; Wales, Scotland, sector, Network Rail route and TOC</li> <li>• FDM by strategic freight corridor</li> <li>• Freight delay minutes (national)</li> <li>• Scotland KPI package<sup>84</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Safety management maturity (Railway Management Maturity Model – RM3)</li> <li>• System operator capability</li> <li>• Programme management capability (P3M3<sup>85</sup>)</li> <li>• Customer service maturity</li> </ul>
Enhancements	<ul style="list-style-type: none"> <li>• Enhancement fund KPIs (e.g. average scheme benefit cost ratios)</li> <li>• Improved governance processes for HLOS funds</li> <li>• Project activities and milestones</li> </ul>	
Depots	<ul style="list-style-type: none"> <li>• Light Maintenance Depot Stewardship Measure: England &amp; Wales, Scotland and National</li> </ul>	
Asset management	<ul style="list-style-type: none"> <li>• Asset condition for robustness and sustainability at National and route level</li> <li>• AMEM lite capability at route level</li> <li>• Renewal and maintenance volumes by asset type and spend at National and route level</li> </ul>	

<sup>81</sup> Sub-operators are a subset of operators’ services, consisting of an aggregation of service groups, most commonly used for performance analysis purposes.

<sup>82</sup> Right-time performance measures the percentage of trains arriving early or within 59 seconds of schedule.

<sup>83</sup> Average lateness measures the number of minutes late a train is at destination and key intermediate points along its route, including an allowance for cancellations.

<sup>84</sup> See section 3.84.

<sup>85</sup> P3M3 is the Cabinet Offices’ Portfolio, Programme, and Project Management Maturity Model.



Area	Indicators	Enablers (these support all output areas)
Environment	<ul style="list-style-type: none"> <li>• Scope 1<sup>86</sup> and 2<sup>87</sup> traction and non-traction carbon dioxide emissions: England &amp; Wales and Scotland</li> <li>• Carbon embedded in new infrastructure</li> <li>• Sustainable development KPIs</li> </ul>	
Other	<ul style="list-style-type: none"> <li>• Passenger satisfaction</li> <li>• Journey time (average speed) at England &amp; Wales, Scotland, sector, TOC and sub-operator</li> <li>• Cross-border service availability</li> </ul>	

3.18 The differences between our draft and final determination are:

- (a) Carbon intensity – our draft determination proposed a carbon intensity indicator. In our final determination we have decided that carbon intensity will not be an indicator in CP5.
- (b) Programme management capability – our draft determination said that we would agree a metric to measure Network Rail’s programme management capability. In our final determination we have decided we will use P3M3 as an enabler for baselining and measuring project, programme and portfolio management maturity.

3.19 The reason for each change is explained in the our decisions section.

## The HLOSs

3.20 The HLOSs<sup>88</sup> are a ‘given’ and where appropriate their requirements have been included as outputs in this determination.

3.21 The Secretary of State’s HLOS included a requirement for PPM in England & Wales to reach 92.5% (MAA<sup>89</sup>) by the end of CP5, funding for a number of enhancement projects to be delivered, and funding for ring-fenced funds to deliver certain strategic objectives, such as station improvements. There was also the option for PPM to be higher, and CaSL lower: “if the ORR determines this is value for money and can be affordably achieved without compromising delivery of other HLOS requirements”.

<sup>86</sup> Scope 1 carbon dioxide emissions result from activities directly under the control of Network Rail.

<sup>87</sup> Scope 2 carbon dioxide emissions are those resulting from energy purchased by Network Rail. These emissions are as a result of Network Rail’s activities, but not directly under its control.

<sup>88</sup> *High Level Output Specification 2012*, Department for Transport, July 2012 is available at <https://www.gov.uk/government/publications/high-level-output-specification-2012> and the *High Level Output Specification 2012*, Transport for Scotland, June 2012 is available at <http://www.transportscotland.gov.uk/strategy-and-research/publications-and-consultations/j232012-00.htm>.

<sup>89</sup> Moving annual average (MAA) – the average of the last 13 four-week time periods.

3.22 The Scottish Ministers' HLOS specified an end CP5 requirement of 92.5% PPM (MAA) (and a minimum annual requirement of 92%), enhancement schemes to be delivered and ring-fenced funds e.g. to close level crossings. There was a requirement to set up a process to make journey time improvements and keep at least one cross-border route available at all times.

## Outputs consultation

3.23 In August 2012 we consulted<sup>90</sup> on the proposed CP5 output framework. We included the requirements of the HLOSs. In some areas we described how we would set the HLOS outputs in more detail (e.g. set enhancement obligations in the form of detailed enhancements milestones, as in CP4), to give clarity to what will be delivered and when.

3.24 But we also proposed to go beyond the HLOSs and;

- (a) strengthen the focus on asset management, to emphasise the importance of Network Rail becoming an excellent asset manager. We proposed that we set some asset management measures as outputs;
- (b) replace our CP4 freight delay minutes output with 'freight CaSL', an output more closely linked to freight operator priorities (freight performance was not specified in the HLOSs);
- (c) focus outputs on train operators / services rather than Network Rail routes, setting PPM and CaSL outputs by TOC, but monitor indicators of Network Rail's performance at route level;
- (d) continue and extend the use of enabler measures, to monitor progress of Network Rail's capability to deliver;
- (e) establish new environmental indicators, to measure Network Rail's progress in sustainable development; and
- (f) introduce and monitor a 'whole industry scorecard' to give context to our assessments of delivery (see chapter 23 on monitoring, enforcement and reporting).

3.25 The main differences between the proposed CP5 output framework and our existing CP4 framework are that for CP4:

- (a) performance outputs were set at sector level;
- (b) Network Rail caused delay minutes (to passenger and freight operators) were set as an output; and

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<sup>90</sup> *Network Rail's output framework for 2014-19*, Office of Rail Regulation, August 2012, available at <http://www.rail-reg.gov.uk/pr13/consultations/outputs.php>.

(c) we did not set any asset management outputs, although we did specify asset management maturity scores as an enabler during CP4.

3.26 We also published the findings of a review<sup>91</sup> by the independent reporter Arup, of the effectiveness of the CP4 output framework. We have explained how Arup's findings are taken into account, in our determination of the output framework, in each of 'our decisions' sections of this chapter.

3.27 Table 3.3 shows the proposed CP5 output framework in our consultation.

**Table 3.3: Outputs consultation: proposed CP5 output framework**

Area	Outputs	Indicators	Enablers (these support all output areas)
Train service reliability	Passenger - PPM: England & Wales, Scotland - PPM by operator - CaSL: England & Wales, Scotland - CaSL by operator  Freight - Freight CaSL	Right-time performance (by operator)  Average lateness (by operator/service group)  Network Rail caused delay (by route)  Suite of cause of delay indicators	Asset management excellence, by route  Safety management maturity  New system operator capability enabler, which could cover:
Enhancements	Enhancement scheme delivery milestones (set out in an enhancements delivery plan)	Enhancement fund KPIs (e.g. average scheme benefit cost ratios)  Improved governance processes for HLOS funds	Process of assembling, validating and publishing the timetable
Safety	Level crossing risk reduction plan delivery milestones		Possessions planning

<sup>91</sup> CP4 regulated outputs, Arup, August 2012, is available at <http://www.rail-reg.gov.uk/pr13/consultations/outputs.php>.

Area	Outputs	Indicators	Enablers (these support all output areas)
Network availability (reducing disruption from engineering works)	PDI-P (or alternative measure proposed by the industry)  PDI-F (or alternative measure proposed by the industry)	Possession indicator report metrics	Understanding / measuring capacity availability and utilisation
Network capability	Base requirement at start of CP5 in terms of track mileage & layout, line speed, gauge, route availability, electrification type		Network planning  Network change
Stations	Station condition measure (existing SSM measure migrating to new measure in CP5)		Possible further measures including customer service maturity
Depots		Average condition score	
Asset management	Asset management excellence capability  Asset data quality  Milestones for ORBIS / operating strategy project	New indicators for asset policy delivery, and asset performance / condition monitoring  More transparent condition reporting	

Area	Outputs	Indicators	Enablers (these support all output areas)
Environment		<p>Indicators demonstrating reductions in carbon dioxide emissions associated with OMRE<sup>92</sup> sector</p> <p>Carbon and energy efficiency KPIs</p> <p>Carbon embedded in new infrastructure</p> <p>Sustainable development KPIs (to be determined)</p>	
Other		<p>Journey time indicator</p> <p>Station accessibility indicator</p> <p>Indicators of improvements in passenger information</p> <p>Possible supply chain engagement indicator</p> <p>Possible levels of innovation indicator</p>	

## Responses to our outputs consultation

3.28 We received responses from a wide range of passenger / freight representatives, passenger / freight operators, funders, suppliers and Network Rail. Very broadly, consultees:

- (a) supported our proposed output framework structure;
- (b) believed the CP4 approach to enhancements delivery plan milestone obligations and change control worked well, and supported its continuation into CP5;
- (c) welcomed the introduction of a whole industry scorecard to set Network Rail's performance in a wider context;

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<sup>92</sup> OMRE refers to operating, maintenance, renewals and enhancement activity.

- (d) agreed obligations should be operator / service-focused (rather than Network Rail route focused) where possible, although ORR should still monitor indicators at route level;
- (e) supported new indicators such as right-time performance and station accessibility;
- (f) believed a journey time indicator is a good idea but hard to define; and
- (g) welcomed our drive towards a more transparent output framework and monitoring process.

3.29 There was disagreement on:

- (a) the status of asset management outputs – in particular, while Network Rail emphasised the importance of improved asset management, it did not believe it should be subject to regulated outputs in this area;
- (b) the appropriateness and practicality of a trade-off / change control mechanism, in particular in relation to HLOS outputs; and
- (c) the extent of regulated output obligations set, as opposed to indicators and enablers.

## Network Rail's proposals

3.30 Network Rail's SBP proposed its own framework. The main differences between Network Rail's proposal and the output framework in our consultation were:

- (a) no asset management outputs – Network Rail believes we should not set outputs for asset management measures, as this would be a move towards input-based regulation;
- (b) performance indicators – Network Rail did not commit to reporting right time performance (in England & Wales) or average lateness;
- (c) no journey time indicators – Network Rail's view is this would be too complex to create and implement in a meaningful fashion;
- (d) no station accessibility measure – Network Rail considers there are existing legal commitments in this area and an indicator could therefore lead to confusion over accountability;
- (e) passenger information – Network Rail sees this as best measured through the National Passenger Survey and therefore should not be a metric in the output framework;
- (f) supply chain engagement/innovation – Network Rail believes there are existing metrics and is working on developing new metrics that can measure progress outside the output framework; and



- (g) no safety management maturity enabler – Network Rail does not believe RM3 is an appropriate enabler as it sees this as a move towards input-based regulation.

## Our decisions on outputs

3.31 The following sections confirm the decisions we have taken in each output area. In each section we have explained the decision we need to make, the analysis we undertook and the output, indicator or enabler we are setting. We have also summarised feedback from our draft determination consultation. Our decisions are structured around the following areas:

- (a) train service reliability (passenger and freight performance);
- (b) enhancements (investment projects);
- (c) health and safety;
- (d) network availability (disruption from possessions);
- (e) network capability (speed and type of trains that can operate on the network);
- (f) stations and depots;
- (g) asset management;
- (h) environment; and
- (i) other (system operator capability, programme management capability, customer service maturity, passenger satisfaction, journey time and cross-border route availability).

## Our decisions on train service reliability

3.32 We have reviewed Network Rail's SBP and commissioned analysis from the independent reporter Nichols<sup>93</sup>.

3.33 This section is structured as follows:

- (a) background on CP4 performance;
- (b) whether Network Rail's SBP contains sufficient evidence that the England & Wales HLOS PPM and CaSL requirements will be met. As Network Rail presented much of its analysis on a 'probability' basis, i.e. a percentage likelihood that it would hit the HLOS requirement, we have reviewed this to understand whether Network Rail's plans will deliver the HLOS requirements. If it appeared that they would not, we would require the company to do more;

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<sup>93</sup> *HLOS Performance and Reliability Analysis and Targets review*, Nichols, April 2013, available at <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

- (c) whether there is an affordable, value for money case for increasing England & Wales PPM and CaSL outputs, to answer the question raised in the Secretary of State's HLOS about whether the requirement should be tightened;
- (d) whether the end CP5 England & Wales HLOS PPM and CaSL outputs should be supplemented with additional annual outputs and the proposed level of these outputs. As related issues it considers whether there should also be sector level outputs or other outputs such as delay minutes;
- (e) if TOC level outputs for PPM and CaSL (in England & Wales) should be set and, if so, how that should be done. In particular, whether a process should be introduced whereby the industry sets TOC level outputs annually, subject to our oversight, and whether each TOC level output should have to reach a minimum level;
- (f) what indicators we should specify, and at what level;
- (g) whether Network Rail's SBP contains sufficient evidence that the Scotland HLOS PPM requirements will be met; and
- (h) whether freight outputs based on FDM should be established, whether these should be annual outputs and the level of these outputs.

## Background on CP4

- 3.34 Network Rail has had a number of problems delivering its PPM outputs in CP4 and we have taken licence enforcement action. As a result of our concerns regarding performance in the long distance sector<sup>94</sup> we carried out an investigation and required Network Rail to develop a performance recovery plan. We accepted Network Rail's plan for 2012-13 but found a likely future licence breach for 2013-14. We made an order containing a reasonable sum which will require Network Rail to pay £1.5m for every 0.1 of a percentage point that performance falls short of the regulated PPM (MAA) output.
- 3.35 Network Rail proactively produced recovery plans for the London & South East<sup>95</sup> and regional<sup>96</sup> sectors when it became clear that its outputs might not be achieved.

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<sup>94</sup> The long distance sector is the industry sector of operators operating long distance services; Arriva CrossCountry, East Coast, East Midlands Trains, First Great Western, Greater Anglia, and Transpennine Express and Virgin Trains. Train operating companies can operate services in more than one sector. For example, First Great Western operates services in each of the three sectors; London & South East, long distance and regional.

<sup>95</sup> The London and South East sector is the industry sector comprising services operated by South Eastern Railway, Southern Railway, South West Trains, First Great Western, Chiltern, London Midland, First Capital Connect, Greater Anglia, C2C and London Overground.

<sup>96</sup> The regional sector is the industry sector comprising services operated by Arriva Trains Wales, First Great Western, London Midland, Northern, East Midlands Trains, and Merseyrail.

- 3.36 In Scotland performance was poor in the early part of the control period but good cooperation and strong management by Network Rail and First ScotRail improved the position somewhat. However, performance in the early part of 2013-14 means that it is now unlikely that it will achieve its PPM (MAA) output at the end of CP4.
- 3.37 Freight performance was poor in the early part of CP4. We concluded that Network Rail had breached its licence and took enforcement action that mandated establishment of the Freight Recovery Board in January 2012. This generated effective, collaborative working across the industry, stimulating an improvement in performance. Despite this, it is unlikely that the CP4 target for Network Rail freight delay per 100 train km will be achieved.

### **England & Wales: will the PPM and CaSL outputs be met?**

- 3.38 Network Rail presented its SBP forecasts in terms of probability distributions – it calculated how likely it was that it would deliver different levels of PPM and CaSL.
- 3.39 Network Rail reviewed all the plans from its operating routes, summed their impacts and calculated that there was a 25% chance that it would hit the HLOS requirements. However, it then added in a number of national and TOC initiatives that would improve performance and this increased the level of confidence to 75%.
- 3.40 Nichols found much of the analysis to be reasonable, but considered that Network Rail had underestimated the performance benefit from implementation of the Traffic Management System (TMS), enhancements, CP4 and CP5 national initiatives and fleet reliability. Nichols also considered that Network Rail had potentially over-estimated the negative impact of traffic growth on performance.
- 3.41 In its SBP, Network Rail assumed it will achieve its CP4 exit outputs for PPM and CaSL. However, both Network Rail's and Nichols's latest assessment indicates that these are not likely to be met. Nichols also considered that Network Rail had underestimated the negative impact of severe weather on performance.
- 3.42 Taking all this into account we concluded in the draft determination that there is around a 45% confidence of Network Rail achieving the HLOS PPM output and around a 50% confidence of Network Rail achieving the HLOS CaSL output based on Network Rail's route and national plans.
- 3.43 In the draft determination we said that with nearly a year of CP4 to run, we saw this as challenging but achievable, and believe that it represented a reasonable degree of confidence. We proposed a CP5 exit output of 92.5% for PPM (MAA) and 2.2% for CaSL (MAA) as outputs.
- 3.44 In its response to our draft determination consultation, Network Rail said it was committed to delivering the 92.5% HLOS PPM target, but believed performance targets "should not be considered a minimum threshold in regulatory terms". Network Rail said "the regulatory framework must recognise that this level of confidence means that half of the time we are as likely to miss the target as achieve it, and that

missing the target should not therefore be regarded as unacceptable (and therefore requiring regulatory intervention) provided that we have taken all reasonable steps to meet it in what would be regarded as normal circumstances”.

- 3.45 Our confidence assessment in the draft determination was based on the evidence presented by Network Rail and our analysis of the confidence levels and scenarios Network Rail presented in the SBP. We have decided that a 45% confidence level at this stage of the process represents an achievable challenge and we will treat performance outputs in the same way as any output, and regulate Network Rail in line with our enforcement policy (see chapter 23 on monitoring, enforcement and reporting).
- 3.46 Passenger Focus is disappointed that only minor improvements in performance are sought, but many other respondents (including FirstGroup, East Midlands Trains, Go-Ahead and Transport for Greater Manchester) support the 92.5% HLOS PPM target. Some respondents would like the measure reviewed to more closely reflect the passenger experience.
- 3.47 There are many ways of measuring performance on the rail network but we believe the robustness and accuracy of PPM makes it a suitable output. We have decided to set PPM and CaSL outputs at the same level proposed in the draft determination; CP5 exit output of 92.5% for PPM (MAA) and 2.2% for CaSL (MAA) as outputs.

### **England & Wales: should the HLOS PPM and CaSL outputs be increased?**

- 3.48 The England & Wales HLOS has an option for the end CP5 national PPM (MAA) output of 92.5% to be increased and CaSL (MAA) output of 2.2% to be reduced (unlike PPM, a lower CaSL rate is better) if this demonstrated value for money, was affordable and did not compromise delivery of other HLOS requirements.
- 3.49 Network Rail did not explicitly consider this as it felt the initial industry plan (published previously) was clear it would not be value for money. Nichols carried out an assessment of the potential impact of setting a higher national level output for PPM or CaSL, in terms of value for money, affordability and trade-off with other outputs, but noted the difficulty of calculating this at the national level. Its assessment of value for money and affordability showed that the cost of driving further performance improvement was increasingly difficult as performance itself improved. Therefore, it is likely that the case for targeted investments will be strongest on those routes or service groups which are the worst performing services or those with the highest economic impact.
- 3.50 Taking all this into account we concluded in the draft determination that the PPM and CaSL outputs for England & Wales should not be increased beyond those specified in the HLOS. We received no substantive feedback to this conclusion in our draft determination consultation and have therefore decided to retain the outputs proposed in the draft determination.

## Additional England & Wales performance outputs

- 3.51 The following section reviews whether we should set further performance outputs in this determination.
- 3.52 The first issue is whether to supplement the end CP5 PPM and CaSL outputs with annual outputs. In our outputs consultation we said it is important to set outputs year-by-year, to drive progress towards the end CP5 output and to ensure passengers' ongoing interests are not compromised in the delivery of the end CP5 output. In our draft determination we said that on balance it is important that annual performance is broadly maintained during CP5, hence we have set annual outputs. We also said we see these annual outputs as an important 'anchor' for TOC level outputs.
- 3.53 In its SBP, Network Rail's phasing to deliver HLOS assumed a CP4 exit level of 92.5% for PPM (MAA) and 2.2% for CaSL (MAA). Based on our own analysis and Network Rail's latest forecasts, the entry point into CP5 is likely to be lower than this.
- 3.54 In our draft determination we proposed the annual outputs for PPM and CaSL in Table 3.4 below, which reflected the CP5 entry point in Network Rail's SBP.

**Table 3.4: Our draft determination proposal on CP5 annual outputs for PPM and CaSL**

	2014-15	2015-16	2016-17	2017-18	2018-19
CP5 PPM (MAA) England & Wales outputs	92.2	92.3	92.4	92.4	92.5
CP5 CaSL (MAA) England & Wales outputs	2.2	2.2	2.2	2.2	2.2

- 3.55 In its response to our draft determination consultation, Network Rail confirmed that it is unlikely to meet its CP4 exit target for England & Wales (92.6%). Network Rail has proposed an alternative CP5 performance trajectory, based on a revised CP4 exit forecast of 91.1%.
- 3.56 We acknowledge that performance has fallen behind Network Rail's projections since the SBP, but do not consider 91.1% to be a reasonable CP4 PPM exit figure for England & Wales as it represents a further deterioration in performance. We have therefore decided to set the annual outputs for PPM and CaSL in Table 3.5 below, based on a CP4 exit of 91.4%, which we believe is achievable given current performance.

**Table 3.5: Our decision on CP5 annual outputs for PPM and CaSL**

	2014-15	2015-16	2016-17	2017-18	2018-19
CP5 PPM (MAA) England & Wales outputs	91.9	92.1	92.3	92.4	92.5
CP5 CaSL (MAA) England & Wales outputs	2.2	2.2	2.2	2.2	2.2

- 3.57 We then considered whether we should continue with the PPM and CaSL outputs by sector (long distance, regional, London & South East) as in CP4. In our outputs consultation we pointed out that sector outputs put a greater focus on certain types of services, but they also add another layer of outputs which could be seen as unnecessary. Network Rail supports a move away from sector level outputs, although some operators pointed out that they are useful for comparative purposes.
- 3.58 There are benefits to aggregating services to sector level, for example holding similar operators to account and providing useful analysis of national performance. However, the approach has created some issues, for example during CP4 we implemented performance investigations at a sector level, despite the underperformance being driven by only one or two operators in that sector.
- 3.59 In our draft determination we said that on balance, we had decided not to maintain the sector level outputs. We proposed that performance at a sector level will be reported as an ‘indicator’ for CP5 as we see benefits from being able to group operators together to provide an interim level between train operators’ performance and national performance. Sector level indicators also provide consistency with performance monitoring in CP4.
- 3.60 In its response to our draft determination consultation, Network Rail said it does not see value in sector level indicators, and said the “National Task Force does not consider sectors as a useful grouping for planning or reporting”. Virgin also shares this view.
- 3.61 We believe, for the reasons outlined above, that sector level monitoring is valuable, and we have decided to maintain sector level indicators for CP5.
- 3.62 In CP4 we also set outputs for Network Rail caused delay minutes for England & Wales, Scotland and freight. In our consultation we said we will not set delay minutes as outputs in CP5, as PPM is a more passenger focused measure. In its review of CP4 regulated outputs, Arup stated that delay minute outputs may drive Network Rail to focus more on delay attribution than on the root causes of delay. Network Rail said it would not set delay minutes targets for CP5.
- 3.63 During CP4 we concluded that it was most effective to focus on and hold Network Rail to account for delivery of the measures that most closely reflected the passengers’ experience – PPM and CaSL. However, delay minutes are a useful measure for identifying performance trends and we have decided they will be an indicator.

## **Performance of individual TOCs**

- 3.64 We need to decide whether there should be performance outputs at franchised TOC level, and if so whether these outputs should be set by ourselves or the industry, and, as a related point, whether TOCs should achieve a minimum PPM by the end of the control period.



- 3.65 In our outputs consultation we said it is essential that PPM and CaSL outputs are set for each TOC, because Network Rail could otherwise try to meet the national output by focusing efforts and resources on some TOCs to the detriment of others. Network Rail's consultation response said it did not agree with ORR setting operator level performance outputs, but proposed that TOC PPM trajectories are agreed via the JPIP<sup>97</sup> process, and this had wider support in the industry. This approach has been discussed by the industry, and we have worked with the National Task Force to agree governance protocols for unsatisfactory or unresolved JPIPs.
- 3.66 In our draft determination we said we support the industry's proposal and commitment to the JPIP process and we have decided that PPM and CaSL in year one of the agreed two year JPIPs should constitute outputs (a rolling annual output). We said we expect Network Rail to include annual forecasts by operator in the CP5 delivery plan and to update these forecasts during the control period.
- 3.67 In the event Network Rail cannot agree a JPIP with a TOC we would expect to set an interim requirement taking the second year of the last agreed JPIP as the starting point (for the first year of CP5 this means the second year of the 2013-2015 JPIPs). For franchised TOCs we would also work with the relevant franchising authority to ensure the JPIP process works smoothly to agree a JPIP as soon as possible (see chapter 23 on monitoring, enforcement and reporting).
- 3.68 In our draft determination we concluded that there should be a minimum point such that no franchised TOC in England & Wales exits the control period with a PPM (MAA) of less than 90%.
- 3.69 In its response to our draft determination consultation, Network Rail said "90 per cent is an inappropriate level of PPM to target for franchised long distance operators. We consider a more appropriate target for those operators is 88 per cent PPM by the end of CP5 with potential lower daily variability". Not all franchised long distance operators responded in the same way as Network Rail. East Coast and Virgin agree that 90% is unrealistic, but have different views on what an alternative target should be. Arriva (representing CrossCountry) did not comment on TOC level PPM, and FirstGroup (representing First Great Western) supported a 90% TOC PPM target but has also told us that it believes that Network Rail should deliver a minimum of 88% for the Long Distance component of its PPM. Many other operators (including Northern, East Midlands, Chiltern and Greater Anglia) supported a minimum performance floor for each TOC, assuming that a focus on worst performing routes would not downgrade higher performing routes, particularly those already above 90% PPM. A minimum performance floor for each TOC was also supported by West Coast Rail 250, Passenger Focus, Metro and Transport for London (TfL).

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<sup>97</sup> Joint performance improvement plans (JPIPs) are based on a two-way obligation of Network Rail and the train operating company (TOC) to improve performance

3.70 Following further discussion we have decided that all England & Wales franchised TOCs should exit CP5 with a PPM (MAA) level of at least 90%, except East Coast and Virgin Trains who will have a dual PPM and CaSL output. East Coast and Virgin Trains must exit CP5 with a PPM (MAA) of at least 88% (representing the minimum level of punctuality East Coast and Virgin Trains believe are acceptable to their passengers), and a CaSL output of no more than 4.2% and 2.9% respectively, which represents the level of CaSL that would be associated with a 90% PPM achievement. Network Rail should also deliver a minimum PPM (MAA) of 88% for First Great Western high speed services at the end of CP5. These changes reflect the views from the operators about the importance their passengers attach to addressing incidents causing long delays on these routes – delays of 30 minutes or more. We reviewed the relationship between PPM and CaSL and set CaSL targets which, taken with the 88% PPM outputs, will provide a target equivalent to the 90% PPM for other franchised operators.

## Performance indicators

3.71 We need to decide what performance indicators should be reported in England & Wales to enable us to understand factors causing variance from the regulated outputs, and whether:

- (a) trajectories should be set for these indicators; and
- (b) the level of disaggregation at which these should be reported.

3.72 Our draft determination for CP5 included fewer performance outputs than were set in CP4, when sector level outputs and outputs for delay minutes were set. We stated that it is essential that a number of other indicators are reported in order to help us understand performance and monitor risk to delivery of the regulated outputs.

3.73 We proposed the following data should be reported each period:

- (a) delay minutes, split by category (including Network Rail on TOC, TOC on self and TOC on TOC) for National, England & Wales, sector, Network Rail route and TOC;
- (b) PPM by sector and service group (sub-operator);
- (c) CaSL by sector and service group (sub-operator);
- (d) PPM and CaSL at TOC level (annual as an output);
- (e) right-time performance by England & Wales, sector, TOC and sub-operator;
- (f) average lateness by England & Wales, sector, TOC and sub-operator;
- (g) FDM by strategic freight corridors; and
- (h) freight delay minutes nationally.

3.74 In its response to our draft determination consultation, Network Rail said “much of the information requested (e.g. right time performance) relates to TOC performance and

the TOCs see published performance as commercially sensitive, the level of granularity that the ORR is looking to publish needs to be agreed with the industry”. We made it clear in our draft determination that we require Network Rail to publish the proposed performance indicators in a transparent and accessible manner, and we have not received any objections from TOCs.

- 3.75 East Midlands and South West Trains both said “There needs to be a greater recognition in the final determination of the industry aspiration to move to and incentivise Network Rail to recognise Right Time Railway”, and Passenger Focus believes right time performance should be an output rather than an indicator. We will increase our monitoring of right time performance in CP5.
- 3.76 Passenger Focus also suggested that our final determination should “Go further than service group in disaggregating PPM, ‘right time’, average lateness, CaSL and delay minutes”. We support this objective in principle and we will urge the industry to make more disaggregated performance data available as part of the industry’s drive to become more transparent.
- 3.77 We have decided that Network Rail should report on each of the indicators proposed (see above) in our draft determination, each period. The only change from our draft determination is that we require reporting of indicators by sub-operator rather than service group. This is a point of clarification, in response to feedback from some draft determination consultation responses.
- 3.78 Network Rail should set trajectories for all the above indicators (with the exception of right time performance and average lateness) at national level (this could be done in its JPIPs or FPIPs<sup>98</sup>). The trajectories will not constitute outputs, but variation from a trajectory may indicate a trend which raises regulatory concern about likely future compliance with an output. We also require Network Rail to develop a robust method of forecasting right time performance and average lateness, such that trajectories can be produced for these measures in the future.

## Performance in Scotland

- 3.79 We need to decide whether:
- (a) the SBP contains sufficient evidence that the Scotland HLOS end CP5 and annual PPM outputs will be met; and
  - (b) the proposed package of KPIs for Scotland addresses the additional HLOS requirements.
- 3.80 Network Rail has built a plan to deliver between 91.5% and 93% PPM (MAA) by the end of CP5 and one of the key assumptions of this plan is for Scotland to outturn 92.0% at the end of CP4. At the end of 2012-13, Scotland outperformed its PPM

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<sup>98</sup> Freight performance improvement plans (FPIPs) are based on a two-way commitment by Network Rail and the freight operating company (FOC) to improve performance.

output and although our analysis shows that there is some doubt Scotland will achieve 92.0% at the end of CP4, we still expect Network Rail to deliver 92.5% at the end of CP5.

- 3.81 The second aspect of the HLOS requirement is for performance of each franchise let by Scottish Ministers to not fall below 92.0% in any given year of the control period. We recognise that there are potential performance risks, such as the Edinburgh to Glasgow Improvement Programme, however we believe that despite a lower than anticipated CP5 entry point Network Rail ought to deliver at least 92.0% in each year of the control period.
- 3.82 We have therefore concluded that Network Rail's SBP for Scotland is likely to deliver the HLOS output for PPM (MAA).
- 3.83 In our draft determination we said we will work with Network Rail, Transport Scotland and the Association of Train Operating Companies to develop a package of indicators to monitor performance in Scotland.
- 3.84 We have now agreed the following package with the stakeholders referred to above:
- (a) right time performance and PPM for ScotRail and ScotRail service groups<sup>99</sup> and service codes<sup>100</sup>;
  - (b) right time performance and PPM for cross border TOCs, Caledonian Sleeper services, peak and off-peak commuter services (heavily used intermediate stations<sup>101</sup>) the 100 most heavily loaded trains in terms of passenger volume<sup>102</sup> and the worst performing trains<sup>103</sup>; and
  - (c) trains run (normal plan, amended plan, actually run) during severe disruption.
- 3.85 This package will address the seven key objectives outlined in the Scotland HLOS and cover the most important aspects of passenger experience, focusing on heavily used trains and stations. It also acknowledges the importance of right-time operation, delivery in times of disruption and reliability of connections. Network Rail will publish the full package of indicators on its website with its draft delivery plan in December 2013.

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<sup>99</sup> Service groups are a collection of service codes that are grouped for Performance Monitoring purposes. Their level of disaggregation is between sub-operator and service code level

<sup>100</sup> Service codes are a specific set of services that operate along the same parts of the rail network and share the same origin and/or destination.

<sup>101</sup> Heavily used intermediate stations are defined as the ten intermediate stations (calling points) in Scotland that have the highest number of trains stopping at them.

<sup>102</sup> The 100 most heavily loaded trains only include First ScotRail services and are selected based on the latest available passenger counts.

<sup>103</sup> Worst performing trains are defined as those weekday services that fail PPM on 50% of all journeys.

## Addressing the poorest performing services or those with greatest economic impact

- 3.86 We need to decide whether the plan outlined in Network Rail’s SBP and supporting documentation to “focus on worst performing service groups” is adequate to meet the England & Wales HLOS expectation<sup>104</sup>.
- 3.87 Network Rail identified the worst performing service groups in its SBP submission<sup>105</sup> and has ascribed a value (low, medium, high) to peak and off peak services within these service groups. This has generated useful analysis for identifying the services that should be targeted.
- 3.88 However, the performance plans for England & Wales and Scotland, and the supporting route plans do not include any detail for how performance of these service groups will be improved beyond the performance improvement that will be driven by the route and national activities outlined. Network Rail has confirmed it will include more detail in the JPIPs.
- 3.89 As stated above, a number of respondents to our draft determination consultation were concerned that a focus on worst performing services would detract from high performing routes. We have made it clear that we expect all franchised TOCs to achieve a minimum performance level. And it would not be acceptable for Network Rail to address performance on worst performing routes, while others declined significantly below JPIP levels (see chapter 23 on monitoring, enforcement and reporting).

## Freight performance

- 3.90 We need to decide whether to have a freight performance output and if so what it should be.
- 3.91 Neither HLOS specified output requirements for freight train service performance, but it is important for freight customers that such an obligation is in place. In our outputs consultation we proposed development of a new freight measure based on passenger CaSL. Responses to our outputs consultation indicated that the current CP4 output (Network Rail caused freight delay per 100 train kilometres) was not directly relevant to freight end users and recommended it was replaced with a new measure.

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<sup>104</sup> “In respect of both PPM and CaSL, the Secretary of State requires that the industry focuses on improving the worst performing routes and those on which lower levels of reliability have the greatest economic effect and would wish to see a plan is produced to this effect.”

<sup>105</sup> See Appendix 2 to *CP5 strategic business plan supporting document – performance plan for England Wales and Scotland*, Network Rail, available at: <http://www.networkrail.co.uk/browse%20documents/strategicbusinessplan/cp5/supporting%20documents/outputs/performance%20plan%20for%20cp5.pdf>.

- 3.92 The Freight Recovery Board has developed the FDM, which measures the percentage of freight trains arriving at their destination within 15 minutes of scheduled time. It only covers delay or cancellation caused by Network Rail.
- 3.93 Network Rail has modelled the relationship between the CP4 and CP5 measures which shows that its forecast CP4 outturn of 2.94 delay minutes per 100tkm is equivalent to 95.4% FDM.
- 3.94 Network Rail has proposed to introduce a national performance output of 95% for each year of CP5 and a performance floor of 91.35% with no regulatory intervention if performance remained above this level.
- 3.95 We agree that the FDM should replace delay minutes as the regulated output for freight performance. The FDM has been developed with agreement from the Freight Joint Board<sup>106</sup> and has a good level of industry and customer support. This aligns with Arup's review of CP4 regulated outputs, which concluded that a new freight measure should be developed that more accurately reflects the impact of Network Rail on freight flows.
- 3.96 We agree with Network Rail that outputs should be set at a national level as it is difficult to predict which freight operators will be operating paths throughout CP5.
- 3.97 We do not agree with Network Rail's proposals for a performance floor in CP5 of 91.35% as we believe that it is based on a number of downsides to performance and does not take into account any potential benefits. It also assumes that factors that could have an adverse effect on performance, such as traffic growth and increased speed, take effect on day one of the control period when we would expect these to be phased into any projection.
- 3.98 In our draft determination we said the output for FDM should be set at 92.5%, to reflect the uncertainty of the CP5 start position and downsides to performance during CP5 such as traffic growth, weather and engineering work. In their responses to our draft determination consultation, Freightliner and DB Schenker raised concerns that a FDM target of 92.5% represents lower performance than that proposed in Network Rail's SBP, and current CP4 freight performance.
- 3.99 We believe a 92.5% FDM target is challenging, for a new metric, and have decided this will be the target for CP5. This output will be an annual output. As discussed with the industry, we are not basing Network Rail's benchmark for the freight Schedule 8 regime (see chapter 20 for more details) on this target, given it is a new metric. Instead we have based the benchmarks on Network Rail performing in CP5 at a level equal to the delay minute target we set for the final year of CP4, which matches the internal delay minute target Network Rail included in its SBP. This is an appropriate package of measures.

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<sup>106</sup> The Freight Joint Board replaced the Freight Recovery Board, as a voluntary industry-led initiative.



- 3.100 FDM is a new metric and it will be important that we monitor it particularly carefully. We intend to use a number of supplementary indicators, including the CP4 measure (Network Rail caused freight delay per 100 train kilometres). We will also work with the industry to define other indicators to measure FOC caused delays. These indicators will not form regulated outputs, but are designed to provide information on areas which are not fully reflected in the FDM and act as a check against any perverse behaviour that might result from strategies designed to drive improvements against the FDM.
- 3.101 In its response to our draft determination consultation Passenger Focus asked whether the new FDM would raise “implications for overall network punctuality, and therefore impact on passenger trains, if there is less incentive for freight trains to run precisely ‘right time’?”. Passenger Focus’s concern is that the regulated target only applies to Network Rail caused delay, whereas Network Rail is responsible for overall PPM for passenger services. We have decided that the package of performance outputs (including the new FDM, PPM and CaSL) will incentivise Network Rail to minimise freight delay that would cause reactionary delay to passenger services. As well as considering the impact of Network Rail delay on TOCs we have considered the concerns of TOCs around FOC on TOC delay. We have agreed with the RDG Freight Group that metrics on this will be reviewed.
- 3.102 Network Rail and the freight operators are working on a wider set of initiatives to improve performance. For example, reducing FOC on TOC delays by better timetable planning and greater use of pre-validated paths and on the use of capacity in terms of reducing the number of paths in the timetable database that are not required. The industry will be involved in the development of any new measures.

## **Our decisions on enhancements**

- 3.103 We said in the outputs consultation that we intend to continue to have milestones for enhancements in Network Rail’s delivery plan and to have a change control mechanism. Both these approaches worked well in CP4 and are widely supported. Setting out when Network Rail will deliver each stage of a project, and keeping this updated, is useful information for stakeholders and customers. We will use these milestones to monitor whether Network Rail is on course to deliver each project. We will categorise some of the milestones as outputs.
- 3.104 Although the outcomes of delivering enhancements are not specifically picked up in the National Passenger Survey they can be one of the biggest drivers of satisfaction in areas where the benefits are delivered. Therefore, we will make sure that outputs are based on the timing of the delivery of passenger and freight customer benefits, as this is what matters to customers. These will be confirmed in the enhancements delivery plan, which will be published by Network Rail and agreed by us before the start of the control period. A draft will be published in December 2013 and open to wider consultation before being finalised by March 2014. In this way the delivery

milestones will reflect stakeholder input, and the main issue is likely to be ensuring a match between the service level changes operators are trying to deliver and Network Rail's infrastructure changes. For example, matching the delivery of longer platforms with the introduction of longer trains.

- 3.105 For projects at an early stage of development the regulated outputs in the March 2014 delivery plan will be to achieve GRIP 3. After that they will be changed to the delivery milestones when these are defined. Detailed outputs of the enhancements projects are dealt with in chapter 9 alongside efficient costs, as the two are closely linked.
- 3.106 In their responses to our draft determination consultation, Network Rail and Passenger Focus both supported this approach.

### **Our decisions on health and safety outputs**

- 3.107 We need to decide what outputs, indicators and enablers we will use to hold Network Rail to account on health and safety.
- 3.108 Network Rail has a legal obligation under the Health and Safety at Work etc. Act 1974 to maintain and, where reasonably practicable, improve health and safety.
- 3.109 In the draft determination we said we were setting one output for level crossings, requiring Network Rail to deliver a plan of projects in CP5 to achieve the maximum possible reduction in risk of accidents at level crossings using the £67m ring-fenced fund made available by the Secretary of State. In its response Network Rail proposed a further reduction in risk of accidents at level crossings with additional funding. We are including an additional £32m in the determination to provide a total of £99m to Network Rail, to deliver a plan of work to achieve the maximum possible reduction in risk of accidents at level crossings. Network Rail has indicated that, based on its experience in CP4, it will achieve a 25% reduction in risk for £99m. This is in addition to Network Rail's legal duty to reduce risk so far as reasonably practicable.
- 3.110 Network Rail for the first time has produced a long-term strategy for health and safety and set its own vision and goals. These include, for example, eliminating all fatalities and major injuries to the workforce with a 50% reduction in train accident risk by 2019. We will monitor Network Rail's implementation of its new strategy.
- 3.111 Network Rail has said it will use RM3 along with other measures to determine the success of its safety and wellbeing strategy, but has not explained what other measures it will use. We will continue to use RM3 as an enabler as the information used by the model is generated through our inspection work.
- 3.112 More generally we will continue to monitor and inspect Network Rail's health and safety performance and where necessary use our regulatory tools to secure legal compliance and continuous improvement. We expect Network Rail to develop measures to show how it is improving its management of health risks.

## Our decisions on network availability

- 3.113 In CP4 we set outputs for passenger and freight disruption using the PDI-P and PDI-F measures. For CP5 we need to decide if network availability outputs should be set, and what the levels of the outputs should be.
- 3.114 In our outputs consultation we proposed to continue the obligations on Network Rail to reduce disruption to passengers and freight from engineering work<sup>107</sup>. We noted the potential development of a new metric but, given a lack of industry consensus, proposed to continue setting PDI-P and PDI-F as the output. Network Rail agreed with this approach in its consultation response.
- 3.115 In its review of CP4 regulated outputs, Arup said PDI-P and PDI-F are difficult to understand, very few people can articulate the calculation process, and few people understand how their actions impact the results, or whether it is driving the right behaviours. Network Rail is working with the industry to develop an alternative measure based on working timetable (WTT) compliance. Network Rail will measure network availability using the WTT compliance measure (in parallel with PDI-P and PDI-F), with a view to replacing PDI-P and PDI-F in CP5. Arup (in its role as independent reporter) reviewed the accuracy and reliability of the new WTT measure. It concluded that while the measure is more transparent than the PDI metrics, it needs further explanation and development to determine its accuracy in different scenarios.
- 3.116 Despite the concerns around the complexity of PDI measures, they appear to have delivered their objectives. Disruption to passengers and freight has reduced in CP4 as a result of initiatives such as multiple worksites in single possessions and enhancement of diversionary routes. Passengers have also seen a reduction in rail replacement bus hours in CP4. Also, despite much discussion of alternative measures, no robust alternative has been put forward. Given the direct impact on passengers and freight customers, we have decided to retain PDI-P and PDI-F as outputs, and set CP5 exit outputs for both measures.
- 3.117 Network Rail already produces a four-weekly Possession Indicator Report containing supporting and diagnostic metrics such as the volume of bus replacement of train services, advanced notice of possessions and overruns, and the use of single line working.
- 3.118 In its SBP, Network Rail presented PDI-P and PDI-F forecasts (based on likely spend rather than specific plans) that we believed were reasonable given the enhancements and renewals planned for CP5. In our draft determination we proposed setting outputs at these levels: CP5 exit for PDI-P of 0.539 and a PDI-F of 0.593 (equivalent to a 14% reduction in passenger disruption and a 33% reduction in freight disruption, between 2014-2019, based on Network Rail's CP4 exit target).

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<sup>107</sup> Network Rail needs to restrict access to its network to carry out many of its maintenance and renewals activities. These restrictions of access are often referred to as possessions.

- 3.119 In its response to our draft determination consultation, Network Rail presented updated PDI forecasts based on the revised pre-efficient spend profiles for enhancements and renewals. Network Rail's updated forecast for PDI-P is 0.653 (equivalent to a 4% increase in passenger disruption) and its updated forecast for PDI-F is 0.786 (equivalent to an 11% decrease in freight disruption). In addition Network Rail also asked for £45m of extra assumed expenditure to continue to fund some initiatives that are happening now that will make a difference to network availability in CP5 and which have broad industry support. However, it has been unable to quantify the specific impact on PDI forecasts.
- 3.120 Freightliner pointed to an apparent contradiction between our draft determination 33% reduction in disruption to freight as measured by the PDI-F index and our Schedule 4 analysis stating that freight will face increased disruption due to higher possessions activity. This is in part explained because our Schedule 4 estimate of possession activity is for maintenance and renewals, whereas the PDI-F index also includes enhancements. It also reflects that the PDI-F measure is based on traffic data for 2006-07 and Possession Planning System data for 2006-07 and 2007-08. Our possessions estimate is based on CP5 maintenance and renewals activity plans and freight mileage data from 2011-12.
- 3.121 The amount of enhancements and renewals work in CP5 inevitably means that there will be disruption to passengers and freight users. However, Network Rail is incentivised to minimise this disruption and should continue to embed the positive initiatives it has done in CP4 in terms of both the 'seven day railway' initiative and improved information for passengers. We accept that the SBP forecasts are no longer realistic, given the revised spend profiles for enhancements and renewals in our draft determination, but the revised forecasts do not represent a sufficiently ambitious target to incentivise Network Rail. We have decided to allow the extra assumed expenditure but will set revised outputs alongside this. We have decided to set these targets midway between the CP4 outturn and the SBP forecast: i.e. CP5 exit for PDI-P at 0.58 (equivalent to an 8% reduction) and PDI-F at 0.73 (equivalent to a 17% reduction). We will monitor disruption throughout CP5.
- 3.122 Network Rail will report network availability using both the new WTT metric and PDI-P / PDI-F during CP5 with a view to potentially changing in the future.
- 3.123 Until the industry defines improved measures, we will continue to monitor PDI-P and PDI-F carefully with a number of supplementary indicators from the Possession Indicator Report. These are not regulated outputs but are designed to:
- (a) provide information on areas which are not fully reflected in the PDIs;
  - (b) help us to understand movements in the PDIs; and
  - (c) act as a check against any perverse behaviours that might result from strategies designed to drive improvements against the PDIs.

## Our decisions on network capability

- 3.124 We need to decide how to protect the baseline capability of the network and reflect future enhancements in network capability monitoring.
- 3.125 In our outputs consultation we said a network capability output is required to provide a minimum level of capability so that Network Rail cannot reduce capability without going through industry processes. Network Rail agreed with this approach in its consultation response.
- 3.126 In our draft determination we said the baseline capability of the network will be that in place as at 1 April 2014. This will be described in Network Rail's Sectional Appendices, Geographic and Infrastructure System (GEOGIS) Database and National Gauging Database. We said that together these sources must describe the capability of the network in terms of track mileage and layout, line speed, gauge, route availability and electrification type / mileage.
- 3.127 In their response to our draft determination consultation, some freight organisations said they believe there could be capability discrepancies that need to be corrected formally and until then should remain part of the infrastructure baseline set at the start of CP4. There was also a comment on the transparency and accessibility of Network Rail's information and that there was inconsistency between routes in what they published.
- 3.128 We note that throughout CP4, Network Rail has reported changes to line speed, gauge, route availability and electrified track in its Annual Return. The company must propose changes formally to industry stakeholders under the network change process and it can discuss such changes with them in their regular gauging meetings. We have asked the freight operators concerned to set out where they believe discrepancies exist and we will use Network Rail's stakeholder gauging meetings as the forum to discuss them and seek redress. Only those changes completed formally under part G of the network code should be declared in the new baseline at 1 April 2014.
- 3.129 We have decided that the output for network capability will not change from that outlined in the draft determination.
- 3.130 Network Rail must be clear that, where any outstanding work to restore capability has not been completed by the end of CP4, it must complete the work without any additional CP5 funding. As is the case now, Network Rail will be funded to maintain the baseline as a minimum, subject to any formal changes through the network change process.
- 3.131 We require Network Rail to provide us with electronic copies of the adjusted baseline for network capability as at 1 April 2014 and transparently publish all changes to the baseline network capability and update its documentation. Network capability must then be maintained at this level, unless the specification is altered through the

industry network change procedure (for example in connection with enhancement projects to deliver increased capacity). This aligns with Arup's review of CP4 regulated outputs, which said that while the outputs of track mileage and layout, linespeed, gauge, route availability and electrified track capability have not changed much nationally, they are nevertheless useful measures to ensure capability does not deteriorate.

3.132 Network Rail must ensure that during and following the devolution of some management decisions to route level, the collection and provision of capability data are maintained on a consistent and timely basis across all routes and network headquarters.

3.133 We will publish an annual summary of capability changes.

### **Our decisions on stations and depots**

3.134 Station condition is an output in CP4 and is measured with the Station Stewardship Measure (SSM). We need to decide whether to set station condition as an output in CP5 and whether to continue with SSM as the measure. In CP4 depot condition is monitored using the Light Maintenance Depot Stewardship Measure (LMDSM), but is not an output. We need to decide whether to continue monitoring depot condition using the LMDSM.

3.135 Stations in England & Wales are classified in six categories<sup>108</sup> and outputs are set for each category along with an aggregated output for Scotland. SSM is calculated by assessing the asset remaining life (how long an element is expected to last at the point of inspection) of key elements against the asset life expectancy (how long an element is expected to last when first made).

3.136 In our outputs consultation we said we will continue with the existing SSM as an output and migrate to the new SSM+<sup>109</sup> if agreed with Network Rail. In its response, Network Rail said it believed SSM should be an indicator, reflecting the changing ownership of stations and the fact that it is only one component of the station environment that influences customer experience.

3.137 SSM has been reviewed by the independent reporter for data assurance (Arup) three times in CP4. Data quality has improved from a C4<sup>110</sup> (significant shortcomings in the

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<sup>108</sup> The Department for Transport categorises stations into National Hub (category A), Regional Interchange (category B), Important Feeder (category C), Medium Staffed (category D), Small Staffed (category E) and Small Unstaffed (category F).

<sup>109</sup> SSM+ provides a clearer disaggregation for measuring condition and better, value based, weights using Modern Equivalent Asset Value as the weighting applied to the condition of station components (to replace the current weighting). It also defines the disaggregation at which the condition assessment should take place.

<sup>110</sup> The independent reporter for data assurance (Arup) assesses the reliability of data on a scale of A (appropriate, auditable, properly documented, well-defined and written records, reporting arrangements, procedures, investigations and analysis shall be maintained, and consistently applied across Network Rail) to D (as A, but with some highly significant shortcomings in the system), and



system and data is accurate to 25%) to a B2 (minor shortcomings in the system and data is accurate to 5%), but is still below our A2 (system is reliable and data is accurate to 5%) data quality expectation. We expect SSM to achieve A2 data quality by April 2017.

- 3.138 Stations are a key passenger interface, and a determinant of passenger satisfaction on the railway. Station condition is also a potential safety concern and poorly maintained stations can present a risk to passengers.
- 3.139 In our draft determination we said we require Network Rail to maintain station condition at anticipated CP4 exit levels<sup>111</sup> and achieve the SSM figures it has provided to us (see Table 3.6 below) in its SBP clarifications.

**Table 3.6: Annual Station Stewardship Measure outputs for CP5**

Station Stewardship Measure	2014-15	2015-16	2016-17	2017-18	2018-19
Category A (England & Wales)	2.24	2.24	2.24	2.23	2.23
Category B (England & Wales)	2.34	2.33	2.33	2.33	2.32
Category C (England & Wales)	2.40	2.40	2.39	2.39	2.38
Category D (England & Wales)	2.40	2.39	2.39	2.38	2.38
Category E (England & Wales)	2.40	2.40	2.39	2.39	2.39
Category F (England & Wales)	2.48	2.47	2.47	2.46	2.46
Scotland	2.33	2.33	2.33	2.32	2.32

- 3.140 In its response to our draft determination consultation, Network Rail said that the SSM projections in the SBP can no longer be achieved, due to a “substantial reduction in franchised station expenditure from the SBP”. In our view Network Rail did not substantiate this assertion (see also maintenance and renewals chapter 8).
- 3.141 Virgin does not believe SSM is effective, and Railfuture believe SSM should contain additional measures such as passenger facilities. Passenger Focus believes the outputs should be more challenging, and believes ORR should “be looking for the underlying station condition to improve more significantly over time”. We believe any further development of SSM should await progress with DfT’s re-franchising programme, which will transfer responsibility for long term maintenance and renewal for some stations to the TOC. In anticipation of this process we commissioned a

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accuracy on a scale of 1\* (data used to calculate the measure is accurate to within 0.1%) to X (data cannot be measured).

<sup>111</sup> A lower SSM score indicates a better station condition.

scoping study<sup>112</sup> for a possible new station measure with input from selected parties from Network Rail and ATOC.

- 3.142 After consideration of these responses we have decided to set the outputs proposed in our draft determination (see Table 3.6 above). We believe these represent challenging but achievable targets, given the funding available. We have decided to retain SSM as a regulated output in CP5. Network Rail must collate the SSM scores for all stations including those transferred to TOCs.
- 3.143 In our outputs consultation we said we would not set LMDSM as an output, but would monitor it as an indicator, reflecting the supporting role depots play in delivery of other outputs.
- 3.144 LMDSM is calculated in the same way as SSM – the asset remaining life of a range of elements is compared to asset life expectancy. As with SSM, data quality of LMDSM was also reviewed three times in CP4. Data quality improved from a C5 (significant shortcomings in the system and data is accurate to 50%) to a C2 (significant shortcomings in the system and data is accurate to 5%), but is still well below our A2 data quality expectation. We expect LMDSM to achieve A2 data quality by April 2017.
- 3.145 As proposed in our draft determination, we have decided that LMDSM should continue to be an indicator in CP5. It will be monitored as an asset condition measure.

## **Our decisions on asset management**

- 3.146 In our outputs consultation we noted that, although Network Rail's management of its assets had improved, the pace of change had been too slow. Network Rail's SBP submission clearly shows that the level of maturity varies across the assets, and we have regularly set out our concerns about problems in particular geographical areas. Recent data casts doubt on Network Rail's delivery of its own asset management plans.
- 3.147 Although we support the move to a more devolved structure, it also raises new challenges. The new route directors for asset management will be integrated with the maintenance delivery organisation, providing a sharper focus on targeting the management of the assets on delivering the operational railway at the route level. But asset management capability is unlikely to be fully embedded at the route level yet, and it will take some time for the structure to evolve, as the central organisation focuses on providing more of a specification and assurance role. We are keen to see that the assurance process is robust, to ensure that the asset polices are applied correctly and effectively.
- 3.148 Our consultation said that we need to be able to measure Network Rail's progress in terms of:

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<sup>112</sup> *Shaping Station Stewardship Measure*, Faithful+Gould, July 2013, is available at <http://www.rail-reg.gov.uk/upload/pdf/ssm-working-group-2013-07-31.pdf>

- (a) asset management capability;
- (b) data quality;
- (c) the delivery of the ORBIS programme;
- (d) asset condition;
- (e) asset performance; and
- (f) the delivery of its asset policies in terms of volumes of work.

3.149 We said that we were considering setting the first three areas as outputs in order to drive faster improvement.

3.150 Network Rail's SBP response on asset management did not fully address the concerns we had raised in our outputs consultation, the ongoing concerns we had raised about delivery, or provide assurance on how the relationship between the central organisation and the routes will work.

3.151 Excellent asset management is a critical pre-cursor to a high performing, efficient and safe railway. We have decided that in order to secure the improvements that we consider are needed, we will set asset management outputs in line with our consultation proposal.

### **Asset management capability**

3.152 The quality of Network Rail's asset management capability is key to performance and efficiency in CP5 and beyond. The independent reporter (AMCL) has carried out regular assessments of Network Rail's maturity against its Asset Management Excellence Model (AMEM, see Table 3.7 below). This model currently has 23 activities that are aligned with PAS55, with each activity given a score from 0% to 100%. A score of over 70% is needed to be in the excellent category.

3.153 For CP4, the 23 activities were aggregated into 6 groups, and improvement trajectories for those groups were agreed with Network Rail. AMCL's latest assessment<sup>113</sup> has shown that while Network Rail has improved recently, it only met two of the six targets as at January 2013.

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<sup>113</sup> 2013 SBP AMEM Assessment, AMCL, May 2013, is available at <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

**Table 3.7: Asset Management Excellence Model – Network Rail’s capability progress in CP4**

Core Groups	Network Rail as assessed 2009	AMCL Roadmap Target for SBP	Network Rail as assessed at SBP
1 - Asset Management Strategy & Planning	56.3%	64.7%	65.8%
2 - Asset Management Decision-Making	47.3%	59.7%	58.7%
3 - Lifecycle Delivery Activities	64.8%	70.5%	69.2%
4 - Asset Knowledge Enablers	51.7%	63.5%	60.7%
5 - Organisation & People Enablers	63.0%	71.1%	67.3%
6 - Risk & Review	49.5%	58.1%	60.8%

- 3.154 During CP5 we expect Network Rail to make sufficient progress in asset management maturity such that the renewals and maintenance parts of its SBP for CP6 will be based on a bottom-up workbank for the whole of CP6. This will be created by applying its asset policies to all assets in all asset groups, in accordance with good asset management practice, and condition 1.19 of its network licence.
- 3.155 To help ensure Network Rail’s SBP for CP6 meets our expectations, in our draft determination we proposed outputs for the asset management excellence scores, one for each of the six groups, which should be achieved by the time of the CP6 SBP submission, in January 2018. We said we expect Network Rail to continue to improve its asset management capability after its CP6 SBP submission, so we also proposed outputs for the end of CP5.
- 3.156 The output levels in the draft determination for the six groups ranged from 70% to 75% in January 2018 and 72% to 77% by the end of CP5.
- 3.157 In its response to our draft determination consultation, Network Rail said that asset management measures should be indicators, rather than outputs, as they are “inputs to the achievement of performance outputs and improved efficiency”. Network Rail believes that if AMEM is to be an output, the target should be 70%, as this is the threshold AMCL define as excellent. Network Rail also questioned the appropriateness of outputs for each of the 6 groups. A number of other respondents, including several TOCs, ATOC, Railway Industry Association and Rail Freight Group supported the establishment of asset management outputs, saying this will improve asset management capability and quality.
- 3.158 Network Rail has a general duty under the terms of its network licence to achieve best practice in asset management to the greatest extent reasonably practicable. AMCL’s AMEM definition of excellence (70%) is somewhat less than best practice: according

to AMCL's benchmarking analysis<sup>114</sup>, the highest AMEM score in their rail sector sample is currently 75% (the highest across all sectors is 80%). However, we accept that progress towards best practice becomes more challenging beyond 70%. Ultimately we expect Network Rail to develop its own view of how far to go beyond excellence, and to articulate the supporting business case. We expect Network Rail to do this in its SBP for CP6. For CP5 we have concluded that using AMEM scores as outputs will help ensure Network Rail meets its licence obligations, and the expectations of stakeholders.

- 3.159 The AMEM model will be re-baselined when the forthcoming ISO55000 standard for asset management is published. This will replace the current 23 activities with 39. It is important that Network Rail continues to make progress towards best practice in all 39 activities, however we recognise that some activities are more important than others for a rail infrastructure asset manager. In our draft determination we proposed outputs based on combining the 39 activities into 6 groups. This approach gives Network Rail some flexibility to direct effort towards the activities it believes are most important, while ensuring good progress overall. We have concluded that this remains the best approach for CP5. Each group score will be computed according to the average of the question scores for all activities in that group.
- 3.160 In its response to our consultation, Network Rail referred to recent work by AMCL on the confidence limits associated with its AMEM scores. For the SBP assessment, the 80% confidence interval for the overall score is  $\pm 1.5\%$ . The confidence interval for individual groups varies between  $\pm 1.8\%$  and  $\pm 5.9\%$ . The range of tolerance reflects where we asked AMCL to focus effort during the SBP assessment. AMCL has confirmed that the assessment protocol can be adapted to make the tolerance more consistent across the groups.
- 3.161 We have therefore decided to set a score of 72% for each group as a regulated output. If Network Rail achieves a group score of 72%, the probability it exceeded the 70% excellence threshold for that group will be around 90%. We have decided that these outputs will apply at the time of Network Rail's CP6 SBP submission (January 2018). For the remainder of CP5, we expect Network Rail to demonstrate continuous improvement towards best practice, consistent with achieving its aims for CP6.
- 3.162 While this means the company will no longer be required to meet the core group scores of up to 77% by 2019 proposed in the draft determination, this approach will ensure Network Rail reaches excellence, while avoiding what could be perverse incentives to chase scores beyond excellent in some groups, regardless of whether this is delivering clear benefits. It also makes the required level for the 'asset management and decision making' group (which includes the critical area of

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<sup>114</sup> AMCL end of CP4 and CP5 trajectories report, AMCL, July 2013, is available at <http://www.rail-reg.gov.uk/upload/pdf/amcl-cp5-am-targets-july-2013.pdf>.

maintenance planning) more challenging than in our draft determination (72% is required rather than 70%, giving a stronger assurance that excellence will have been reached), while giving the company flexibility over which groups to target for further improvements post January 2018.

3.163 During CP5 we will also monitor Network Rail’s asset management capability at route level (where asset management decisions will increasingly be taken), as well as at network-wide level. This will provide assurance that corporate asset management strategies and policies are being applied by the routes consistently and effectively. We are working with Network Rail to develop an AMEM-lite indicator, to monitor progress at route level, based on the elements of the AMEM assessment that are applicable at route level. The AMEM-lite methodology will be piloted on two routes, and then applied to all routes before the end of CP4, to provide a baseline for monitoring progress at route level during CP5. We expect AMEM-lite to be applied annually and can be used to inform the full AMEM capability model. The results will provide evidence of whether Network Rail is on course to achieve the AMEM outputs in time for its SBP submission for CP6.

### Asset data quality

3.164 Asset management is only as good as the data on which it is based. As our analysis in the maintenance and renewals chapter shows, poor data reduces the quality and value of Network Rail’s SBP.

3.165 We already have a standard method for assessing asset data quality based on confidence grading of data reliability (the process or ‘governance’ for producing the data: A to D scale) and a grading of accuracy and completeness (1\* to 6). The results of a recent audit by Arup<sup>115</sup> applying this approach are in Table 3.8 below.

**Table 3.8: Our decisions on asset data quality outputs**

Asset Groups	May 2013 ARUP Scores	Output (April 2017)
Track		
Plain Line	B3	A2
Switches & Crossings	B3	
Signalling		
Interlockings	A2	A2
Signals	A3	
Train Detection Equipment	A3	
Point Operating Equipment	A3	
Level Crossings	A2	

<sup>115</sup> *Audit of asset data quality*, Arup, May 2013, is available at <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

Asset Groups	May 2013 ARUP Scores	Output (April 2017)
Telecomms	-*	A2
Electrical Power		
High Voltage Switchgear	-*	A2
Transformers	-*	
Overhead Line Equipment	B2	
Conductor Rail	B4	
High Voltage Cables	-*	
Buildings	B1	A2
Structures		
Underline Bridges	B5	A2
Overline Bridges	B5	
Earthworks	-*	A2

\*The data quality of these asset types has not been fully assessed at the time of publication.

3.166 In our draft determination we said that Network Rail cannot be an excellent asset manager without good quality data for all its assets. We therefore proposed that asset data quality should reach grade A2 for all asset types except buildings, for which we proposed A1. We set these as outputs to be achieved by April 2017, to support Network Rail's CP6 SBP submission.

3.167 In its response to our draft determination consultation, Network Rail accepted that good quality data is necessary to manage its business effectively, but opposed the principle of asset data quality being a regulated output, proposing instead that it should be an indicator. Network Rail pointed out that Arup's B1 score for buildings was qualified due to the small sample size, and that in its subsequent annual return assessment, a score of B2 was given based on much the same data. It also said that the asset data attributes that will be required by its decision support tools cannot be defined now, but will be defined and delivered by the ORBIS programme.

3.168 We remain of the view that good asset data is fundamental to asset management, and that establishing asset data quality as regulated outputs during CP5 will help ensure that Network Rail meets its obligations under condition 1.20 of its network licence.

3.169 We have concluded that the A2 score will be an output and will apply to core asset data for all asset types. The term 'core asset data' refers to specific data attributes and these will be defined as part of the ORBIS programme, with the definition and dates shown in Table 3.9.

## ORBIS milestones

3.170 The ORBIS programme represents a major investment in asset management by Network Rail. The programme is reasonably well defined and we proposed a series of



specific milestones, as outputs in the draft determination. In its response, Network Rail said it does not consider that ORBIS milestones should be regulated outputs, but indicators instead.

3.171 The ORBIS programme is fundamental to Network Rail progressing towards best practice, and we have decided to set ORBIS milestones as outputs to help ensure the programme delivers the benefits envisaged. We have retained the milestones proposed in our draft determination (incorporating clarifications from Network Rail’s response to our draft determination consultation), and added those required for improved data quality, as discussed above. The full set of milestones is shown in Table 3.10. The ORBIS milestone for the track data specification (including for core data) is January 2014. We will monitor progress against this milestone.

**Table 3.9: Our decisions on ORBIS milestone outputs**

Decision Support Capability	Milestone Description	Date
Track  Linear Asset Decisions Support (LADS) will bring together disparate track data sources to enable NR to target work more efficiently	National roll-out complete	May 2014
Signalling  Signalling Decision Support (SDS) will bring together disparate signalling data sources to enable NR to target work more efficiently	Data specification complete, including for core data	January 2015
	National roll-out complete	September 2015
Electrification & Plant  Electrification & Plant Decision Support (E&PDS) will bring together disparate E&P data sources to enable NR to target work more efficiently	Data specification complete, including for core data	April 2015
	National roll-out complete	December 2015
Structures  Ellipse replaces CARRs (Civils Asset Register & Reporting system) as the master system for Civils Structures	Data specification complete, including for core data	June 2014
	Asset hierarchies established and Ellipse designated as master system for Civils	June 2016
GEOGIS decommissioned	GEOGIS will be replaced by strategic Asset Management Platform systems	December 2016
Handheld - Fault and incident data capture app roll-out complete	The new app will allow maintenance staff to enter fault data into handheld devices and for this to be electronically transmitted to control centre staff	August 2014

3.172 The success measure of each milestone will be our approval of each milestone's completion report.

### **Asset condition and performance indicators**

3.173 An excellent asset management company must have the tools to measure the condition and performance of its assets at appropriate intervals, to match the predicted residual life and failure modes (why the asset fails in service) and also to develop appropriate plans to maintain and renew these accordingly.

3.174 In our draft determination we said we would monitor a suite of asset condition indicators, at the national and route level, to improve our ability to understand how well Network Rail is delivering. The creation of route asset managers for each discipline (for example, track and signalling) as part of devolution, places asset management much closer to both maintenance and renewal delivery. We need to adapt our monitoring approach accordingly, so that we can, for example, understand whether higher performance could be delivered at an individual TOC level depending on asset performance at the route level.

3.175 In our draft determination we said we had developed a series of measures of condition (sustainability) and performance (robustness) with Network Rail collaboratively. We proposed to monitor the 'level one' indicators defined in Table 3.10 below. Network Rail will publish these indicators in its delivery plan.

**Table 3.10: Our decisions on asset condition indicators for CP5**

Robustness (Periodic)			Sustainability (Annual)	
Asset discipline	Measure	Reported by	Measure	Reported by
Track	Rail Breaks and Immediate Action defects per 100km	Route	Track - Used Life - Rail	Route
	Plain Line Poor Track geometry	Route	Track - Used Life – Switches & Crossings	Route
	Track failures (service affecting)	Route	Track - Used Life - Sleepers	Route
			Track - Used Life - Ballast	Route
Signalling	Signalling failures (service affecting)	Route	Signalling Condition Index (Signalling Infrastructure Condition Assessment Remaining Life)	Route
Telecoms	Telecoms failures (service affecting)	Route	Telecoms - Remaining Life	Route
Electrical Power	Alternating Current traction power failures (service affecting)	Route	Electrification & Plant (E&P) - Remaining Life - Conductor Rail	Route
	Direct Current traction power failures (service affecting)	Route	E&P - Remaining Life – Overhead Line Equipment	Route
	Non traction operational power supply failures (service affecting)	Route	E&P - Remaining Life - Signalling Power Cable	Route
Buildings	Reactive faults (attention within 2hr and 24hr)	Route	Percentage Asset Remaining Life - Stations	Route

Robustness (Periodic)			Sustainability (Annual)	
Asset discipline	Measure	Reported by	Measure	Reported by
			Percentage Asset Remaining Life – Light Maintenance Depots	Route
Structures	Number of open faults with a risk score $\geq 12$	Route	Structures – Primary Loadbearing Element Condition Banding	Route
			Tunnel Condition Monitoring Index	Route
Earthworks	Earthwork failures	Route	Earthworks - Condition Banding	Route
Drainage	None		Track Drainage - Condition Banding	Route
			Earthwork/Structure Drainage - Condition Banding	Route
Points	Points failures (service affecting)	Route	None	

3.176 In its response to our draft determination consultation, Network Rail said “the ORR has taken a different view to us on our asset stewardship and how asset sustainability is measured”. We do not agree with this, and have worked collaboratively with Network Rail throughout the development of these measures. Passenger Focus believes that the condition of all assets should improve and is concerned that Network Rail is proposing a decline in the condition of some assets.

3.177 We will monitor the condition of all assets closely, to ensure that Network Rail complies with its asset policies.

3.178 In addition to the level one asset condition measures we have proposed above, we also intend to continue to monitor level two indicators as per Network Rail’s Annual Return and its internal periodic Infrastructure Condition Report.

## Volume indicators

3.179 We have assessed Network Rail’s asset policies through challenge by our own engineers and independent reporters. But we have not dictated any aspect of policy detail.

- 3.180 Network Rail has used its models or bottom-up development of workbanks to turn the policies into a series of activity volumes, to be published (e.g. in its delivery plan), which profiles the work over the prospective five year control period. We do not set the required volumes or drive Network Rail to carry out renewals on less busy routes to meet volume or unit rate targets. The priority for individual renewals comes from Network Rail's whole life cost models and policies for each asset group, which it uses to define the work required to meet asset condition targets.
- 3.181 We are primarily interested in Network Rail's delivery of outputs across the control period and long-term sustainability. We will monitor the maintenance and renewals volumes included in Network Rail's delivery plan, as it is clear from CP4 that there is a correlation between operational performance and volumes of activities such as tamping. We will expect Network Rail's delivery plan to be in line with its asset policies and to provide us with delivery volumes for each asset. This was not done comprehensively in CP4 (for example buildings and drainage volumes were not provided) and we require this to be addressed in CP5. Network Rail will need to provide us with a justification for any material divergences between the actual volumes delivered in a year and those forecast in the delivery plan and we will monitor this on a forward looking basis (i.e. whether the volumes are likely to be delivered). Taken at a route level these measures will help inform our decisions on the future deliverability of TOC level JPIP performance outputs.

## Decisions on the environment

- 3.182 The HLOSs made it clear that the Secretary of State and the Scottish Ministers expect Network Rail to manage the network with minimum impact on the environment. The Secretary of State's HLOS said the industry should set itself carbon and energy efficiency objectives. The Scottish Ministers' HLOS seeks a continuous and sustained carbon reduction. We need to decide how we will measure Network Rail's performance in this area, while avoiding any potential dual regulation.
- 3.183 In April 2013 the industry-wide Sustainable Rail Programme published its Meeting Rail's Carbon Ambition plan. The plan acknowledges the need to reduce operational and embedded carbon, develop a whole life carbon measurement tool and measure emissions accurately. The plan includes a number of industry-wide actions that will translate to an absolute reduction in traction CO<sub>2</sub> emissions of 12% by the end of CP5.
- 3.184 A number of Network Rail's plans will have positive environmental benefits. The electrification programme will reduce carbon emissions, Network Rail has signed a ten-year contract for supply of low-carbon electricity, and we are setting incentives to reduce transmission losses for electricity used by rolling stock and to encourage consumption to be metered.
- 3.185 Network Rail produced carbon emission forecasts in the SBP and we (jointly with Network Rail) commissioned the independent reporter (Arup) to validate the accuracy

and reliability of the forecasts. Arup concluded<sup>116</sup> that there was scope for improving the process for producing these forecasts.

- 3.186 Our outputs consultation proposed there should be no environmental outputs for Network Rail in CP5. In its review of CP4 regulated outputs, Arup questioned the value of environmental outputs, given the relative immaturity of the measures. There are also existing environmental and legal obligations on Network Rail<sup>117</sup> and many of Network Rail's sustainable development activities are regulated by others.
- 3.187 However, Network Rail must set itself ambitious and stretching targets. The Secretary of State's HLOS stated the "industry should also set out plans for embedding the rail industry's Sustainable Development Principles<sup>118</sup> and measuring and reducing the carbon embedded in new infrastructure, throughout the lifecycle of programmes and projects. This should include the use of a suitable carbon accounting methodology". We will monitor Network Rail's asset policies and programme / project planning, to ensure this requirement is met.
- 3.188 Network Rail plans to forecast and report on the following measures, which we have decided will be indicators in CP5:
- (a) Scope 1 and 2 carbon dioxide emissions associated with Network Rail's own operations (traction, non-traction and total);
  - (b) carbon embedded in new infrastructure; and
  - (c) sustainable development KPIs (to be detailed in the CP5 delivery plan).
- 3.189 There will be independent assurance of these indicators, to ensure Network Rail's environmental reporting is relevant, accurate and reliable.
- 3.190 We expect Network Rail to address the recommendations in Arup's report before the revised carbon emission and intensity forecasts are published in its delivery plan. Network Rail's carbon reduction forecasts must also support the industry's goal of an absolute reduction in traction CO<sub>2</sub> emissions of 12% by the end of CP5, and a reduction in carbon embedded in new infrastructure.
- 3.191 In our draft determination we said it is vital that railway infrastructure is resilient to climate change and extreme weather. We said Network Rail does not have robust

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<sup>116</sup> *Review of Network Rail's carbon reduction calculations and CP5 trajectory*, Arup, May 2013, is available at <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

<sup>117</sup> Network Rail is required to report environmental incidents, and events of non-compliance with environmental permits, to the Environment Agency and Scottish Environment Protection Agency. Network Rail is also required to report the condition of Sites of Special Scientific Interest (that it owns) to Natural England, Scottish Natural Heritage and Countryside Council of Wales, and its carbon footprint via the Carbon Reduction Commitment, to Department for Energy and Climate Change.

<sup>118</sup> *The Rail Industry Sustainable Development Principles*, RSSB, February 2009, is available at [http://www.rssb.co.uk/SiteCollectionDocuments/national\\_programmes/sustainable\\_rail/Rail\\_Industry\\_Sustainable\\_Development\\_Principles.pdf](http://www.rssb.co.uk/SiteCollectionDocuments/national_programmes/sustainable_rail/Rail_Industry_Sustainable_Development_Principles.pdf).

climate change resilience plans and required it to provide further evidence (with its delivery plan) of how its assets are resilient to climate change and extreme weather. In its response to our draft determination consultation, Network Rail provided a climate change and weather resilience document. It emphasises the need for a whole life cycle approach and provides examples of how Network Rail is making assets resilient to climate change and extreme weather. We believe this is a robust plan and provides the evidence we sought in our draft determination. Network Rail has also provided an example of a climate change and weather resilience plan at route level (for Western) and committed to publishing plans for all other routes by the end of September 2014. We will review these plans and monitor progress against the specific project delivery milestones in each route.

3.192 In 2010 the Department for Environment, Food and Rural Affairs (Defra) published a set of Noise Action Plans addressing noise management issues under the terms of the Environmental Noise (England) Regulations 2006, as amended<sup>119</sup>. The railways action plan identified ORR and DfT as the rail authorities required to implement any actions or secure budget for actions. In 2012 Defra completed the second round of noise mapping<sup>120</sup>; identifying areas affected by railway noise. The Welsh and Scottish governments have also carried out similar noise mapping exercises. Railway noise exposure is obtained through modelling. The industry's Noise Policy Working Group (NPWG) is considering additional research in CP5 to supplement the mapping work with recorded data, particularly in connection with acoustic track quality. Network Rail also has planned activities in CP5, including rail profile grinding and electrification projects that will support mitigation of the noise impacts identified in the latest noise mapping round. The NPWG agrees this is the most effective method of addressing railway noise impacts. We will monitor Network Rail's progress and continue to engage with the NPWG to address railway noise in the worst affected areas across Great Britain.

## Decisions on other areas

### System operator capability

3.193 System operation is important: it is about planning and managing the use of the whole system efficiently, rather than building, owning and maintaining it. Good system operation is not about getting more traffic on to the network at all costs - it is about optimising within constraints, including customers' and funders' requirements. The

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<sup>119</sup> These regulations implement the Environmental Noise Directive in England and require, on a five year cycle, the production of strategic noise maps and the preparation of Action Plans for large urban areas (agglomerations), roads and railways, based on the results of the noise mapping.

<sup>120</sup> The Department for Environment, Food and Rural Affairs maps noise on the rail network to identify areas with significant noise nuisance. The mapping is used to direct actions that mitigate nuisance noise from the rail network. Further information can be found on the Department for Environment, Food and Rural Affairs' website: <http://services.defra.gov.uk/wps/portal/noise>.



nature and extent of the constraints that exist on the rail network differ from those that exist in other network industries. For example, the opportunities for interchange and diversion are limited, as passengers do not like changing trains.

### **Aims and objectives**

- 3.194 In our draft determination, we reiterated our intention to develop a new system operation capability enabler. We said that this new enabler would measure the performance of system operation functions, including, but not limited to: the process of assembling, validating and publishing the timetable, possessions planning, understanding / measuring capacity availability and utilisation, network planning and network change. We said that:
- (a) the enabler will take the form of a dashboard of measures (rather than any single measure);
  - (b) an illustrative dashboard will be drawn up and agreed with Network Rail in time for inclusion in the final determination;
  - (c) the exact content of the dashboard will be consulted on by Network Rail as part of its December 2013 draft delivery plan;
  - (d) the dashboard will be finalised and in place before the start of CP5; and
  - (e) we will expect Network Rail to publish its performance against dashboard measures annually throughout CP5 and we will keep its content under review.
- 3.195 Our measurement of the performance of system operation functions should help improve our understanding of Network Rail's decision making. Measurement should provide clarity as to whether Network Rail has the information, capability and incentives to make the right decisions at the right time in the right way to optimise the use of the existing network and to plan capacity enhancements. It should help to identify what improvements are required including whether Network Rail has the right incentives to encourage and support good system operation performance. Measures should provide transparency and assurance to access beneficiaries and funders, help to promote fairness and facilitate more informed decision making.
- 3.196 It is important to stress that, overall, our intention is not to create a new raft of measures that we are going to monitor and regulate to. The measures should provide insight to Network Rail's performance in carrying out its system operation activities. If Network Rail is able to demonstrate its progress and good performance of its system operation functions then the regulatory framework can adapt and respond accordingly.

### **Response to draft determination consultation and industry views**

- 3.197 In its response to the draft determination, the Rail Freight Group stated that it supports the need to develop the system operator function and to encourage this through the outputs framework. DB Schenker noted that good system operation is critical. Freightliner stated that it considered that further work on the role and

responsibilities of the system operator, drawing on input from TOCs and FOCs, is urgently needed to develop the system operator concept, since it is not yet fully developed or understood in the wider industry.

- 3.198 Chiltern considered that there is no framework to encourage Network Rail to get more capacity out of the existing system and that Network Rail is 'programmed' to prioritise performance results over sale of capacity. It noted that there are many ways of creating additional capacity without embarking upon major schemes and that Network Rail currently lacks an incentive to chase out these initiatives because the incentive signals are about achieving performance targets and maintaining and renewing the asset. Chiltern would expect a world class system operator to naturally seek out these opportunities.
- 3.199 DB Schenker raised concerns about the potential effect of devolution on Network Rail's performance of its system operator functions and while it acknowledged Network Rail having established a central freight team to deal with this concern, it suggested that the pace of devolution may test the effectiveness of these arrangements. Freightliner raised concerns around Network Rail's train planning service and the apparent devolution of powers over access rights to its routes. It highlighted the importance of an integrated approach, particularly as freight operators' paths usually cross many routes and stressed the importance of our continued role as a 'referee' on issues around access to the network.
- 3.200 Freightliner stated that it supports our proposal in terms of developing an illustrative dashboard, and was happy to contribute to a better definition and understanding of the system operator concept. DB Schenker cautioned that a dashboard of measures must not be overtaken by events – for example a switch from rail to road – and suggested that the dashboard should be capable of illustrating qualitative issues – for example path quality.
- 3.201 Network Rail stated that while it, in principle, agrees with developing a dashboard of metrics to measure system operator performance, it recognised the importance of avoiding conflicting impacts/perverse incentives. For example, Network Rail is keen to align the system operator metrics with the Journey Time metric.
- 3.202 Beyond the draft determination, Network Rail has sought the views of the industry through discussion of the emerging dashboard of measures with the Planning Oversight Group (POG). RDG wrote to us on 2 October 2013 to inform us that POG will support Network Rail in developing meaningful and useful indicators to be included in Network Rail's draft delivery plan. To facilitate this, POG has established a sub-group with cross-industry representation. We welcome this wider industry involvement in developing the dashboard and agree that suitable measures should provide transparency and assurance to operators and funders.

## Capacity measures

- 3.203 In our view it should be possible to develop a measure or set of measures of capacity availability and utilisation. It should also be possible to measure capacity constraints and the extent to which Network Rail is minimising those constraints that are within its control. However, we recognise that developing useful capacity measures for railways is challenging and that there are few existing reliable measures of capacity availability and utilisation.
- 3.204 Recently, Network Rail has conducted pilot studies of how the network is used - to identify both theoretical capacity and actual utilisation and the reasons why they differ. This work has helped to highlight some of the constraints e.g. customer and funder requirements for different rolling stock speed characteristics or stopping patterns. This could aid future discussions as to the possible removal or relaxation of some of these constraints to improve efficiency in the management of network capacity and so allow Network Rail to increase both performance and capacity utilisation at the same time.
- 3.205 Network Rail will analyse other parts of the network – focusing on those parts of the network where there are competing and conflicting demands for the use of capacity. The work should facilitate more informed decision making. It might, for example, create an overall improvement in, and speeding up of, the handling of access applications.

## Illustrative dashboard

- 3.206 Ultimately we are interested in whether Network Rail is delivering good outcomes from system operation. Many system operation functions contribute to outcomes but are not measurable. For example, a good process for assembling, validating and publishing the timetable should help to deliver the 'right' capacity utilisation and operational performance.
- 3.207 Types of outcome measures which may be suitable for inclusion in the system operation dashboard include:
- (a) capacity or volume related measures i.e. how much the system is used. For example, actual train km per track km could be measured until such a time as reliable and robust capacity measures are developed;
  - (b) performance or quality related measures i.e. punctuality, delays, cancellations etc. Measures could, for example, include average lateness per passenger and the Freight Delivery Metric;
  - (c) customer perceptions and service related measures i.e. appreciation, response times etc. This could include measures which reflect responses to the National Passenger Survey and freight end user surveys; and
  - (d) financial related measures i.e. indicators of optimal system operation including trade-offs. This could include measures such as cost of performing system

operator functions or payments under various regulatory contractual and financial incentives regimes e.g. Schedule 8.

- 3.208 While outcome measures are important we recognise they can be indicators of the performance / behaviours of parties other than the system operator. This also means that many of these measures feature elsewhere in our measurement of Network Rail or industry performance.
- 3.209 We understand that the POG sub-group is of the view that measures included in the dashboard should focus on the outcomes that access beneficiaries expect from an effective system operator. It considers that the metrics and measurements should be of use to the industry, ORR and funders in assessing the performance of those functions clearly defined within the system operator capability. However, the POG sub-group recognises also that many of the outputs, indicators and enablers relevant to Network Rail at national and route level will also provide evidence of overall performance.
- 3.210 In addition to these high level measures, we have also looked at what practical problems Network Rail and operators face 'on the ground'. Network Rail is working to develop and improve the tools, information, data and processes on which good system operation relies. These capability improvements include:
- (a) capacity and performance management<sup>121</sup>;
  - (b) people, skills and culture<sup>122</sup>; and
  - (c) the long term planning process<sup>123</sup>.
- 3.211 Measures of these improvements in inputs and processes are important. Network Rail will identify suitable indicators of the progress of these work streams - for example key project milestones - for inclusion in the dashboard. This should allow us and the industry to monitor the development of the company's capability to perform its system operation functions.

### Next steps

- 3.212 We will continue to work with Network Rail and the wider industry (through the POG sub-group) to develop the measures for the dashboard. The dashboard must be agreed and put in place before the start of CP5. Since measures, for example of

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<sup>121</sup> This aims to better understand and reconcile trade-offs between different uses of the network. Currently, there are three significant areas: a) supporting and influencing funders and timetable participants in franchise and significant timetable change; b) balancing the allocation of access for train operation and efficient infrastructure management; and c) providing a clearer framework of the decision support tools to inform capacity planning.

<sup>122</sup> This involves investment in people and plans to develop the right capabilities and skills in the organisation through targeted training and development programmes.

<sup>123</sup> The LTPP comprises a series of studies (market studies, route studies and cross-boundary analysis).

capacity availability and utilisation, are at an early stage of development they will require further refinement over CP5. This will necessitate close working with Network Rail and the on-going support and engagement of the wider industry.

## **Programme management capability**

- 3.213 In our outputs consultation we stated that Network Rail needs to monitor its own capability in programme and project management. We also said we expect Network Rail to propose a framework for each of these areas by which we can also monitor its progress.
- 3.214 We commissioned the independent reporter Nichols to provide constructive challenge to Network Rail in its assessment of how best to drive continuous improvement in its programme and project management. Nichols' report found that Network Rail's project management capability is advanced, but it could improve its programme and portfolio management, and identified priority areas within its business where this will add most value. Nichols recommended Network Rail baseline and monitor its capability using the Cabinet Office's Portfolio, Programme, and Project Management Maturity Model (P3M3).
- 3.215 We have therefore decided to include P3M3 as an enabler that measures Network Rail's effectiveness in project, programme and portfolio management capability. Network Rail will confirm the milestones, for baselining and developing its capability, in its delivery plan.

## **Customer service maturity**

- 3.216 We need to decide whether Network Rail's customer service maturity should be an enabler in CP5 and hence whether it should set a trajectory for its level of maturity through CP5.
- 3.217 Network Rail has measured the satisfaction of its passenger and freight operator customers in its annual survey throughout CP4. The survey gives a good guide but does not allow Network Rail to understand if it is a genuinely customer-focused organisation.
- 3.218 Network Rail has been developing an appropriate model for measuring its overall level of customer service maturity in CP5. It committed to establishing a trajectory for its customer service maturity in its SBP. We support this and believe that the model will provide a much fuller picture of the level of service delivered to its customers than its annual survey alone. However, the SBP did not specify any detail as to how it proposed to do this.
- 3.219 We have been monitoring Network Rail's work to establish the trajectory. Network Rail has appointed KPMG to work with it to identify, develop and implement an appropriate model and establish a trajectory to reach a CP5 exit target.
- 3.220 Network Rail needs to develop a clear plan to establish an appropriate model. Network Rail has committed to consulting the industry on its proposed metric and

action plan for implementing the model. We will ensure that Network Rail responds positively to feedback received and uses it to develop a model for implementation.

- 3.221 In our draft determination we said we would require Network Rail to develop a customer service maturity model, with trajectories and an action plan. The model must be able to baseline performance as of 1 April 2014, and act as an enabler for excellent customer service maturity throughout CP5. In its response to our draft determination consultation, Network Rail said it will develop a baseline in the first year of CP5, which is later than we expected, but we accept this position. We will require Network Rail to consult on the proposed measures in its draft delivery plan consultation, and baseline its performance by March 2015, and set CP5 exit targets.

## **Passenger satisfaction**

- 3.222 We are focused on improving the passenger experience. Supporting a better service for passengers is a key strategic objective for ORR and a priority for the wider rail industry.
- 3.223 The National Passenger Survey (NPS, Passenger Focus) provides biannual passenger satisfaction results for the rail industry. We monitor it to assess progress in the passenger experience across the network.
- 3.224 In our draft determination we said we have included the NPS as an indicator in our output framework. This will support continuous improvement in service and raise awareness of our passenger role. No material comments were received in relation to this issue and we therefore confirm the decision set out in our draft determination.

## **Journey time**

### **Journey time metric**

- 3.225 We need to decide whether to establish a metric to measure changes in journey time.
- 3.226 The Secretary of State and Scottish Ministers' HLOSs both note the importance of reducing journey times where strategic opportunities present themselves. There are several initiatives planned for CP5 (including the Edinburgh to Glasgow Improvements Programme and investments in the Great Western, East Coast and Midland Main Lines) that will cut journey times across borders, and between key cities.
- 3.227 In our outputs consultation we said it is important that performance improvements must not be achieved simply at the expense of journey times. We acknowledged that developing a metric would be challenging, but useful given the funds committed to journey time reduction. In its response, Network Rail said a journey time indicator would be complex, but a metric linked to improvement funds could be considered. In our draft determination we said we would work with the industry and funders to develop a journey time metric.



- 3.228 In its response to our draft determination consultation, Network Rail said it was developing a journey time speed metric<sup>124</sup>. Transport Scotland proposed an alternative metric<sup>125</sup> for ScotRail that it suggested could also be used to monitor Network Rail's performance. Elsewhere, there was general support for the introduction of a journey time metric, and requests (from Rail Freight Group and DB Schenker) for the metric to be extended to cover freight.
- 3.229 We have discussed the proposed measures with stakeholders and decided that a journey time metric based on average speed will be introduced, at operator and sub-operator level. There will be specific measures for services in Scotland.

### Opportunities for reducing journey times

- 3.230 The HLOS for Scotland also required a process to be developed for "all opportunities for journey time improvements through planned works, network maintenance, network changes, timetabling and signalling exercises to be explored and implemented where they offer best value for money."
- 3.231 The Route Investment Review Groups (RIRGs), which include Network Rail's strategic planning teams, train operators and other stakeholders (such as Transport Scotland and DfT), currently provide a forum for discussing future renewals and enhancement schemes on each route. These have helped to deliver some improvements to journey times.
- 3.232 However, the industry (through the Planning Oversight Group (POG), which includes Network Rail) recognises that there is scope for improving processes for identifying opportunities for journey time improvements. It has proposed to work with Network Rail to identify best practice and apply this consistently across the network and to examine other areas where improvements could be made to support journey time improvements (such as through timetabling).
- 3.233 We note Transport Scotland's view that the RIRG process is too limited, for example, it does not adequately provide for potential journey time improvements identified by stakeholders to be fully explored. It has also expressed to us a concern that opportunities are being missed to improve journey times in the course of maintenance and renewals work even though these could be implemented at no additional cost. We also note the responses to the draft determination from other stakeholders seeking better arrangements for identifying and implementing journey time improvements.
- 3.234 We welcome the proposal from POG to set out how improvements could be made to these processes. We require Network Rail to review its processes for identifying

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<sup>124</sup> Journey Time Metric (average speed) = Total planned distance (miles) / Total planned journey time (mins) \* 60

<sup>125</sup> Journey Time Metric (mins per mile) = Total Planned Journey Time (mins) / Total Planned Distance (miles)

journey time improvements, working with POG and other key stakeholders including Transport Scotland to do this, and establish improved arrangements across Great Britain by the start of CP5. Amongst other things, these arrangements should ensure that:

- (a) Network Rail considers potential improvements to journey times that could be delivered using opportunities arising from its day-to-day activities such as renewals. Where improvements can be delivered without requiring additional funding, Network Rail should implement these where practicable. There should be sufficient transparency over this process to give assurance to key stakeholders that such opportunities are being actively considered, and provide for them to challenge if they feel that opportunities are being missed;
- (b) there is adequate scope for the involvement of customers and funders in exploring potential improvements to journey times, including the opportunity to fund incremental improvements or advocate the use of ring-fenced funds for this; and
- (c) improvements are delivered where there is a value for money case and funding.

3.235 In conjunction with the journey time metric KPI discussed earlier, this should provide a clear and measurable process for facilitating incremental improvements to journey times, with progress assessed against the baseline position of 31 March 2014.

### **Cross-border service availability**

3.236 We need to decide if there should be a requirement on Network Rail to make at least one cross-border (between England and Scotland) route available at all times.

3.237 The Scottish Ministers' HLOS said "Cross border rail services provide vital connections for passengers, key routes to market for freight users and contribute to regional economic development, including within Scotland. In support of this, the Scottish Ministers require that where maintenance, renewal or enhancement activity is required on cross border routes, at least one of those routes will be planned to be available at all times for the passage of timetabled sleeper, passenger and freight services through to London without the need for change."

3.238 This requirement spans both England and Scotland and the Secretary of State did not specify a similar requirement. It is not clear what costs would be involved in providing a total guarantee one route would always be open. Network Rail's SBP acknowledges the importance of the requirement, but highlights potential difficulties on certain dates, such as English Bank Holidays.

3.239 In our draft determination we said that the availability of a cross-border route (as described in the Scottish Ministers' HLOS) would be an indicator. We said Network Rail must use all reasonable endeavours to plan to keep at least one cross-border route open at all times, but we recognised that this might not always be possible. We

said we would review this requirement throughout CP5 and discuss with Transport Scotland, DfT, and Network Rail.

- 3.240 In its response to our draft determination consultation, Network Rail said there was little benefit in introducing an indicator and proposed that “the existing process for informing Transport Scotland of the availability of a cross border route continues through CP5”. Transport Scotland said it was disappointed that it would not always be possible to maintain at least one cross-border route and was keen to understand our expectations of Network Rail.
- 3.241 We understand Transport Scotland’s position. However, we do not believe it is feasible to guarantee the availability of a cross-border route at all times. There is no ring-fenced fund for cross border availability, and we cannot reasonably expect Network Rail to anticipate all external events that could jeopardise availability of a cross-border route. We do however require Network Rail to use all reasonable endeavours to plan to keep at least one cross-border route available at all times, alert operators, funders and ourselves when this will not be possible, and justify any instances where this is not possible. Network Rail’s internal planning processes must recognise the significance of this issue and provide appropriate guidance.
- 3.242 More generally Network Rail must follow industry processes, particularly the requirements of the network code. Any instances where Network Rail considers that it is not possible to keep at least one cross-border route open would need to be consistent with this framework. Network Rail consults on timetable changes every six months and is required to issue proposed changes 59 weeks before the commencement of the new timetable. A train operator can appeal (using industry appeals processes) against the changes and we make the final decision, where any party is dissatisfied with the outcome of the appeal.
- 3.243 We have decided that cross-border service availability will be an indicator.

## **Change control**

- 3.244 In CP4 we have a change control mechanism for enhancements. This has worked well and (for example) allowed us – in consultation with the industry – to adjust enhancement programmes when the scope or requirements has changed.
- 3.245 Network Rail has proposed that a broader mechanism is introduced to allow other outputs to be changed in one specific circumstance – where the DfT or Transport Scotland specifies franchises in a way which is materially inconsistent with Network Rail’s outputs.
- 3.246 We agree this is sensible and allows the regulatory settlement and franchising to be more joined-up. In our draft determination we proposed to introduce a change control mechanism for performance outputs, on the terms outlined above.
- 3.247 In its response to our draft determination consultation, Network Rail said the change control “mechanism needs to be broadened so that we have greater flexibility to deal

with unexpected growth or other external changes”. We do not believe it is appropriate to have an open-ended change control mechanism, or define all potential external changes that could legitimately lead to an output change. We will therefore introduce a change control mechanism for performance outputs, as per our draft determination proposal.

3.248 Any change to a regulated output will involve consultation with affected parties. We will make the final decision on change control requests.

## **CP5 output framework**

3.249 This chapter confirms the decisions we have taken on outputs, indicators and enablers. It presents our analysis of HLOS requirements, Network Rail’s SBP, independent reporter studies and consultation feedback. We have considered all of these in specifying our output framework, which is summarised below in Table 3.11.

**Table 3.11: Our decisions on the CP5 output framework**

Area	Outputs	Indicators	Enablers (these support all output areas)
Train service reliability	<ul style="list-style-type: none"> <li>• PPM: for England &amp; Wales (annual with a CP5 exit of 92.5%), Scotland (annual 92% and CP5 exit of 92.5%) and franchised TOCs in England &amp; Wales (rolling annual output JPIP, no TOC to exit CP5 below 90%, except East Coast and Virgin who must not exit CP5 with PPM below 88% or CaSL above 4.2% and 2.9% respectively. Additional 88% minimum for First Great Western high speed services at the end of CP5)</li> <li>• CaSL for England &amp; Wales (annual and CP5 exit of 2.2%) and rolling annual output JPIP</li> <li>• Freight Delivery Metric (National annual 92.5%)</li> </ul>	<ul style="list-style-type: none"> <li>• PPM: sector and sub-operator</li> <li>• Right-time performance: England &amp; Wales, Scotland, sector, JPIP and sub-operator</li> <li>• Average lateness: England &amp; Wales, Scotland, sector and JPIP</li> <li>• CaSL: sector and sub-operator</li> <li>• Delay minutes, split by category (including Network Rail on TOC, TOC on self and TOC on TOC): for National, England &amp; Wales, Scotland, sector, Network Rail route and JPIP</li> <li>• FDM by strategic freight corridor</li> <li>• Freight delay minutes (national)</li> <li>• Scotland KPI package</li> </ul>	<ul style="list-style-type: none"> <li>• Safety management maturity (Railway Management Maturity Model – RM3)</li> <li>• System operator capability</li> <li>• Programme management capability (P3M3)</li> <li>• Customer service maturity</li> </ul>
Enhancements	<ul style="list-style-type: none"> <li>• Enhancement scheme delivery milestones (set in an enhancements delivery plan)</li> <li>• Development milestones for early stage projects</li> </ul>	<ul style="list-style-type: none"> <li>• Enhancement fund KPIs (e.g. average scheme benefit cost ratios)</li> <li>• Improved governance processes for HLOS funds</li> <li>• Project activities and milestones</li> </ul>	
Health and safety	<ul style="list-style-type: none"> <li>• A plan of projects in CP5, to achieve the maximum possible reduction in risk of accidents at level crossings using the £99m ring-fenced fund</li> </ul>		

Area	Outputs	Indicators	Enablers (these support all output areas)
Network availability	<ul style="list-style-type: none"> <li>PDI-P (National CP5 exit of 0.58)</li> <li>PDI-F (National CP5 exit of 0.73)</li> </ul>		
Network capability	<ul style="list-style-type: none"> <li>Base requirement at start of CP5 in terms of track mileage &amp; layout, line speed, gauge, route availability, electrification type</li> </ul>		
Stations	<ul style="list-style-type: none"> <li>SSM by station category for England &amp; Wales, and Scotland (annual)</li> </ul>		
Depots		<ul style="list-style-type: none"> <li>Light Maintenance Depot Stewardship Measure: England &amp; Wales, Scotland and National</li> </ul>	
Asset management	<ul style="list-style-type: none"> <li>Asset management excellence (AMEM) capability for each core group at National level</li> <li>Asset data quality for each asset type at National level</li> <li>Milestones for ORBIS</li> </ul>	<ul style="list-style-type: none"> <li>Asset condition for robustness and sustainability at National and route level</li> <li>AMEM lite capability at route level</li> <li>Renewal and maintenance volumes by asset type and spend at National and route level</li> </ul>	
Environment		<ul style="list-style-type: none"> <li>Scope 1 and 2 traction and non-traction carbon dioxide emissions: England &amp; Wales and Scotland</li> <li>Carbon embedded in new infrastructure</li> <li>Sustainable development KPIs</li> </ul>	



Area	Outputs	Indicators	Enablers (these support all output areas)
Other		<ul style="list-style-type: none"> <li>• Passenger satisfaction</li> <li>• Journey time</li> <li>• Cross-border service availability</li> </ul>	

## Differences between our draft and final determination

3.250 We have considered all the feedback and evidence received from our draft determination consultation, and made the following change to the output framework:

- (a) Annual PPM (England & Wales) – the output for the first three years has been lowered to reflect Network Rail’s lower than anticipated CP4 exit rate (see Table 3.5 for details).
- (b) TOC PPM – we have confirmed that all England & Wales franchised TOCs should exit CP5 with PPM no lower than 90%, except East Coast and Virgin, who must not exit CP5 with PPM below 88% or CaSL above 4.2% and 2.9% respectively. We have also added a minimum 88% PPM output for First Great Western high speed services.
- (c) PDI – the CP5 exit rate for PDI-P and PDI-F has been lowered (to 0.58 and 0.73 respectively) to reflect the reprofiling of enhancement and renewal activities.
- (d) Carbon intensity – we specified this as an indicator but Network Rail has signed a ten-year contract for supply of low-carbon electricity and therefore there is little value in monitoring its carbon intensity. We expect Network Rail to emphasise low-carbon electricity in new procurement contracts.
- (e) Programme management capability – P3M3 will be the enabler for baselining and measuring project, programme and portfolio management maturity.

## Main differences compared to PR08

3.251 Table 3.12 below summarises the main changes in each output area from CP4.

**Table 3.12: Summary of differences between CP4 and CP5 output framework**

Area	Outputs	Indicators	Enablers (these support all output areas)
Train service reliability	PPM: franchised TOC CP5 exit output and industry sets TOC level outputs via JPIPs  Freight: delay minutes measure replaced with Freight Delivery Metric		New safety enabler (Railway Management Maturity Model)  New system operator capability enabler  New programme management capability enabler
Enhancements	New approach for regulating early stages schemes		New customer service maturity enabler
Health and safety	New level crossing risk reduction plan output (England & Wales and Scotland)		
Network availability (reducing disruption from engineering works)	Potential new (working timetable compliance) measure to run in parallel to PDI-P and PDI-F		
Stations	Potential new (SSM+) measure		
Depots		Light Maintenance Depot Stewardship Measure monitored as part of asset condition suite of indicators	
Asset management	New national capability output (AMEM)  New core data quality output (confidence grades)  New ORBIS output	New asset condition indicators for robustness and sustainability  New route capability indicator (AMEM lite)  Renewal and maintenance volumes by asset type and spend at National and route level	

Area	Outputs	Indicators	Enablers (these support all output areas)
Environment		New indicators for carbon dioxide emissions	
Other		New Passenger satisfaction (National Passenger Satisfaction Survey) indicator  New journey time indicator  New cross-border route availability indicator	

## Next steps

- 3.252 Network Rail needs to agree the two year JPIPs with individual TOCs and the milestones for its enhancement projects (including completion dates for projects that are well advanced and development milestones for projects at an early stage of development).
- 3.253 Network Rail will publish its plans in its draft delivery plan in December 2013. The final delivery plan will be published in March 2014 following consultation.

## 4. Overview of efficient expenditure

### Key messages in this chapter

- Our assumptions on how much money Network Rail needs to spend to deliver its outputs and other commitments are fundamental to our decisions on the company's revenue requirements.
- We have undertaken a thorough review of Network Rail's plans across all areas of expenditure to ensure that our assessment is challenging but achievable.
- We have reviewed cross-cutting issues such as the management of inflation, which potentially apply to all areas of expenditure, and issues specific to certain types of expenditure.
- We have set Network Rail a challenge of achieving 19.4% efficiency savings on its support, operations, maintenance and renewals expenditure in CP5.
- Our assumptions for maintenance and renewals expenditure include both volumes of work and the unit cost of doing this work today.
- We consider that Network Rail has the capability to deliver this challenge and our assessment should incentivise Network Rail to reduce its expenditure in a safe and sustainable way.

### Main changes since our draft determination

- After reviewing the evidence from responses to our draft determination, we have changed our efficiency challenge from 19.6% in our draft determination to 19.4% in our final determination.

### Structure of the chapter

4.1 This chapter is structured as follows:

- (a) introduction and background to the chapter;
- (b) CP4 experience;
- (c) approach to our PR13 assessment;
- (d) cross-cutting issues;
- (e) efficient expenditure assumptions; and
- (f) overview of efficiency assumptions.

## Introduction and background

- 4.2 Assessing the level of efficient support, operating, maintenance, traction electricity, industry costs and rates, renewals and enhancement expenditure that Network Rail needs to deliver its required outputs in CP5 and to sustain asset condition for the longer term is a core part of our work on PR13. The assumptions that we make on the level of efficient expenditure are fundamentally important to our determination of the company's overall revenue requirements.
- 4.3 In our 2003 determination, we assumed that Network Rail could achieve efficiency improvements of 31% by the end of CP3 (i.e. 2008-09) on its support, operations, maintenance and renewals costs. In our 2008-09 annual efficiency and finance assessment of Network Rail<sup>126</sup>, we found that the company had achieved efficiencies of 27% in CP3.
- 4.4 In PR08, we assessed that the efficiency gap for Network Rail's support, operations, maintenance and renewals expenditure at the end of CP3 was 35%. In PR08, we set Network Rail's revenue requirement on the assumption that it could close around two thirds of this gap in CP4, i.e. achieve 21% efficiencies by the end of CP4. Network Rail is now forecasting that it will achieve efficiencies of 18% in CP4. This means that the gap at the end of CP4, in simple terms, based on our PR08 analysis, would be 17%.
- 4.5 The Rail Value for Money (RVfM) study set a clear challenge for the rail industry to reduce its costs. The study assumed that Network Rail could deliver between approximately 50% - 75% of the industry savings identified for CP5. Annex G sets out how our PR13 assumptions compare to the RVfM study findings.
- 4.6 We reviewed Network Rail's SBP in detail and compiled our own extensive evidence base. We have assessed the quality of the input data Network Rail has used (for example on its unit costs), its planned volumes of work and proposed efficiencies.
- 4.7 In a number of areas, Network Rail's submission was a considerable improvement over the submission provided for PR08, but there were still weaknesses, e.g. a number of documents were submitted late and with significant inconsistencies. However, compared to PR08, Network Rail made much more realistic assumptions about the expenditure reductions that could be achieved. This is reflected in our determination where in some areas we have only made small changes to Network Rail's SBP numbers.
- 4.8 The responses to our draft determination have been reviewed and we have made some specific changes to our draft determination to take account of the evidence from

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<sup>126</sup> The annual efficiency and finance assessment of Network Rail 2008-09 is available at: <http://www.rail-reg.gov.uk/upload/pdf/404.pdf>.

the consultation responses and to ensure an appropriate balance to our determination.

- 4.9 In its response Network Rail focused on two areas of expenditure, track and signalling renewals and information management, where it thought that we had underestimated its costs. This evidence has led us to make changes in these areas, although not on the scale the company proposed, as we did not think that some of its suggested changes reflected levels of efficient expenditure.
- 4.10 We have developed a substantial body of evidence to support our decisions. Our decisions are supported by comparisons with how work is carried out in other industries and in other countries, based on studies by independent consultants and our own in-house analysis. Our analysis is set out in this document, with more detailed supporting reports on our website<sup>127</sup>.
- 4.11 We set out in detail how we reached our assumptions on each expenditure area in the other chapters of this document. In this chapter we summarise how we approached our assessment.

## CP4 experience

- 4.12 In our PR08 determination for Network Rail we set Network Rail's total support, operating, maintenance and renewals expenditure at £23,380m (2012-13 prices).
- 4.13 The PR08 efficiency assumptions were for Network Rail to reduce its support, operating, maintenance and renewals costs by 21% by the end of CP4 (i.e. the end of 2013-14). Our annual PR08 efficiency assumptions are shown in Table 4.1.

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<sup>127</sup> See <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

**Table 4.1: Our PR08 efficiency assumptions**

	2009-10	2010-11	2011-12	2012-13	2013-14
<b>Support and operations</b>					
Net efficiency	2.8%	2.8%	4.0%	4.0%	4.0%
Cumulative net efficiency	2.8%	5.5%	9.3%	12.9%	16.4%
<b>Maintenance</b>					
Net efficiency	3.2%	3.2%	4.0%	4.5%	4.5%
Cumulative net efficiency	3.2%	6.3%	10.1%	14.1%	18.0%
<b>Renewals</b>					
Net efficiency	5.0%	5.0%	5.5%	5.5%	5.5%
Cumulative net efficiency	5.0%	9.8%	14.7%	19.4%	23.8%
<b>Total</b>					
Net efficiency	4.2%	4.1%	4.7%	4.9%	4.9%
Cumulative net efficiency	4.2%	8.2%	12.5%	16.8%	21.0%

- 4.14 Network Rail's PR13 SBP forecast level of efficiency for CP4 is three percentage points below its original PR08 delivery plan target that would have met our PR08 determination. This is likely to mean that on a PR08 basis Network Rail's efficiency improvement in CP4 will be around 18%.
- 4.15 Our assessment of Network Rail's efficient expenditure in CP5, and hence the efficiency savings that we expect Network Rail to achieve in CP5, assume that Network Rail delivers its SBP forecast of 18% efficiency savings at the end of CP4.

## Approach to our PR13 assessment

### Regulatory techniques

- 4.16 Economic regulators use a wide variety of techniques to analyse the scope for efficiency savings in regulated companies. As no single approach will necessarily provide a definitive answer on the scope for future efficiency improvement, it is preferable to look at evidence from a range of approaches and sources and exercise a degree of judgement in forming a view on what should be achievable. Both 'top-down' and 'bottom-up' approaches are generally used to inform assessments of the scope for efficiency improvement.
- 4.17 Bottom-up approaches focus on identifying specific improvements in efficiency based on technologies or working methods that are known about at the time by those undertaking the study. Therefore, by definition, a bottom-up approach, even if it is exhaustive in its inclusion of all potential efficiency improvements that are known about at the time, is likely to understate the scope for future improvements in efficiency.



- 4.18 Top-down approaches typically utilise statistical techniques to produce high-level comparisons between companies or industries taking into account trends over time.
- 4.19 We consider that we are following best practice in efficiency assessment by using both bottom-up and top-down approaches to complement each other and provide useful evidence to inform our overall judgements.

## High level approach for PR13

### Background and our determination

- 4.20 We have conducted our assessment of efficient expenditure thoroughly and we have engaged with Network Rail throughout the course of PR13. Network Rail has worked with us constructively throughout this process. The independent reporters have also provided significant input into our assessment.
- 4.21 In undertaking our assessment, we have considered the impact on safety management and also Network Rail's capability to deliver its work programme in CP5.
- 4.22 We have adopted a transparent approach to our work and we have undertaken a significant amount of analysis to review and challenge Network Rail's submissions, including its performance plans, asset policies, efficiency assumptions and modelling tools (including the infrastructure cost model) that it has used as a basis for its plans.
- 4.23 At the start of PR13 we said to Network Rail that we wanted it to robustly justify its plans. It has not done this in all areas and Network Rail has recognised that there is scope for further improvements.
- 4.24 We asked Network Rail to set out its plans separately for England & Wales, Scotland and the nine England & Wales operating routes. Network Rail did this and we have undertaken separate assessments to produce figures for England & Wales, Scotland and for the nine England & Wales operating routes, although much of our underlying analysis has been common to the whole network.
- 4.25 In broad terms our approach has been to:
- (a) review bottom-up calculations of how Network Rail justifies its expenditure in detail, e.g. its planned volumes of work. We have focused on:
    - (i) route-based assessments. In PR13 we have undertaken more of our efficient expenditure assessments at a route level based on Network Rail's route level submissions, i.e. at a much greater level of disaggregation than PR08; and
    - (ii) a more detailed bottom-up review of Network Rail's SBP than in PR08;
  - (b) benchmark Network Rail's activities against other companies in Great Britain and overseas;
  - (c) carry out top-down assessments of Network Rail's overall efficiency for support, operations, maintenance and renewals compared to companies in the UK and in other countries. We have used comparisons against other regulated industries as

we did in PR08 and we made improvements to our approach compared to PR08 by benchmarking Network Rail more extensively against non-railway comparators and non-European rail comparators and by improving on the econometric work we undertook in PR08; and

- (d) make a judgement on the level of efficient expenditure taking into account the overall package and the achievable pace of change on efficiency.

- 4.26 Compared to PR08, we have relied more on our detailed benchmarking analysis and less on top-down international econometric modelling, using the latter as a 'sense check' to give us greater confidence in our detailed benchmarking analysis.
- 4.27 Assessing the efficient level of expenditure for enhancements is different from the approach taken for maintenance and renewal activities, although some of the same data is used. This difference is mainly due to the nature of enhancements projects, which often have bespoke solutions involving a range of different types of work and include significant development and delivery expenditure spread over several years.
- 4.28 Our efficient expenditure assessment of enhancements has improved since PR08 in terms of the quality of the data available to us. We have reviewed how Network Rail captures cost data from its existing programme of works and how it uses this information in building cost estimates for the CP5 programme. This work included a review of international and non-rail benchmarks.
- 4.29 One issue that we said in our draft determination we may need to consider further is that it is not clear how much of Network Rail's efficiencies can come from alliances and other industry initiatives.
- 4.30 Network Rail noted that in CP4, it has entered into nine alliance arrangements, including one deep alliance. Network Rail anticipates that further alliance arrangements will develop throughout CP5, particularly as a result of the refranchising schedule and noted that its SBP efficiency plans are predicated upon its ability to work more closely with its partners. The use of alliances also received support from some other respondents.
- 4.31 We support the use of alliances and other industry initiatives by Network Rail to help it deliver efficiencies that will benefit funders and customers and we have incentivised Network Rail to work with the industry to 'outperform' our determination, and benefit from this outperformance.

## Cross-cutting issues

- 4.32 We have carried out an analysis of possible savings for each area of expenditure. But there are some potential savings – the management of inflation, input prices, frontier shift, employment costs and occupational health – that could apply to all areas of expenditure. We have termed these 'cross-cutting' issues and this section explains how we have treated these issues.

## Network Rail's management of inflation

### Background, our decisions in previous decision documents and our draft determination

- 4.33 In our December 2012 financial issues decisions document<sup>128</sup>, we set out our approach to incentivising Network Rail to efficiently manage its inflation risk. We explained that in CP5 we will allocate input price risk to Network Rail but that we will not allocate general inflation risk to Network Rail. In that document we also said that we would commission a study to identify how efficiently Network Rail manages inflation risk and that we would further adjust our efficiency assumptions, e.g. increase or decrease them, based on the findings of the study. We considered that this will incentivise Network Rail to efficiently manage inflation in CP5.
- 4.34 In January 2013, we commissioned Credo, our consultants, to carry out the study into Network Rail's management of inflation risk (both general inflation risk and input price risk). The study included both a qualitative assessment and quantification of the efficiency of Network Rail's approach to managing inflation risk.
- 4.35 As part of its review, Credo met with Network Rail's senior management and with staff from Network Rail's procurement functions. Credo also reviewed a variety of Network Rail's procurement contracts and developed a modelling tool to help quantify the level of efficiency in this area. Credo spoke with 18 infrastructure owners and suppliers to understand how they managed inflation risk. To assess Network Rail's overall effectiveness in managing inflation risk, Credo developed a 15 principle framework which defines what good inflation management might encompass.
- 4.36 Credo found that Network Rail manages its expenditure to hit efficiency targets with inflation layered on top and that inflation is generally thought to be a factor that is beyond Network Rail's direct control. The study reported that Network Rail's paramount drive is to manage down overall costs and this means there is no explicit emphasis on managing inflation risk - it is just one of several factors that drive commercial outcomes. Credo highlighted the importance of inflation within Network Rail's overall regulatory settlement. For example, it estimates that cumulative general price inflation accounts for 16% (c. £1bn) of Network Rail's total CP4 expenditure, compared to cumulative expected CP4 efficiencies of 23.5% (c. £1.4bn).
- 4.37 Credo found that Network Rail has a 'performance gap' of approximately 25% in its management of inflation compared to the industry average. Credo estimated that it may be possible to close this gap by the end of CP5, which could generate savings of between £97m and £433m (£257m in its central case scenario).
- 4.38 As a result of this study, we made adjustments to our efficiency assumptions to reflect the impact of improved inflation management on Network Rail's costs. However, we

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<sup>128</sup> *Financial issues for Network Rail in CP5: decisions*, December 2012, available at <http://www.rail-reg.gov.uk/pr13/PDF/pr13-financial-issues-decisions-dec12.pdf>.

recognise that it is possible that our other analysis of Network Rail's efficient expenditure may already include some of the savings from improved management of inflation. As such, we took a cautious view of the potential efficiencies that can be achieved and applied a 0.2% per annum increase to our efficiency assumptions across Network Rail's CP5 support, operations, maintenance, renewals and enhancement costs.

### **Responses to our draft determination**

- 4.39 Network Rail did not agree that an efficiency overlay of 0.2% for its management of inflation is appropriate. Network Rail stated that this approach is unconventional and the efficiency overlay unprecedented in economic regulation. Network Rail also noted that applying the efficiency overlay amounts to an additional £150m of savings which would double-count other aspects of its efficiency challenge and that we have not taken this into account. Network Rail and its consultants, Oxera, indicated that we should articulate what we hope to achieve by imposing an additional cost reduction target where other economic regulators do not consider it necessary.
- 4.40 Network Rail considered that Credo's modelling approach does not use data supported by empirical evidence. Network Rail stated that Credo's modelling should be re-performed using assumptions that it considered would be more realistic.
- 4.41 The Rail Industry Association (RIA) stated that it is yet to be convinced of the substitutability that Network Rail may be able to achieve, to be able to offset external pressures on input prices.

### **Our comments on the responses to our draft determination**

- 4.42 It is normal for economic regulators to consider the effects of inflation (both general inflation and input price inflation) on a regulated company and to make adjustments for the effect of input price inflation. It is hard to separate input price effects from general inflation, e.g. RPI. Given this, Credo, our consultants, assessed Network Rail's overall management of inflation (both general inflation and input price inflation). Credo found that Network Rail does not efficiently manage inflation.
- 4.43 The adjustment that we have made to our expenditure assumptions is similar in nature to an input price adjustment in that we are assessing how Network Rail's costs are likely to change relative to general inflation and then adjusting for that difference.
- 4.44 For example, if we thought that the input price factors affecting renewals such as employment costs or the price of steel are likely to reduce 1% per annum relative to changes in RPI, then we could account for that issue by reducing our estimate of Network Rail's renewals costs each year in CP5 by 1.0%.
- 4.45 This is the same approach as we have used for our management of inflation assumption. The only difference is that the source of the estimated change in costs for input prices would normally be an external source, e.g. market prices for steel

whereas the source of the potential change in costs for our management of inflation assumption is the efficiency of Network Rail's management of inflation.

- 4.46 An example of a management of inflation issue is that our employment cost consultants, IDS, found that between 2007 and 2012, all pay settlements in Network Rail's maintenance and operations bargaining units have been above the level of the annual RPI inflation rate. Over the same 2007 - 2012 period, comparing annual basic pay rises at Network Rail with the median level of annual basic pay settlements and awards across the economy, Network Rail's maintenance and operations bargaining units have given increases above the all economy median in five of the six annual reviews, with maintenance receiving an additional increase in November 2010 from the Phase 2BC re-organisation.
- 4.47 Although we have tried to ensure that our management of inflation efficiency assumption does not double-count our other efficiency assumptions, we recognise that it is possible that our other analysis of Network Rail's efficient expenditure may already include some of the savings from improved management of inflation.
- 4.48 Therefore, we have taken a conservative view of the potential efficiencies that can be realised and applied a 0.2% per annum increase to our efficiency assumptions across Network Rail's CP5 support, operations, maintenance, renewals and enhancement expenditure (this is around 50% of the implied efficiency assumption that Credo identified). We are confident that this assumption does not double-count our other efficiency assumptions.
- 4.49 Network Rail has not provided any specific evidence of any double-counting in our efficiency assumptions because the argument it was making was one in principle.
- 4.50 Also, as a sense check of how deliverable our assumption on the management of inflation efficiency is, it is useful to compare the size of the management of inflation efficiency assumption with the size of our other efficiency assumptions. In particular, our top-down efficiency assumption for support and operations costs is 3.7% per annum (the average of CEPA's average efficiency assumption of 4.4% per annum and Oxera's average of 3.0% per annum). Therefore, we have aimed off by 0.7% per annum (4.4% - 3.7%). So, if the management of inflation efficiency assumption is added to the 3.7% top-down efficiency assumption for support and operations costs, the total efficiency assumption would be 3.9%, which is 0.5% below CEPA's average efficiency assumption of 4.4% per annum.
- 4.51 In relation to Oxera's comment about why we are adjusting our efficiency assumptions for Network Rail's management of inflation, we are doing this because we have evidence that Network Rail does not manage inflation as efficiently as it could do.
- 4.52 In relation to Network Rail's comments about the robustness of Credo's modelling, both we and Credo recognise that quantifying this analysis is difficult. This is one of the reasons we have aimed off when we have applied the results of Credo's analysis to our calculation of Network Rail's efficient expenditure.

4.53 With regard to RIA's comment, we consider that a purchaser can affect the particular inflation that it faces by the choices that it makes in its selection of goods and services to buy and the way in which it buys these goods and services. The impact of inflation can therefore be managed to an extent.

### **Our determination**

4.54 After considering these issues and the responses to our draft determination, for the reasons set out above and elsewhere in the document, we have decided to continue to apply a 0.2% per annum efficiency assumption across Network Rail's CP5 support, operations, maintenance, renewals and enhancement expenditure, as this is a cross-cutting issue that applies to all of Network Rail's expenditure.

4.55 This decision has been taken in the round with our other efficiency assumptions and in particular together with our decisions on input prices, frontier shift, employment costs and occupational health. We are confident that this assumption does not double-count our other efficiency assumptions.

### **Input prices**

#### **Background and our draft determination**

4.56 Input price inflation is the change in the prices of Network Rail's inputs (the goods and services it consumes). Input price inflation can be measured in absolute terms or relative to movements in more general price indices, such as RPI or CPI.

4.57 Our approach to risk and uncertainty in PR13 is to allocate to Network Rail the risks that it is best placed to manage. This should ensure that it is incentivised to secure continuous improvements in value for money and operate commercially where appropriate, e.g. in managing its financial risks. As we consider that it is possible to efficiently control the effect of input price inflation, Network Rail will be at risk for any deviations between the actual inflation that it faces and RPI in CP5.

4.58 In order to calculate Network Rail's efficient expenditure in CP5 we have to make assumptions about the level of input price inflation that we expect Network Rail to experience.

4.59 In PR08, we adjusted our efficiency assumptions to reflect the input price inflation forecasts from a Network Rail commissioned study by LEK. Although we had some concerns about LEK's methodology and assumptions, we considered that, overall, the results were broadly robust and represented a reasonable estimate of expected input price inflation in CP4.

4.60 However, during CP4, the actual levels of input price inflation that Network Rail has experienced to date are likely to have overall been significantly lower than the assumptions that we used to adjust our PR08 efficiency assumptions. Network Rail has therefore financially benefited from these variations from our assumptions.

4.61 Network Rail's SBP included its forecast of CP5 input price inflation. In contrast to its detailed PR08 submission, the CP5 forecast was based on a high-level review of



other input price forecasts, including recent regulatory forecasts. Table 4.2 sets out Network Rail's forecasts. Network Rail has assumed that it will be able to absorb any input price effects within its proposed efficiency profile for support, operations and maintenance expenditure but not for renewals expenditure.

**Table 4.2: Network Rail's SBP input price inflation forecasts**

Expenditure	Input price effect (per annum)
Support and operations	0.00%
Maintenance	0.00%
Renewals	0.70%

4.62 Given the following considerations, we decided to make no explicit adjustments to our efficiency assumptions for input price inflation:

- (a) Network Rail has assumed a low level of input price inflation over CP5 on renewals and no input price inflation over CP5 on support, operations and maintenance expenditure;
- (b) the uncertainty in forecasting and measuring input price inflation; and
- (c) our approach to funding risk, i.e. in our financial framework we are not providing Network Rail with upfront funding for risks.

4.63 However, we said we would still adjust Network Rail's access charges, network grant and RAB for changes in RPI as we do not consider that general inflation is efficiently controllable by Network Rail.

### Responses to our draft determination

4.64 Network Rail did not agree with our assumptions on input prices. Essentially its main point was that it thinks that there is input price inflation on renewals expenditure and other regulators have recognised this. Network Rail also noted that analysis of input price inflation is uncertain.

### Our comments on the responses to our draft determination

4.65 Like other economic regulators, we take decisions on input prices based on evidence. Network Rail's analysis shows that it expects renewals price inflation to be 0.70% per annum, but the evidence supporting this assumption was not robust and it is not clear how Network Rail has taken account of risk in its assumptions.

4.66 Actual input price inflation in CP4 has probably been negative and, based on Network Rail's own analysis, it has probably financially benefited from input price inflation. This is because we assumed in PR08 that input price inflation would be positive.

4.67 Generally, Network Rail's approach to risk has been to propose that it should be funded in advance for risks that may or may not materialise. We consider that Network Rail is probably taking a similar approach in its proposals on input prices. We



think that the risk surrounding a forecast of input price inflation in CP5 should be dealt with through the balance sheet buffer<sup>129</sup>.

## Our determination

- 4.68 As Network Rail acknowledges, forecasting input price inflation is subjective and the results are uncertain. Given this, it is important that we take our input price decision in the round and in particular our decision should take account of our other decisions, particularly in relation to efficiency and our treatment of risk and uncertainty.
- 4.69 Network Rail has not provided any robust evidence to support its views on input prices. We have assumed that input price inflation is zero in CP5.
- 4.70 This decision has been taken in the round with our other efficiency assumptions and in particular together with our decisions on the management of inflation, frontier shift, employment costs and occupational health.

## Frontier shift

### Background and our draft determination

- 4.71 Estimates of frontier shift<sup>130</sup> for an organisation are usually inferred through the assessment of historical changes in productivity in relevant sectors (weighted appropriately to match the organisations' activities), with an adjustment, if appropriate, to reflect that some of these sectors may have seen productivity changes owing to 'catch-up' as well as frontier shift.
- 4.72 Network Rail's SBP included a report by Oxera, which provided an estimate of frontier shift of 0.55% to 0.8% per annum for operations and support only<sup>131</sup>. The cumulative effect would be around 2.7% to 3.9% over CP5. This effect was considered by Network Rail together with input price inflation, when it derived the stretch element of its overall efficiency target.
- 4.73 Our assessment of Network Rail's SBP was that while we understand that separating out frontier shift and other efficiencies is complex, some separation is necessary and desirable in order to produce robust results. Furthermore, we noted the approach to estimating these effects is well established. For example, the differences in

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<sup>129</sup> The balance sheet buffer is the difference, at a point in time, between Network Rail's actual level of financial indebtedness and the level of financial indebtedness allowed by its network licence. The restriction on Network Rail's level of debt is presented as a percentage (i.e. debt/RAB) in its network licence. This is explained further in the financial framework chapter (Chapter 12).

<sup>130</sup> Frontier shift is the on-going productivity improvements that even the best performing companies would expect to achieve above that reflected in general inflation. In other words, over time, even the best companies can get better at what they do.

<sup>131</sup> Note this estimate also includes capital substitution effects. By capital substitution effects we mean that if frontier shift is assessed against the separate parts of Network Rail's activities, then for those activities, the use of capital expenditure to drive efficiencies in those activities needs to be taken account of elsewhere in the business. However, if Network Rail's expenditure is assessed as a whole, the effect of the use of capital expenditure is already taken account of.

methodology between Oxera's report for Network Rail and CEPA's report for us are small.

- 4.74 In comparison to PR08 and previous work, we have adopted an approach that assesses Network Rail's expenditure as a whole, rather than separating out elements of expenditure because:
- (a) this removes the need to take into account capital substitution effects directly, for which Network Rail had raised concerns; and
  - (b) we consider that assessing frontier shift at a more aggregate level is likely to be more robust.
- 4.75 Based on analysis undertaken on our behalf by CEPA, our overall estimate for frontier shift is 0.3% per annum which equates to 1.5% for CP5 as a whole<sup>132</sup>. This adjustment could apply to Network Rail's total expenditure, including support, operations, maintenance, renewals and enhancements.
- 4.76 In our draft determination, we only applied a frontier shift adjustment in our estimate of enhancements efficiency (the frontier shift for enhancements expenditure only is 0.4%) and we did not adjust our efficiency assumptions for other expenditure. This is because it was not clear for those costs, whether our efficiency assumptions include effects similar to frontier shift.

### **Responses to our draft determination**

- 4.77 Network Rail stated that it is not appropriate to apply an additional frontier shift to support and operations costs as frontier shift is already taken into consideration in the CEPA/Oxera estimates.

### **Our comments on the responses to our draft determination**

- 4.78 No additional analysis has been provided by Network Rail to support its views. We have not applied frontier shift to expenditure that we have applied a top-down assumption to, so we are confident that we are not double-counting the frontier shift efficiency assumption with our other efficiency assumptions.

### **Our determination**

- 4.79 For the reasons set out above and elsewhere in the document, we confirm the decision set out in our draft determination to apply a frontier shift of 0.4% per annum to enhancement expenditure and we have not adjusted our other expenditure assumptions for frontier shift.
- 4.80 Overall, our approach to frontier shift is pragmatic, as it is unlikely our bottom-up assumptions fully include all the potential frontier shift efficiencies. This means we

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<sup>132</sup> This is in real terms, and is based on CEPA's 'Adjusted TFP' approach with an assumed split of 75% frontier shift and 25% catch-up for the industries upon which the calculations are based.

have taken a cautious approach to frontier shift in CP5, which should help incentivise Network Rail to 'outperform' our determination, and benefit from outperformance.

- 4.81 This decision has been taken in the round with our other efficiency assumptions and in particular together with our decisions on the management of inflation, input prices, employment costs and occupational health.

## **Employment costs**

### **Background and our draft determination**

- 4.82 In January 2013, we commissioned Incomes Data Services (IDS) to review Network Rail's total employment costs and determine if they are efficient<sup>133</sup>. The review benchmarked the total reward package for key groups of Network Rail employees against those in other rail and non-rail industry jobs.
- 4.83 The IDS study found that the total reward for Network Rail's role clarity grades (mainly office-based staff, e.g. accountants and information management staff) is around 9% higher than the market rate. IDS found larger gaps for maintenance and operations staff, with maintenance workers' total reward 32% above the market rate and operations staff 36% above the market rate. IDS's findings are consistent with our PR08 Inbucon report, given that Network Rail's pay awards for operations and maintenance staff have been above inflation in CP4. Network Rail's own analysis is broadly consistent with these findings.
- 4.84 Network Rail's explanation of its pay strategy for operations and maintenance staff is that it takes a wide view of the overall cost savings to be achieved taking into account factors such as productivity.
- 4.85 Our determination sets the overall package for Network Rail in CP5. In most cases, it does not state how Network Rail should spend the revenue that it is allowed to recover, e.g. the level of remuneration for its employees or how it should achieve its efficiency savings.
- 4.86 The IDS study reinforced our view that Network Rail can deliver significant savings in CP5 but in our draft determination we did not explicitly adjust our efficiency assumptions for the findings of the IDS study because overall our efficiency assumptions are already challenging but achievable.

### **Responses to our draft determination**

- 4.87 Network Rail stated that the IDS study looked at the remuneration trend from 2007 to 2012 on a per employee basis but did not examine the staffing levels of Network Rail and therefore the study is not able to provide a view on staff output or the number of staff that should be employed. Consequently, Network Rail considered that the study

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<sup>133</sup> This is available at: <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

did not factor into the benchmarking comparison, the efficiency savings made to date and those planned for CP5.

- 4.88 The Transport Salaried Staffs' Association (TSSA) disagreed that savings can be made through employment costs. TSSA noted the caveats in the IDS study and queried whether the impact of equal pay claims was taken into account, which TSSA thought could be significant. TSSA also noted there is an equal pay 'timebomb' within Network Rail, which needs to be addressed so that it does not require further job cuts to deal with it. TSSA also disagreed with what it perceived to be an implication in our draft determination that savings can be made through employment costs. TSSA asked us to make our views known on this in our final determination.

### **Our comments on the responses to our draft determination**

- 4.89 The focus of the IDS study was on total employment costs per employee, not on the level of efficiency of Network Rail's total expenditure on employment, for example whether Network Rail employs the correct numbers of staff in certain roles. Therefore, we agree with Network Rail that the study did not look at the number of staff that should be employed or savings planned for CP5. However, it did take account of staff output when considering how the roles within Network Rail could be benchmarked.
- 4.90 In response to TSSA's comments, it is for Network Rail to manage its business, so we do not make specific comments on how Network Rail should manage its employment costs. It is our role to make assumptions on the level of efficient income and expenditure in CP5 for the purpose of our calculation of Network Rail's revenue requirements.

### **Our determination**

- 4.91 Our final determination applies no explicit adjustment to our efficiency assumptions for the findings of the IDS study because overall our efficiency assumptions are already challenging but achievable.
- 4.92 This decision has been taken in the round with our other efficiency assumptions and in particular together with our decisions on the management of inflation, input prices, frontier shift and employment costs.

## **Occupational health**

### **Background and our draft determination**

- 4.93 Poor management of occupational health issues has a detrimental effect on the individuals who suffer ill-health and it creates inefficiencies and costs within organisations.
- 4.94 Our recent inspection work has found that Network Rail has no suitable coordinated approach to health management, particularly at route level. Network Rail acknowledged that historically occupational health issues have not been managed systematically. However, Network Rail has now produced its Employee Health and

Wellbeing vision and strategy and a six-point action plan to start to deliver this strategy in CP5.

- 4.95 In our draft determination, we applied a conservative increase to our overall efficiency estimates of approximately 0.07% per annum across Network Rail's support, operations, maintenance, renewals and enhancements expenditure to reflect the savings which could be achieved through improvements in occupational health. This amounts to approximately £20m of savings in the final year of CP5.

### **Responses to our draft determination**

- 4.96 The responses on our occupational health efficiency assumptions are included in the health and safety chapter (chapter 11), together with our comments on those responses, apart from Network Rail's response that we should not have applied the occupational health efficiency assumption to all expenditure as that approach could double-count efficiency savings from occupational health with our other efficiency assumptions.

### **Our comments on the response to our draft determination**

- 4.97 It is clear that where we have applied a bottom up efficiency assumption, we have not included an adjustment for occupational health. Therefore, we are clearly not double-counting those assumptions. Where we have applied a top-down assumption, it may be the case that a top-down assumption may include an effect similar to occupational health.
- 4.98 However, we are confident that there is no double-counting of efficiency savings. This is because our efficiency assumptions should be considered in the round and given how much we are aiming off in our calculation of our top-down efficiency assumptions, it is unlikely we have double-counted occupational health savings.
- 4.99 For example, for our overall top-down efficiency assumption on support and operations expenditure, we have aimed off by 0.7% per annum, which is ten times bigger than the occupational health efficiency assumption of 0.07% per annum.

### **Our determination**

- 4.100 For the reasons set out above and elsewhere in the document, we have decided to retain our draft determination assumptions and apply a small increase to our overall efficiency estimates of approximately 0.07% per annum across Network Rail's support, operations, maintenance, renewals and enhancement expenditure to reflect the savings which could be achieved through improvements in occupational health. This is a cautious approach.
- 4.101 This decision has been taken in the round with our other efficiency assumptions and in particular together with our decisions on the management of inflation, input prices, frontier shift and employment costs.

## Efficient expenditure assumptions

4.102 This section outlines our specific assumptions in each area of expenditure, including the cross-cutting savings explained above.

### Support

#### Background

4.103 Support costs include expenditure on activities that ‘support’ Network Rail’s business. These are mainly administrative costs, such as costs related to finance, but include other running costs such as utilities and insurance.

4.104 In its SBP, Network Rail set out its plan to deliver a 24% reduction in its support costs over CP5. This included cost reductions by the end of CP5 compared to 2013-14 costs of 12% in core support costs<sup>134</sup>.

4.105 Our approach to the assessment of Network Rail’s support costs is set out in detail in the support expenditure chapter (chapter 5). In summary, we have decided on a base year and ‘rolled forward’ costs for that year through each year of CP5 by applying an efficiency assumption. We have derived our efficiency assumption by applying a combination of both top-down and bottom-up approaches. Where Network Rail has provided robust analysis of its functions’ costs, we have used Network Rail’s forecast. However, where Network Rail has provided insufficient justification for its forecasts, we have applied a top-down efficiency estimate to our view of Network Rail’s pre-efficient costs.

#### Responses to our draft determination and our comments on the responses to our draft determination

4.106 Network Rail’s responses on support expenditure are included in the support expenditure chapter (chapter 5) together with our comments on those responses. We received no other material consultation responses on support costs.

#### Our determination

4.107 Our assessment of efficient support costs for CP5 assumes that Network Rail can achieve efficiencies in core support costs of 20% by the final year of CP5 and a reduction in total support costs of 25% by the end of CP5. Overall there is a saving of £621m in CP5 compared to total CP4 support costs of £2,740m and £113m less than Network Rail’s SBP assumption of £2,232m.

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<sup>134</sup> We are focusing on core support costs because we consider a comparison at that level provides a more useful comparison to Network Rail’s assumptions than looking at total support costs, which includes costs like the National Delivery Service.



## Operations

### Background

- 4.108 Operations expenditure is expenditure incurred in ‘operating’ the rail infrastructure such as expenditure on signallers and control staff. Our approach to the assessment of Network Rail’s operations expenditure is set out in detail in the operations expenditure chapter (chapter 7).
- 4.109 Network Rail’s SBP set out its plan to deliver a 13% reduction in operations expenditure over CP5 primarily through the implementation of a new way to run its infrastructure, known as the network operating strategy. This strategy should reduce Network Rail’s operations costs as it will reduce the number of signallers required to operate the network.
- 4.110 We have reviewed Network Rail’s proposals against various domestic and European benchmarks. We have also conducted our own assessment as to whether the strategy can deliver the proposed benefits. Network Rail will compare favourably with international benchmarks once the strategy is implemented. However, Network Rail’s proposed costs for operations activities outside signalling are above benchmarks with other UK regulated industries. For our assessment of these non-signaller costs we have taken into account domestic benchmarks and savings from cross-cutting issues.

### Responses to our draft determination

- 4.111 Network Rail’s main response on operations expenditure was that it does not think that it is appropriate for us to use a hybrid approach and apply our top-down efficiency assumption to operations activities outside signalling and to also apply the cross-cutting efficiency assumptions to those costs.
- 4.112 Network Rail compared the combined operations and support expenditure challenge of 24% to the CEPA and Oxera top-down average efficiency assumption of 17.2% and it thinks our assumptions are stretching. Network Rail also stated that we have not taken account of QX cost reductions in our forecast of QX income.

### Our comments on the responses to our draft determination

- 4.113 We have considered Network Rail’s concerns about our hybrid approach to our assessment. Network Rail has generally supported us in using more bottom-up analysis to support our assumptions. However, when we do not think its analysis is robust we can either develop our own bottom-up assumptions or use a top-down approach. By definition deriving a bottom-up estimate when we do not think Network Rail’s plan is robust is not straightforward, e.g. it does not have a set of policies for how much money it should spend on information management, in the same way that it does for track renewals. There is also an asymmetry of information between us and Network Rail.
- 4.114 Therefore, when Network Rail has not provided a robust bottom-up analysis for a part of its business, we think that applying a top-down approach would be more



appropriate and the most important issue is checking that the efficiency assumption for that part of the business is reasonable and that the efficiency assumptions for operations expenditure overall are reasonable.

- 4.115 In relation to applying a top-down efficiency assumption to operations activities outside signalling. Network Rail has not provided adequate evidence to show that its assumptions are efficient or that our approach is inappropriate. We also note that the main cost of operations is employment costs and the IDS report found that Network Rail's operations staff were paid 36% above the market rate.
- 4.116 Network Rail noted that the total challenge on support and operations expenditure is higher than the top-down efficiency assumption derived from an average of CEPA and Oxera's analysis. However, CEPA and Oxera's forecasts are averages over a significant amount of data from a number of industries, which Network Rail's comment does not seem to take account of, as it simply compares the average of CEPA's and Oxera's top-down efficiency averages to our overall assumptions on support costs, rather than considering the reasons for the differences.
- 4.117 For example, one of the main drivers of the cost reductions we have assumed in operations costs is the network operations strategy, which has a one-off effect for the areas where it is being applied. There are also significant one-off changes that Network Rail is proposing in some areas of its expenditure that are included in support costs but are actually more engineering related. Once those costs and group costs are excluded from support costs to provide a more useful comparison, the efficiency challenge is 20%, which is higher than the average of CEPA and Oxera top-down efficiency assumption of 17.2%, but lower than CEPA's own average of 22.0%.
- 4.118 Also, in response to Network Rail's point about QX, we have now taken account of QX cost reductions in our forecast of QX income. Network Rail's issues with cross-cutting issues are discussed above.

### **Our determination**

- 4.119 Our assessment of Network Rail's efficient operations expenditure in CP5 assumes that Network Rail can achieve 17% efficiencies by the final year of CP5. This is a saving of £271m in CP5 compared to total CP4 operations expenditure of £2,239m and £59m less than Network Rail's SBP assumption of £2,027m.

### **Maintenance and renewals**

- 4.120 Maintenance expenditure covers the work required to maintain assets efficiently and sustainably. Maintenance work may be either planned (for example, routine or visual inspections) or reactive (for example, responding to asset failures). Maintenance expenditure is forecast and assessed for each of the following main asset categories: track, civil structures and earthworks, signalling, electrification, telecommunications, and plant and machinery.

- 4.121 Renewals expenditure covers work to replace assets which have reached, or are nearing, the end of their useful lives with the modern equivalent asset. Renewals expenditure is forecast and assessed for the same asset types as maintenance (track, civil structures and earthworks, signalling, electrification, telecommunications, plant and machinery) as well as buildings, and other renewals.
- 4.122 In Network Rail's SBP, its maintenance plans for CP5 assumed efficiencies of 13.8% by the final year of the control period and total maintenance expenditure in CP5 of £5,282m. We have restated these figures in this chapter so that they are more comparable with our determination, to take account of accounting changes between CP4 and CP5, and the effects of traffic and network growth.
- 4.123 Network Rail's renewals plans for CP5 assumed an increase in expenditure compared to CP4 driven by a programme of rationalisation and centralisation of signalling and electrical control, a large increase in expenditure on civil structures and earthworks, accelerated renewals (due to enhancements), a programme to improve asset information and additional investment schemes. It planned efficiency savings of 15.8% by the final year of the control period and total renewal expenditure in CP5 of £13,559m. These figures have also been restated as described above.
- 4.124 The efficiencies include those embedded in Network Rail's proposed CP5 asset policies and consider efficiency across all costs classified as renewals, whereas Network Rail's efficiency assumption in its SBP was based on a subset of renewals asset types (i.e. the main asset categories such as track). Based on our review and the evidence, we have included efficiency savings in other categories of renewals expenditure, where Network Rail assumed no efficiencies, e.g. information management.
- 4.125 Our approach to the assessment of maintenance and renewal efficiencies is set out in detail in the asset management: maintenance and renewals chapter (chapter 8). In summary, we have carried out both a bottom-up and top-down assessment of efficiency, including:
- (a) a detailed review of Network Rail's plans, including an audit of its benchmarking work and SBP efficiencies;
  - (b) our bottom-up benchmarking and efficiency studies conducted for PR13;
  - (c) our review of previous studies (for example those carried out for PR08 and for the RVfM study) and cataloguing of remaining efficiency opportunities; and
  - (d) our top-down statistical (econometric) analysis of the efficiency gap to the frontier rail infrastructure manager.
- 4.126 The efficiency assumptions for maintenance and renewal draws mainly, on (a) to (c) with (d) used as a sense check.

## Responses to our draft determination

- 4.127 Network Rail noted that the maintenance and renewals efficiency profiles in its SBP and in our draft determination are all based on comprehensive bottom-up assessments of how much Network Rail can change its ways of working in CP5. They already account for emerging developments in technology and incorporate significant elements of stretch (notably in signalling and maintenance).
- 4.128 Network Rail stated that it is not methodologically consistent to include top-down efficiency overlays in addition to a thorough bottom-up assessment by either Network Rail or by us. Additionally, Network Rail stated that in the case of renewals expenditure, it thinks that some issues related to the top-down efficiency overlays sit largely outside its control, as they are more of an issue for the contracting base that Network Rail relies upon to carry out the works. Network Rail also noted that any advances in these areas are already accounted for in the efficiency assumptions for CP5 that it included in its SBP.
- 4.129 RMT mentioned the concern previously raised by Network Rail about our top-down benchmarking of maintenance and renewals.

## Our comments on the response to our draft determination

- 4.130 Our draft determination applied efficiency overlays to our bottom-up efficiency assessment for the management of occupational health and inflation. We continue to consider that these adjustments are appropriate as the bottom-up assessment did not address these potential areas of efficiency. The overlays have been applied at a level, which is considered appropriate in the round and after also taking account of Network Rail's ability to influence its costs.
- 4.131 As we note above, our maintenance and renewals efficiency assumptions draw mainly on other analysis, e.g. bottom-up analysis, rather than our top-down analysis.

## Our determination

- 4.132 We assume that Network Rail can achieve maintenance efficiencies of 16.4% by the final year of the control period and we assume that it spends £5,166m on maintenance during CP5. This is £116m less than proposed in the SBP. This is largely due to adjustments to pre-efficient reactive maintenance as described in the asset management: maintenance and renewals chapter (chapter 8).
- 4.133 Our assessment of efficient renewals expenditure for CP5 assumes lower levels of pre-efficient expenditure, where its plans were not sufficiently justified. For example, we have assumed lower levels of expenditure on buildings, information management and R&D, and made adjustments where we have identified issues with its unit costs.
- 4.134 We assess that Network Rail can achieve renewals efficiencies of 20.0% by the final year of the control period and we assume that Network Rail spends £12,107m on renewals during CP5. This is £1,452m less than it proposed in its SBP.

## Enhancements

4.135 As explained above, our assessment of the efficient level of expenditure for enhancements is different from the approach taken for other costs. Firstly, we looked at whether the proposed projects were required to meet the HLOSs. We then scrutinised individual project costs and portfolio efficiency overlays.

### Responses to our draft determination

4.136 Other than the comments Network Rail has made above about the application of frontier shift, we have included all other responses, e.g. the responses in relation to the Northern Hub and Uckfield train lengthening projects, in the enhancements chapter (chapter 9).

### Our determination

4.137 Of the £12.4bn enhancement expenditure in Network Rail's SBP, there were about £3.3bn of costs for projects that are determined outside of our review by the governments (Thameslink, Crossrail, Borders and an element of EGIP<sup>135</sup>) and £1.3bn of ring-fenced funds. We scrutinised the remaining £7.8bn of expenditure and we think that these projects can be delivered for £7.0bn, largely as a result of applying Network Rail's own efficiency overlay to more projects, where we thought the efficient level of expenditure should be lower. We also reduced the allowances for risk that Network Rail had included in its SBP on some of its projects, where we concluded they were too high.

4.138 Finally, we have included about £1.3bn in our determination for<sup>136</sup>:

- (a) an assumption for non-government investment framework schemes (consistent with our assessment of other single till income) (£416m);
- (b) additional Schedule 4 costs as a result of the recalibration of Schedule 8 (£172m);
- (c) funding for R&D (£50m);
- (d) additional funding for level crossings (£32m);
- (e) CP4 rollovers (£246m);
- (f) funding for ETCS cab fitment (£194m); and
- (g) funding for depots and stabling (£312m).

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<sup>135</sup> The Edinburgh to Glasgow Improvement Programme.

<sup>136</sup> This expenditure is explained in the enhancements chapter (Chapter 9).

## Package

### Background and our draft determination

4.139 In our draft determination we identified why we thought our package was challenging but achievable.

### Responses to our draft determination

4.140 Network Rail thought that our overall draft determination package unrealistically requires it to go beyond its SBP ambitions and deliver even higher levels of performance and cost savings with less investment, and less money to operate, manage and enhance the railway.

4.141 Some other respondents said that our draft determination was achievable and some thought that there might be deliverability issues with the package.

### Our assessment

4.142 In PR13, we have set Network Rail's revenue requirement for Great Britain on the assumption that it will achieve 19% efficiencies on its support, operations, maintenance and renewals by the end of CP5. We have decided that it is reasonable to assume that Network Rail will achieve this level of savings in CP5 and it builds on the efficiencies of 40% in total that Network Rail has already achieved in CP3 and CP4.

4.143 All our decisions on the overall PR13 settlement are made as part of a 'balanced package' for CP5. By balanced package we mean one which considers the outputs to be delivered, the costs, the incentives, the risks, Network Rail's capability to safely and sustainably deliver the efficiency savings and the safety requirements.

4.144 The package should be considered and judged as a whole. Our considered view after fully considering the responses to our draft determination and our statutory duties, is that this determination is challenging but achievable for Network Rail in terms of efficiency, value for money and deliverability, and indeed could potentially be exceeded without compromising the delivery of outputs (including health and safety). It will improve safety and it takes account of long-term needs as well as the short-term – i.e. it is sustainable.

4.145 Furthermore, it incentivises Network Rail to efficiently manage the costs it can control and provides strong incentives in CP5 for Network Rail to strive for continuous and sustained improvements in efficiency, building on the improvements in efficiency that Network Rail has achieved in CP3 and CP4.

4.146 It also provides appropriate protections against risk. We have made specific provisions to provide protections against certain risks, for example the new civils adjustment mechanism. We have also made some specific changes to our draft determination to take account of the evidence from consultation responses and ensure an appropriate balance, for example we have increased our expenditure assumption on track renewals.

4.147 For the above reasons we do not agree with Network Rail's response.

## Overview of efficiency assumptions

4.148 Our determination of Network Rail's efficient expenditure reflects our assessment of both the expenditure-specific analysis and the cross-cutting issues discussed above.

4.149 Tables 4.3, 4.4 and 4.5 set out the efficiency assumptions that we have applied to Network Rail's support, operations, maintenance and renewals expenditure.

**Table 4.3: Our assumptions on CP5 efficiency (Great Britain)**

Expenditure	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support	9.0%	4.9%	6.2%	3.3%	4.3%	24.9%
Operations	1.9%	2.9%	4.3%	4.2%	5.4%	17.4%
Maintenance	3.7%	3.3%	3.5%	3.5%	3.6%	16.4%
Renewals	8.4%	3.6%	3.8%	2.7%	3.2%	20.0%
<b>Weighted average efficiency</b>	<b>6.8%</b>	<b>3.6%</b>	<b>4.0%</b>	<b>3.1%</b>	<b>3.6%</b>	<b>19.4%</b>

**Table 4.4: Our assumptions on CP5 efficiency (England & Wales)**

Expenditure	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support	9.0%	4.8%	6.2%	3.3%	4.3%	24.8%
Operations	2.0%	2.8%	4.3%	3.9%	5.5%	17.3%
Maintenance	3.7%	3.4%	3.5%	3.5%	3.6%	16.6%
Renewals	8.4%	3.6%	3.7%	2.7%	3.2%	19.9%
<b>Weighted average efficiency</b>	<b>6.8%</b>	<b>3.6%</b>	<b>4.0%</b>	<b>3.1%</b>	<b>3.6%</b>	<b>19.4%</b>

**Table 4.5: Our assumptions on CP5 efficiency (Scotland)**

Expenditure	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support	9.5%	5.0%	6.1%	3.4%	4.5%	25.6%
Operations	1.3%	3.8%	3.8%	6.7%	4.1%	18.3%
Maintenance	3.5%	3.0%	3.3%	3.3%	3.3%	15.4%
Renewals	8.3%	3.0%	4.5%	2.8%	3.3%	20.2%
<b>Weighted average efficiency</b>	<b>6.8%</b>	<b>3.4%</b>	<b>4.2%</b>	<b>3.2%</b>	<b>3.5%</b>	<b>19.5%</b>

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## 5. Support expenditure

### Key messages in this chapter

- Support costs are mainly administrative costs that Network Rail incurs to deliver its outputs, such as costs related to finance, human resources and information management. However, this category also includes other running costs such as utilities costs and insurance.
- We have reviewed Network Rail's proposals and assessed them against a number of rail and non-rail benchmarks. We have seen some improvements in Network Rail's analysis compared to PR08.
- Network Rail's support functions have made progress in reducing costs during CP4. However, there are still inefficiencies to be addressed in CP5.
- In our final determination we assumed Network Rail's total support costs to be £2,119m over CP5. This is £113m less than Network Rail forecast in its SBP and £621m less than Network Rail's CP4 costs (based on its PR13 SBP forecast). This represented a 20% efficiency improvement in Network Rail's core support costs (i.e. excluding group costs and other support functions). Network Rail assumed a 12% efficiency improvement in core support costs.
- The reductions in our assumptions compared to the SBP of £113m were in information management (£39m over CP5), insurance costs (£35m over CP5), group costs (£33m over CP5), cross-cutting efficiencies (£16m), other support costs (£5m) offset by an increase in utility costs (£16m). These differences are shown in Table 5.6 and explained in paragraph 5.74.
- Our forecast of Network Rail's expenditure on support costs in our determination is 5.5% of Network Rail's total expenditure.

### Main changes since our draft determination

- We have reviewed the evidence received in consultation responses and have adjusted some of our assumptions for our final determination. The main change since our draft determination is that we have included an additional £25m of redundancy costs (part of group costs).



## Structure of this chapter

- 5.1 This chapter is structured as follows:
- (a) introduction to the chapter;
  - (b) description of support costs;
  - (c) Network Rail's proposal;
  - (d) our assessment;
  - (e) summary of our draft determination;
  - (f) responses to our draft determination;
  - (g) our comments on the responses to our draft determination; and
  - (h) our determination.

## Introduction

- 5.2 This chapter summarises our assessment of Network Rail's CP5 expenditure on its support functions.

## Description of support costs

- 5.3 Network Rail's operating expenditure includes support costs, operations expenditure and traction electricity, industry costs and rates. In this chapter, we explain our assessment of Network Rail's support costs only. We cover operations costs and traction electricity, industry costs and rates in the next two chapters.
- 5.4 Support costs include expenditure on activities that 'support' Network Rail's business. These are mainly administrative costs, such as costs related to finance, human resources (HR) and information management. This category includes other running costs such as utilities and insurance. It also includes some engineering costs, such as asset management services.
- 5.5 Some of Network Rail's support costs are 'recharged' to other parts of the business, i.e. they are included in operations, maintenance, renewals and enhancements expenditure. For its regulatory accounts and its SBP, these recharges are calculated in accordance with the rules set out in our regulatory accounting guidelines (RAGs)<sup>137</sup>. The figures we present in this chapter are shown after any recharges<sup>138</sup>.

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<sup>137</sup> The RAGs are available at: <http://www.rail-reg.gov.uk/server/show/nav.149>.

<sup>138</sup> Network Rail presents its support costs data after recharges. We have used the same approach in presenting our analysis in our determination but we have analysed total support costs before recharges to other parts of Network Rail's business.

- 5.6 Since PR08, Network Rail has made a number of changes to its definition of support costs. For example, pensions and staff incentives costs are now charged to the rest of the business, e.g. operations, instead of being held in support costs.
- 5.7 Support costs are an important part of Network Rail's overall revenue requirement, especially as they are funded in the year that they are incurred. Network Rail spent £477m (in 2012-13 prices) on support costs in 2011-12 (after recharges) and Network Rail's SBP assumed that support costs will be around 5.5% of its total support, operating, maintenance, renewals and enhancement expenditure in CP5, and around 8% of its projected gross revenue requirement.

## Network Rail's proposal

- 5.8 As part of PR13, Network Rail has generally produced more comprehensive analysis and supporting information than it did in PR08. For example, in support of its SBP, Network Rail independently benchmarked (for example against external comparators) 95% of support costs across its corporate services (HR, finance, information management etc.) and has provided detailed function-by-function plans. This has given us a better view of Network Rail's costs and ultimately has allowed us to make more informed decisions.
- 5.9 In its SBP, Network Rail set out its plan to deliver a 24% reduction in its support costs over CP5<sup>139</sup>. This includes cost reductions by the final year of CP5 (compared to 2013-14 costs) of 12% in core support costs. We distinguish between core and non-core support costs because some of the functions included within Network Rail's support costs category are engineering-related functions.
- 5.10 Network Rail's cost savings are driven by a number of initiatives, including the development of a new operating model for its central functions, e.g. HR, which will allow it to more effectively support the business.
- 5.11 Table 5.1 sets out Network Rail's SBP assumptions for the cost of its support functions over CP5 and Table 5.2. sets out Network Rail's SBP assumptions for the cost of its support functions between Great Britain, England & Wales and Scotland over CP5.

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<sup>139</sup> Network Rail's total savings in its SBP were presented as a comparison between the last year of CP5 and the last year of CP4 and did not adjust for atypical costs in the last year of CP4.

**Table 5.1: Network Rail's SBP forecast of support costs in CP5 for Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Human Resources	63	59	59	54	52	49	273
Information Management	59	65	65	65	65	65	324
Government and Corporate Affairs	20	18	18	17	17	17	86
Group Strategy	13	11	11	11	11	10	53
Finance	29	28	27	25	25	24	129
Business Services	16	14	13	13	13	13	66
Accommodation	77	72	72	66	65	64	339
Utilities	39	38	38	37	37	36	186
Insurance	53	52	52	52	52	51	259
Legal and Inquiry	6	6	6	6	6	6	30
Safety and Sustainable Development	13	10	8	7	7	7	39
Strategic Sourcing	11	10	9	9	8	8	44
Business Change	4	4	3	3	3	3	16
Other corporate functions	4	3	3	3	3	3	16
<b>Core support costs (excluding group)</b>	<b>406</b>	<b>390</b>	<b>384</b>	<b>368</b>	<b>363</b>	<b>356</b>	<b>1,860</b>
Efficiency		4.0%	1.4%	4.2%	1.5%	1.9%	12.3%
Asset Management Services	51	42	41	41	41	40	205
Network Rail Telecom	45	46	37	32	30	26	172
National Delivery Service	7	5	3	1	(0)	(2)	7
Investment Projects	0	0	(0)	0	(0)	0	0
Commercial Property <sup>140</sup>	7	(3)	(3)	(4)	(4)	(5)	(19)
<b>Support costs (excluding group)</b>	<b>515</b>	<b>479</b>	<b>462</b>	<b>439</b>	<b>429</b>	<b>415</b>	<b>2,224</b>
Group costs	39	0	(0)	1	2	5	8
<b>Support costs (including group)</b>	<b>554</b>	<b>480</b>	<b>462</b>	<b>440</b>	<b>431</b>	<b>420</b>	<b>2,232</b>
Efficiency		13.4%	3.7%	4.8%	1.9%	2.7%	24.2%

<sup>140</sup> Network Rail's SBP separates out its commercial property costs from its support costs. However, for our analysis we include commercial property costs within our support cost analysis.

**Table 5.2: Network Rail's SBP forecast of support costs in CP5 by area**

£m (2012-13 prices)	Great Britain	England & Wales	Scotland
Human Resources	273	245	27
Information Management	324	292	32
Government and Corporate Affairs	86	77	9
Group Strategy	53	48	5
Finance	129	116	13
Business Services	66	59	7
Accommodation	339	319	20
Utilities	186	168	19
Insurance	259	233	26
Legal and Inquiry	30	27	3
Safety and Sustainable Development	39	35	4
Strategic Sourcing	44	39	4
Business Change	16	14	2
Other corporate functions	16	14	2
<b>Core support costs (excluding group)</b>	<b>1,860</b>	<b>1,688</b>	<b>172</b>
Asset Management Services	205	184	20
Network Rail Telecom	172	154	17
National Delivery Service	7	7	1
Investment Projects	0	0	0
Commercial property	(19)	(18)	(1)
<b>Support costs (excluding group)</b>	<b>2,224</b>	<b>2,015</b>	<b>209</b>
Group costs	8	7	1
<b>Support costs (including group)</b>	<b>2,232</b>	<b>2,022</b>	<b>210</b>

5.12 Network Rail's support costs include 'group costs'. These costs are usually large/one-off items (or atypicals) or recharges to elsewhere in the company. We provide a breakdown of Network Rail's SBP forecast of CP5 group costs, consistent with the analysis above, in Table 5.3.

**Table 5.3: Network Rail's SBP forecast of group costs in CP5 for Great Britain**

£m (2012-13 prices)	CP5 total
Income from High Speed 1	(28)
Consultancy / legal / other	25
Project support recharges	(122)
Redundancy costs	100
Contingency	33
<b>Total group costs</b>	<b>8</b>

# Our assessment

## Overview

- 5.13 We have assessed the efficient level of Network Rail's support costs in CP5. We have reviewed Network Rail's SBP and supporting evidence, commissioned external consultancy studies on certain areas of support costs as discussed below, and carried out our own analysis to support our assessment. The following paragraphs explain our approach and the evidence that we have used.
- 5.14 Our approach to assessing Network Rail's support costs was to:
- (a) select a base year;
  - (b) adjust the base year to remove any atypical or inappropriate costs;
  - (c) roll forward the base year for each year of CP5 to give the pre-efficient costs;
  - (d) apply our own efficiency assumption to the pre-efficient costs;
  - (e) decide between a bottom-up efficiency assumption and a top-down efficiency assumption; and
  - (f) assess capitalisation and recharges to capital expenditure.

## Base year, adjustments and roll forward

- 5.15 We have used Network Rail's PR13 SBP forecast of 2013-14 expenditure as the base year for our assessment. However, in any one year Network Rail may incur one-off costs or receive one-off income. So that we could assess a representative year of expenditure, i.e. it is comparable to future years' spend, we have removed any significant one-off or 'atypical' costs (or income) from the base year. We set out the adjustments that we have made later in this chapter. We then rolled forward the base year.
- 5.16 Table 5.4 sets out the adjustments that we have made to Network Rail's 2013-14 support costs to determine our base year expenditure for CP5. These adjustments result in a net reduction in base year costs of £40m and have two main effects on our assessment:
- (a) impact on efficiency assessment. To calculate our efficiency assumption for Network Rail's CP5 support costs, we compare our assumption of Network Rail's support costs in the final year of CP5 to our base year costs. Any changes we make to the base year will impact on the calculation of our CP5 efficiency assumptions; and
  - (b) impact on our CP5 cost assessment. Where we have adjusted the base year and Network Rail:
    - (i) assumed in its SBP that these costs continue into CP5, any changes we make will impact on our assessment of Network Rail's CP5 costs, e.g. contingency, as well as the calculation of our efficiency assessment; and

(ii) did not assume that these costs continue into CP5, there is no impact on our CP5 support cost assessment.

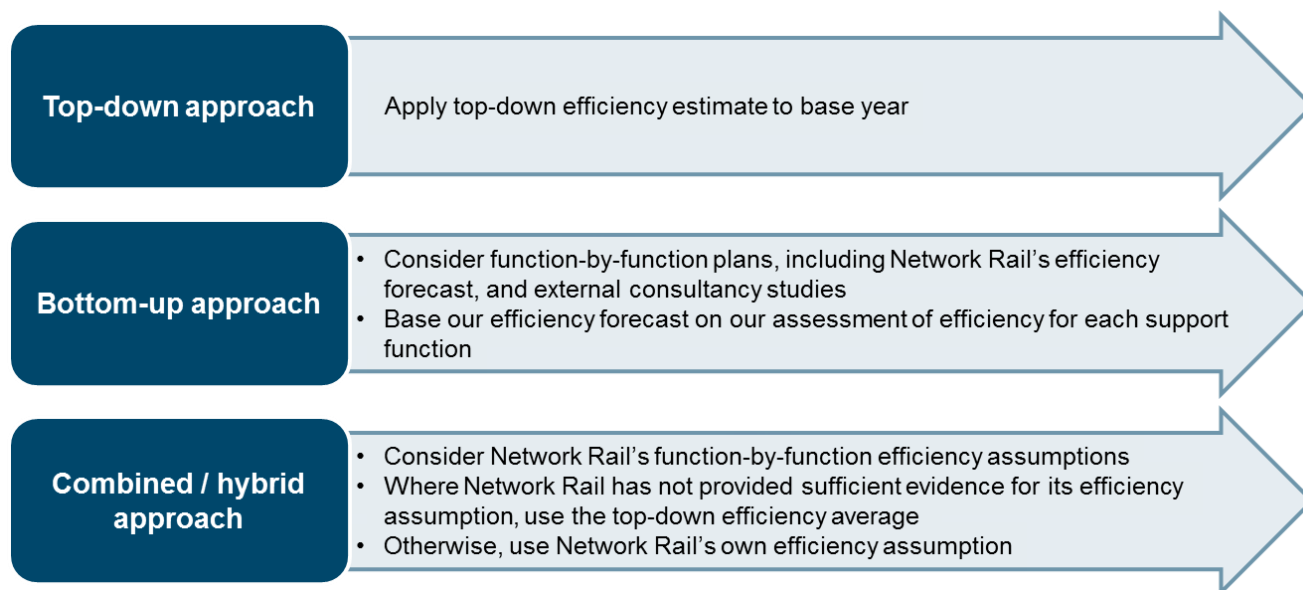
5.17 In Table 5.6, we have presented our assessment on a function-by-function basis, i.e. we do not separate out the effect of any base year adjustments on our CP5 cost assumptions, as this would complicate the analysis. As an example, our determination assumption of Network Rail's CP5 insurance costs is £35m lower than Network Rail's SBP and around £15m of the £35m reduction is due to our £3m adjustment to Network Rail's base year insurance costs.

## Evidence for efficiency assumptions

5.18 We then considered what efficiency adjustment to apply. We had evidence from studies by CEPA, Oxera, Civity, BDO/CEPA and Willis. Compared to PR08, we have completed a more wide ranging set of studies on support costs. These studies are summarised below and each study, or an executive summary of the study, is available on our website<sup>141</sup>.

5.19 Figure 5.1 sets out the three main options for determining Network Rail's efficient support costs in CP5.

**Figure 5.1: Options for determining Network Rail's efficient support costs**



5.20 We have based our assessment of Network Rail's CP5 support costs on the combined/hybrid approach. This means that where Network Rail has provided robust analysis of its functions' costs, we have used Network Rail's forecast of costs. However, where Network Rail has provided insufficient justification for its forecasts, we have applied a top-down efficiency assumption to our view of Network Rail's pre-

<sup>141</sup> These studies are available at: <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

efficient costs. We have done this for information management, insurance and other Corporate Functions.

- 5.21 Our top-down efficiency assumption has been calculated by taking the average of CEPA's forecast of 4.4%<sup>142</sup> (the CEPA study is summarised below) and Oxera's forecast of 3.0%<sup>143</sup> annual efficiency estimates. We recognise that the use of a top-down efficiency assumption is subjective, so by taking this approach we have made our final determination more robust.

### ***Top-down comparison of Network Rail's support and operations costs against other companies (CEPA)***

- 5.22 The purpose of CEPA's study was to provide estimates of Network Rail's scope for achieving efficiency gains in support and operations costs over CP5. This study drew on the historical performance of other UK network industries and different sectors' productivity performance in order to determine the possible scope for efficiency gains for Network Rail in CP5. CEPA used the following methods to provide a range for the scope for efficiency gains: Real Unit Operating Expenditure (RUOE); Total Factor Productivity (TFP); and a Labour, Energy, Materials and Services cost measure (LEMS).
- 5.23 CEPA found that, subject to Network Rail delivering its CP4 targets, the average annual change in RUOE of 4.4% (for comparator industries in their third price control<sup>144</sup>), and the LEMS cost measure for electricity, gas and water supply (11-15 years since privatisation) of 5.1%, could represent an appropriate annual target for each year of CP5. Savings of this order are consistent with broader studies of Network Rail's relative efficiency, e.g. the benchmarking work included in the RVfM study, which suggested that Network Rail's costs are significantly higher in a range of activities than those of its international peers<sup>145</sup>.

### ***International support and operations benchmarking (Civity)***

- 5.24 We commissioned consultants, Civity, to benchmark Network Rail's support and operations expenditure against other railway infrastructure managers. The aim was to help us to understand whether, and to what extent, there is a gap between the

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<sup>142</sup> We commissioned CEPA to produce a study on the scope for Network Rail to achieve efficiency gains in operations and support costs in CP5. This is available at: <http://www.rail-reg.gov.uk/pr13/PDF/cepa-orr-om-productivity-over-cp5.pdf>.

<sup>143</sup> Network Rail included a study by Oxera on the scope for efficiency improvements in Network Rail in its SBP.

<sup>144</sup> CEPA based its assumptions on the third control period because it assumes that when Network Rail took over its responsibilities, the effect of Railtrack's problems had reset efficiency levels to the level at privatisation. Therefore, as CP5 is the third control period after Network Rail took over its responsibilities, CEPA's analysis was based on the efficiency levels in comparator industries in their third control period.

<sup>145</sup> These results are similar to the analysis that Oxera carried out for us in PR08. Oxera's PR08 study is available at: <http://www.rail-reg.gov.uk/upload/pdf/pr08-oxeraeffic-160408.pdf>.



efficiency of Network Rail's support and operations expenditure and that of comparators (particularly the most efficient rail infrastructure managers). Civity's views on operations costs are included in the operations expenditure chapter (chapter 7).

- 5.25 For support costs, Civity found that, in relation to its peers (based on total expenditure, staff size, and labour costs), Network Rail's total expenditure on support functions (representing 8% of its total annual expenditure) is in the middle of the peer group. Civity also found that this was the case for individual support functions, with the exception of procurement, where Network Rail's position is at the higher end of its peer group.
- 5.26 However, Civity did conclude that the current positioning of Network Rail relative to its peers cannot be used to draw reliable conclusions on Network Rail's efficiency and that further disaggregation of costs would be necessary to produce more reliable analysis. We consider that this study has identified a number of useful issues but we have not used it to inform our determination of support costs for CP5 due to the issues over data reliability highlighted by Civity.

#### ***Pace of change study (BDO/CEPA)***

- 5.27 The purpose of the study was to develop a greater understanding of the potential pace of change for the cost savings that Network Rail could achieve in its support functions over CP5. The study considered a number of companies and reviewed how they reacted to significant changes to their businesses, e.g. from mergers, regulatory change through a price control and changing markets. The study also sought to estimate Network Rail's fixed and variable support costs and determine how the split between fixed and variable costs can impact on a company's ability to react to a significant business change, e.g. a merger, acquisition or price control.
- 5.28 The study found that major change within other organisations can often be seen first in support costs, with significant cost reductions achievable within two to four years, although this was potentially more difficult to sustain in the long term. The study also found that where there is a significant business imperative, e.g. potential bankruptcy, the pace of change is at its most rapid and most extensive. When reflecting on Network Rail's current position, the report concluded that Network Rail's historic pace of change in support costs has been slow and steady and that there was scope to increase the speed at which Network Rail implements its change programmes.
- 5.29 We did not use this analysis directly, but it provided an important sense check on the appropriateness of the use of the top down efficiency average. Given the overall challenge of our PR13 package we consider that the speed at which we are assuming costs savings can be made in this area is reasonable.

#### ***Insurance costs (Willis)***

- 5.30 We commissioned Willis (an insurance broker) to review Network Rail's proposed annual insurance costs for each year of CP5 to consider whether Network Rail's overall insurance strategy is appropriate and whether its proposed insurance costs

are efficient, e.g. are there some risks that Network Rail could manage more efficiently than it is proposing?

- 5.31 Willis concluded that Network Rail's overall approach to insurance costs is efficient. However, it identified some aspects of Network Rail's insurance cover where Network Rail may not take an efficient approach, e.g. terrorism insurance.

### **Network Rail studies**

- 5.32 In support of the IIP, SBP and as part of progressive assurance, Network Rail has commissioned a number of external and internal studies. We have considered the findings of these studies in our assessment of Network Rail's CP5 support costs.

- 5.33 These studies included:

- (a) Oxera study on the scope for efficiency improvements in Network Rail in its SBP;
- (b) Hackett benchmarking of key support functions, e.g. HR;
- (c) IPD workplace management benchmarking;
- (d) Gartner study on information management; and
- (e) Arup review of NDS.

### **Capitalisation and recharges**

- 5.34 Network Rail's support functions provide services to other areas of the business where the costs of these activities are capitalised rather than expensed in the year, e.g. renewals expenditure.

- 5.35 As part of its SBP, Network Rail provided a high level reconciliation of transfers of support costs into renewals and enhancement costs, which we have reviewed. This analysis showed an additional £62m of capitalised costs, which was not consistent with its assumptions on support costs.

- 5.36 Network Rail has not been able to adequately explain this inconsistency and the burden of proof is on it to show that its unit costs are appropriate. As we explain in the enhancements expenditure chapter (chapter 9), Network Rail has not done this. As a result we have deducted £62m from enhancement costs for Great Britain<sup>146</sup> for our determination. We have assumed that all capitalised costs are variable and so we have changed the support costs that are included in capital expenditure in line with any reduction or increase in our underlying capital expenditure assumptions.

## **Summary of our draft determination**

- 5.37 In our draft determination we determined Network Rail's total support costs to be £2,093m over CP5. This represented a 20% efficiency improvement in Network Rail's

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<sup>146</sup> This was a more straightforward way of making the adjustment than adjusting both renewals and enhancements expenditure.

core support costs (i.e. excluding group costs and other support functions), compared to Network Rail's 12% SBP efficiency assumption. This was £139m less than Network Rail forecast in its SBP and £647m less than Network Rail's CP4 costs (based on its PR13 SBP forecast).

## Responses to our draft determination

- 5.38 Network Rail had a number of concerns with our assessment and in particular that it:
- (a) did not think that it was appropriate to use a hybrid approach to our assessment. It considered that we should either apply the top-down efficiency assumptions to the whole of support costs or use a bottom-up approach, rather than a combination of the two different methods;
  - (b) disagreed with our use of cross-cutting efficiency overlays as it considered that these were already factored into the top-down efficiency assumptions;
  - (c) did not think that further efficiencies (above its SBP assumptions) could be achieved in Legal and Inquiry and Other Corporate functions;
  - (d) considered that it required additional funding, above its SBP assumptions, for redundancy and severance (£122m) and pensions (£135m);
  - (e) considered that it would incur higher insurance costs due to increases in Schedule 4 & 8 costs over CP5; and
  - (f) did not think that we should have excluded £25m of costs relating to consultancy and other costs that it included within group costs for CP5, as it thinks that its forecast is lower than its historical experience.
- 5.39 Freightliner supported our decision to continue to set efficiency targets for Network Rail's support costs. Freightliner suggested that there was an imbalance in the industry between the resources that Network Rail has and those of the TOCs and FOCs.
- 5.40 RMT stated it was totally opposed to any cuts in Network Rail's finances, and that it had concerns about cuts to support, operations, maintenance and renewals costs in CP5.
- 5.41 TSSA noted our efficiency assumption on Network Rail's core support costs (20% over CP5) and said that it was concerned that the resources required to deliver the level of change required in CP5 had not been considered. It also suggested that issues with major change programmes in CP4 may, in some part, be due to poor resourcing of support for these changes. TSSA asked us to consider, holistically, whether the efficiencies we are assuming on support costs in CP5 are possible.

## Our comments on the responses to our draft determination

5.42 Our approach to cross-cutting efficiencies is addressed in the overview of efficient expenditure chapter (chapter 4). We have considered the issues raised by respondents on support costs and have the following comments.

### Hybrid approach

- 5.43 We have considered Network Rail's concerns about our hybrid approach to our assessment. Network Rail has generally supported a more bottom-up analysis to support our assumptions. However, when we do not think its bottom-up analysis is sufficiently robust we can either develop our own bottom-up assumptions or use a top-down approach. By definition, deriving a bottom-up estimate when we do not think that Network Rail's plan is robust is not straightforward, e.g. it does not have a set of policies for how much money it should spend on information management, in the same way that it does for track renewals. There is also an asymmetry of information between us and Network Rail.
- 5.44 Therefore, when Network Rail has not provided a robust bottom-up analysis we consider that applying a top-down approach would be more appropriate. The most important issue is checking that the efficiency assumption for that business unit is reasonable and that the efficiency assumptions for support costs, overall, are reasonable.
- 5.45 We have applied a top-down approach for information management, insurance and other corporate functions but not all support costs. Applying our top-down efficiency assumptions to the whole of Network Rail's core support functions, would mean our assessment of its support costs would be £15m higher. Using the average of CEPA's analysis, our assumptions on core support costs would be £23m lower. In our view these alternative approaches show that our overall hybrid approach is reasonable. We consider the issues involved with these costs in more detail below.
- 5.46 Network Rail's bottom-up information management analysis was not robust. Given the information asymmetry between us and Network Rail, and that Network Rail did not provide an appropriate level of detail to explain its own analysis<sup>147</sup> we considered that it was more appropriate to use a top-down approach to assess the efficiency of information management expenditure.
- 5.47 As a sense check, Network Rail's own report on information management efficiency by Hackett showed a 16% efficiency gap in information management support costs, which is similar to our top-down assumption. However, instead of applying the 16% assumption, Network Rail in its SBP thought that an efficiency assumption of 7% was

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<sup>147</sup> Significant issues were also raised by Network Rail after the SBP was issued and in Network Rail's response to our determination.

more appropriate. The other main issue with our assessment of information management costs is that we do not agree with Network Rail's assumption for the increased support costs of new systems, which it has not adequately justified. Our assumption provides a similar level of funding for the costs of supporting new information management systems in CP5 as Network Rail spent in CP4. Network Rail has not adequately shown why that is not a reasonable assumption.

- 5.48 Network Rail's bottom-up insurance costs analysis was not robust. In particular, it did not clearly set out why its approach to insurance does not double-count other costs that we are funding, e.g. Schedule 4 and 8 costs and why its approach is efficient, i.e. whether it is insuring risks that are most efficiently managed by self-insurance rather than external insurance, e.g. terrorism. Also, it is not clear that Network Rail applied efficiency assumptions to its self-insured costs in its SBP.
- 5.49 Given the asymmetry of information between us and Network Rail on the issue of the appropriate scope of its insurance costs, we considered that it would be more appropriate to apply a top-down assumption for our assessment of efficiency of insurance costs. As a sense check, if we had just adjusted for the double-count in Schedule 4 and 8 costs, the scope of terrorism cover and if we had applied the maintenance and renewal efficiency assumptions to the insurance claims it is self-insuring (as the costs involved are, for example, the costs of repairing damage to property, which is an engineering-type cost rather than a typical support cost) then our insurance cost assumption would be similar to the assumption in our draft determination.

## **Legal and Inquiry and other corporate functions**

- 5.50 In light of Network Rail's responses, we have reviewed our analysis of Network Rail's Legal and Inquiry and other corporate functions.
- 5.51 Network Rail provided limited justification of its assumptions for its other corporate functions costs and so we have retained our top-down efficiency assumption on this area of its costs.
- 5.52 However, Network Rail did provide some justification of its Legal and Inquiry costs. As a result, we do not think that it is appropriate to apply the full top-down efficiency assumption. Instead, we applied an efficiency assumption of 10% over CP5 to reflect that some elements of Network Rail's plan were reasonable. We did not use Network Rail's efficiency assumption because we consider that some areas of its plan were too cautious and not all costs were adequately justified. Also, for some of the issues that Network Rail identified as requiring additional expenditure in CP5, e.g. telecoms, it did not include the additional income that would be delivered elsewhere in its plan.

## **Pensions**

- 5.53 Network Rail's pensions costs analysis identified issues that might increase pension costs. However, we do not specifically fund employment costs (pension costs are a

part of employment costs) and these issues need to be considered in the context of the IDS employment cost report which found that Network Rail's employment costs were higher than the market by 9% for support staff, 32% for maintenance staff and 36% for operations staff.

- 5.54 We also note that this analysis was provided late in the assessment process, is not robust and only considers a limited number of issues that could increase costs and does not identify issues that could reduce costs.

## **Redundancy and severance costs**

- 5.55 Our draft determination redundancy and severance cost assumption was similar to Network Rail's SBP assumption. The analysis supporting our assumption was based on actual redundancy and severance costs in previous years. Given that Network Rail's efficiency challenge is of a similar magnitude in CP5 as CP4, we consider that it is reasonable to base our assumption of redundancy and severance costs on Network Rail's historic expenditure.
- 5.56 Network Rail has not identified why this is not a reasonable approach to forecasting a very uncertain number and its own analysis was provided late in the assessment process and is not robust. However, in light of Network Rail's concern we have reviewed our analysis and we have now excluded two atypical years from our analysis, which has meant our redundancy and severance cost assumption has increased by £5m per annum (£25m for CP5 in total).

## **Insurance**

- 5.57 We do not fund insurance cover for Schedule 4 & 8 costs in our determination as our assumption for Schedule 4 & 8 costs already covers the effect of external events. Given this approach, we have adjusted Network Rail's baseline insurance costs to remove Schedule 4 & 8 costs where Network Rail has identified this cost in its plans. But there may still be some insurance costs covering extreme events that were included in Network Rail's external insurance costs in its SBP. So, it is not clear that including these costs in Network Rail's support costs is consistent with our Schedule 4 forecast, as we may be double-counting this cost.
- 5.58 We have taken a pragmatic approach to this issue and we have not adjusted Network Rail's baseline insurance costs to remove some of the costs of extreme events because the issue is not clear. We have also not adjusted for the additional costs Network Rail has requested in its response to our draft determination because it is not clear that the insurance costs that may be included in support costs are not double-counted by our Schedule 4 assumptions, as we may be double-counting this cost.

## **Other comments**

- 5.59 Network Rail has not provided adequate evidence to justify the consultancy/legal/other costs it has included in group costs.



- 5.60 We note RMT and TSSA's comments on our assumptions for Network Rail's CP5 support costs, and in particular their comments on deliverability and issues with major change programmes in CP4. We consider that our efficiency assumptions on this area of Network Rail's costs are challenging but also achievable. It is also important to consider the decisions that we make in our final determination as an entire package.
- 5.61 We also note Freightliner's comments on our support cost efficiency assumptions.

## Our determination

### Overview

- 5.62 In our assessment of Network Rail's support costs in CP5 we have considered:
- (a) whether we need to make adjustments to base year costs;
  - (b) any implications of Network Rail's approach to the capitalisation and recharging of support costs;
  - (c) the findings of the studies that we have commissioned to review different elements of Network Rail's support costs;
  - (d) the studies provided by Network Rail (both internal and external);
  - (e) whether Network Rail has included any contingency within its forecasts – we have excluded contingency where relevant; and
  - (f) the additional overlay for Network Rail's management of inflation and occupational health.
- 5.63 Our analysis has been described above. We set out below our adjustments to base year costs before summarising our expenditure assumptions.

### Base year

- 5.64 We have reviewed Network Rail's SBP forecast of its expenditure of £554m on support costs in 2013-14. We have identified a number of one-off (or atypical) costs or costs that it is not appropriate to include in our assessment of CP5 support costs, e.g. financial penalties, contingency, CP4 specific expenditure and a double-count of insurance costs with Schedule 4 & 8 costs in CP5 and have adjusted the base year for them.
- 5.65 These adjustments result in a net reduction in base year costs of £40m. Table 5.4 sets out the adjustments that we have made to Network Rail's 2013-14 support costs to get to our base year expenditure for CP5.



**Table 5.4: Adjustments to our base year assumptions for 2013-14**

£m (2012-13 prices)	Great Britain	England & Wales	Scotland
Network Rail's SBP forecast	554	502	52
Contingency	(26)	(23)	(3)
CP4 funds	(11)	(10)	(1)
Insurance costs	(3)	(3)	(0)
One-off costs and incomes	(10)	(9)	(1)
Information management	5	4	0
Utilities	5	5	1
Allocation adjustments	-	(4)	3
Total adjustment	(40)	(40)	(0)
<b>FD base year assumption</b>	<b>514</b>	<b>462</b>	<b>52</b>

5.66 We explain the reasons for each adjustment to the 2013-14 base year for support costs below:

- (a) reduction in contingency (£26m). We are not providing specific contingency for support costs in CP5 and Network Rail can use its balance sheet buffer to manage the risks involved with support costs;
- (b) reduction in CP4 funds (£11m). This is expenditure on the performance fund and the seven day railway fund in 2013-14, that will not be spent in CP5;
- (c) reduction in insurance costs. To reflect a double-count of Schedule 4 & 8 costs (£3m);
- (d) reduction in one-off incomes/costs in 2013-14 (£10m). This reduction is £5m lower than our draft determination assumptions as we have included an additional £5m of redundancy to reflect Network Rail's CP4 average expenditure on redundancy costs;
- (e) increase in information management costs. To reflect an increase in support costs for new information management systems. This has the effect of increasing costs over CP5 by £21m and is similar to Network Rail's estimate of its incremental support costs for new information management systems in CP4. This is £21m lower than Network Rail included in its SBP but Network Rail has not adequately justified its forecast and it increased its forecast of the cost of the new systems by £18m in its response to our draft determination, which was also not adequately justified; and
- (f) increase in utilities costs (£5m). To correct an error in Network Rail's forecast.

5.67 As shown in Table 5.4, these adjustments result in an adjusted base year expenditure for Great Britain of £514m compared to Network Rail's SBP assumption of £554m. We also presented our base year expenditure assumptions for England & Wales and Scotland in Table 5.4.

5.68 To calculate these assumptions we have allocated costs based on Network Rail's latest allocation methodology, which was developed after it published its SBP. We show the impact of the updated allocation methodology in Table 5.4.

### Efficient forecast of costs

- 5.69 After considering the evidence we have used Network Rail's bottom up assumptions for Network Rail's forecasts apart from, IM, insurance, Legal and Inquiry and other Corporate Functions. For IM, insurance and other Corporate Functions we have applied our top-down efficiency assumption of 17.2% over CP5 and for Legal and Inquiry we have further reviewed Network Rail's plan and decided that a 10% efficiency assumption is appropriate as described below. We have also taken our own view of group costs as described below.
- 5.70 On the basis of our assessment, we have determined Network Rail's total support costs to be £2,119m over CP5. This is £113m less than Network Rail forecast in its SBP and £621m less than Network Rail's CP4 costs (based on its PR13 SBP forecast). This represents a 20%<sup>148</sup> efficiency in Network Rail's core support costs (i.e. excluding group costs and other support functions). Given the overall challenge of our PR13 package, we consider that the speed at which we are assuming that cost savings can be delivered in this area is reasonable.
- 5.71 Our forecast of Network Rail's expenditure on support costs in our determination represents 5.5% of Network Rail's total expenditure.
- 5.72 Table 5.5 sets out our efficiency assumptions for CP5 and the implied post-efficient level of support costs for Great Britain.

**Table 5.5: Our assessment of CP5 support costs (Great Britain)**

£m (2012-13 prices)	CP4				CP5			Total
	2013-14	Base year	2014-15	2015-16	2016-17	2017-18	2018-19	
Human Resources	63	63	59	59	53	51	48	271
Information Management	59	64	61	59	57	54	52	283
Government and Corporate Affairs	20	20	18	18	17	17	16	85
Group Strategy	13	13	11	11	11	10	10	53
Finance	29	29	28	27	25	24	24	128
Business Services	16	16	14	13	13	13	12	65
Accommodation	77	77	72	72	65	65	63	337
Utilities	39	44	41	41	40	39	38	201
Insurance	53	50	48	46	44	43	41	222
Legal and Inquiry	6	6	6	6	6	6	5	29

<sup>148</sup> Our efficiency assumption is calculated with reference to the 2013-14 base year.

£m (2012-13 prices)	CP4				CP5			Total
	2013-14	Base year	2014-15	2015-16	2016-17	2017-18	2018-19	
Safety and Sustainable Development	13	13	10	8	7	7	7	39
Strategic Sourcing	11	11	10	9	9	8	8	43
Business Change	4	4	4	3	3	3	3	16
Other Corporate Functions	4	4	3	3	3	3	3	16
<b>Core support costs (excluding group)</b>	<b>406</b>	<b>412</b>	<b>385</b>	<b>375</b>	<b>354</b>	<b>343</b>	<b>331</b>	<b>1,787</b>
Efficiency	-	N/A	6.7%	2.5%	5.7%	3.0%	3.5%	19.7%
Asset Management Services	51	51	41	41	40	41	40	203
Network Rail Telecom	45	45	45	36	31	29	25	166
National Delivery Service	7	7	5	3	1	(0)	(2)	7
Investment Projects	0	0	(0)	(0)	(0)	(0)	(0)	(0)
Commercial Property <sup>149</sup>	7	7	(3)	(3)	(4)	(5)	(5)	(20)
<b>Support costs (excluding group)</b>	<b>515</b>	<b>522</b>	<b>474</b>	<b>452</b>	<b>423</b>	<b>408</b>	<b>388</b>	<b>2,144</b>
Group costs	39	(8)	(6)	(7)	(5)	(4)	(2)	(25)
<b>Support costs (including group)</b>	<b>554</b>	<b>514</b>	<b>468</b>	<b>445</b>	<b>417</b>	<b>403</b>	<b>386</b>	<b>2,119</b>
Efficiency		N/A	9.0%	4.9%	6.2%	3.3%	4.3%	24.9%

## Summary of changes from the SBP and our draft determination

5.73 Tables 5.6 sets out the key changes to our assessment from the draft determination and provides a comparison to the SBP efficiency assumptions for CP5 and the implied post-efficient level of support costs for Great Britain.

**Table 5.6: Key changes between SBP, draft determination and final determination for Great Britain – CP5 totals**

£m (2012-13 prices)	SBP	DD*	FD*	FD less SBP	FD less DD
Information Management	324	285	285	(39)	-
Utilities	186	202	202	16	-
Insurance	259	223	223	(35)	-
Group costs	8	(51)	(26)	(33)	25
Cross-cutting efficiencies	-	(16)	(16)	(16)	(0)
Other support costs	1,455	1,449	1,450	(5)	1
<b>Total</b>	<b>2,232</b>	<b>2,093</b>	<b>2,119</b>	<b>(113)</b>	<b>26</b>

\* We show individual function costs before we adjust for cross-cutting efficiencies.

<sup>149</sup> Network Rail's SBP separates out its commercial property costs from its support costs. However, for our analysis we include commercial property costs within our support cost analysis.

- 5.74 The main differences between Network Rail's SBP and our final determination were:
- (a) information management, £39m lower. As we explain above the two main differences between our assumptions and Network Rail's SBP are that we think Network Rail can achieve higher efficiencies in this area than it did and that it will need less expenditure for new systems;
  - (b) utilities, £16m higher. This adjustment corrects an error in Network Rail's SBP;
  - (c) insurance, £35m lower. As explained above we have adjusted for a double-count between insurance costs and Schedule 4 & 8 costs (approximately £15m) and we think Network Rail can achieve efficiencies in these costs (£20m);
  - (d) group costs, £33m lower. This difference is explained below; and
  - (e) cross-cutting efficiencies, £16m lower. As described in the overview of efficient expenditure chapter (chapter 4), we have assumed that Network Rail can make additional efficiencies from its management of inflation and occupational health.
- 5.75 Table 5.7 sets out the main differences between our assumptions of group costs for our final determination and Network Rail's assumption in its SBP.

**Table 5.7: Our assessment of CP5 group costs for Great Britain**

£m (2012-13 prices)	SBP	DD	FD	FD less SBP	FD less DD
Income from High Speed 1	(28)	(28)	(28)	-	-
Consultancy / legal / other	25	-	-	(25)	-
Project support recharges	(122)	(122)	(122)	-	-
Redundancy costs	100	100	125	25	25
Contingency	33	-	-	(33)	-
<b>Total</b>	<b>8</b>	<b>(51)</b>	<b>(26)</b>	<b>(33)</b>	<b>25</b>

- 5.76 The main differences between our assumptions of group costs for our final determination and Network Rail's assumption in its SBP are that we have:
- (a) not included consultancy/legal/other costs of £25m as they were not adequately justified;
  - (b) not included contingency of £33m as we are not providing specific contingency for support costs in CP5 and Network Rail can use its balance sheet buffer to manage the risks involved with support costs; and
  - (c) included an additional £25m for redundancy and severance costs, after a further review of Network Rail's actual expenditure in CP4 on these costs as explained above.

- 5.77 The main differences between our final determination and Network Rail's SBP were:

- (a) group costs, we have increased redundancy and severance by £25m as explained above in the section on redundancy and severance costs; and
- (b) other support costs, we have increased our estimate of Legal and Inquiry costs as we are now applying a lower efficiency assumption to these costs as described above in the section on Legal and Inquiry and other corporate functions.

5.78 Table 5.8 sets out the total support cost expenditure assumed in Network Rail's SBP, in our draft determination and in our final determination.

**Table 5.8: CP5 total support cost expenditure**

£m (2012-13 prices)	CP4	SBP	DD	FD	FD less SBP
Great Britain	2,740	2,232	2,093	2,119	(113)
England & Wales	2,466	2,022	1,884	1,908	(114)
Scotland	274	210	209	211	1

5.79 Tables 5.9, 5.10 and 5.11 set out our detailed CP5 expenditure assumptions for Great Britain, England & Wales and Scotland compared to the SBP and draft determination.

**Table 5.9: Our assessment of CP5 support costs (Great Britain)**

£m (2012-13 prices)	SBP	DD	FD	FD less SBP	FD less DD
Human Resources	273	271	271	(2)	-
Information Management	324	283	283	(41)	-
Government and Corporate Affairs	86	85	85	(1)	-
Group Strategy	53	53	53	(0)	-
Finance	129	128	128	(1)	-
Business Services	66	65	65	(1)	-
Accommodation	339	337	337	(2)	-
Utilities	186	201	201	14	-
Insurance	259	222	222	(37)	-
Legal and Inquiry	30	27	29	(1)	1
Safety and Sustainable Development	39	39	39	(0)	-
Strategic Sourcing	44	43	43	(0)	-
Business Change	16	16	16	(0)	-
Other corporate functions	16	16	16	(0)	-
<b>Core support costs (excluding group)</b>	<b>1,860</b>	<b>1,786</b>	<b>1,787</b>	<b>(73)</b>	<b>1</b>
Efficiency	12.3%	19.8%	19.7%	7.4%	(0.1%)
Asset Management Services	205	203	203	(2)	-
Network Rail Telecom	172	166	166	(5)	-
National Delivery Service	7	7	7	(0)	-

£m (2012-13 prices)	SBP	DD	FD	FD less SBP	FD less DD
Investment Projects	0	(0)	(0)	(0)	-
Commercial Property <sup>150</sup>	(19)	(20)	(20)	(0)	-
<b>Support costs (excluding group)</b>	<b>2,224</b>	<b>2,143</b>	<b>2,144</b>	<b>(80)</b>	<b>1</b>
Group costs	8	(50)	(25)	(33)	25
<b>Support costs (including group)</b>	<b>2,232</b>	<b>2,093</b>	<b>2,119</b>	<b>(113)</b>	<b>26</b>
Efficiency	24.2%	25.2%	24.9%	0.7%	(0.3%)

**Table 5.10: Our assessment of CP5 support costs (England & Wales)**

£m (2012-13 prices)	SBP	DD	FD	FD less SBP	FD less DD
Human Resources	245	245	246	0	0
Information Management	292	255	255	(36)	-
Government and Corporate Affairs	77	77	77	0	0
Group Strategy	48	48	48	(0)	-
Finance	116	116	116	0	0
Business Services	59	59	59	(0)	0
Accommodation	319	307	307	(12)	-
Utilities	168	180	180	13	-
Insurance	233	199	199	(34)	-
Legal and Inquiry	27	25	26	(1)	1
Safety and Sustainable Development	35	35	35	(0)	0
Strategic Sourcing	39	39	39	(0)	0
Business Change	14	14	14	0	0
Other corporate functions	14	14	14	(0)	0
<b>Core support costs (excluding group)</b>	<b>1,688</b>	<b>1,615</b>	<b>1,617</b>	<b>(71)</b>	<b>1</b>
Efficiency	12.4%	19.9%	19.7%	7.3%	(0.1%)
Asset Management Services	184	176	176	(9)	-
Network Rail Telecom	154	149	149	(5)	-
National Delivery Service	7	6	6	(0)	-
Investment Projects	(0)	(0)	(0)	(0)	-
Commercial Property <sup>151</sup>	(18)	(18)	(18)	1	-
<b>Support costs (excluding group)</b>	<b>2,015</b>	<b>1,929</b>	<b>1,931</b>	<b>(84)</b>	<b>2</b>
Group costs	7	(45)	(23)	(30)	23

<sup>150</sup> Network Rail's SBP separates out its commercial property costs from its support costs. However, for our analysis we include commercial property costs within our support cost analysis.

<sup>151</sup> Network Rail's SBP separates out its commercial property costs from its support costs. However, for our analysis we include commercial property costs within our support cost analysis.

£m (2012-13 prices)	SBP	DD	FD	FD less SBP	FD less DD
<b>Support costs (including group)</b>	<b>2,022</b>	<b>1,884</b>	<b>1,908</b>	<b>(114)</b>	<b>24</b>
Efficiency	24.3%	25.1%	24.8%	0.5%	(0.3%)

**Table 5.11: Our assessment of CP5 support costs (Scotland)**

£m (2012-13 prices)	SBP	DD	FD	FD less SBP	FD less DD
Human Resources	27	25	25	(2)	0
Information Management	32	28	28	(4)	-
Government and Corporate Affairs	9	8	8	(1)	0
Group Strategy	5	5	5	(0)	-
Finance	13	12	12	(1)	0
Business Services	7	6	6	(0)	0
Accommodation	20	30	30	9	-
Utilities	19	20	20	2	-
Insurance	26	23	23	(3)	-
Legal and Inquiry	3	3	3	(0)	0
Safety and Sustainable Development	4	4	4	(0)	0
Strategic Sourcing	4	4	4	(0)	0
Business Change	2	1	1	(0)	0
Other corporate functions	2	1	1	(0)	0
<b>Core support costs (excluding group)</b>	<b>172</b>	<b>170</b>	<b>170</b>	<b>(2)</b>	<b>0</b>
Efficiency	12.1%	19.8%	19.7%	7.6%	(0.1%)
Asset Management Services	20	28	28	7	-
Network Rail Telecom	17	17	17	(0)	-
National Delivery Service	1	1	1	0	-
Investment Projects	(0)	(0)	(0)	(0)	-
Commercial Property <sup>152</sup>	(1)	(2)	(2)	(1)	-
<b>Support costs (excluding group)</b>	<b>209</b>	<b>214</b>	<b>214</b>	<b>4</b>	<b>-</b>
Group costs	1	(5)	(2)	(3)	2
<b>Support costs (including group)</b>	<b>210</b>	<b>209</b>	<b>211</b>	<b>1</b>	<b>2</b>
Efficiency	23.9%	25.9%	25.5%	1.6%	(0.4%)

<sup>152</sup> Network Rail's SBP separates out its commercial property costs from its support costs. However, for our analysis we include commercial property costs within our support cost analysis.



# 6. Traction electricity, industry costs and rates

## Key messages in this chapter

- We have updated Network Rail's forecast of traction electricity costs for the latest forecast of electricity prices in CP5. This has reduced the forecast of traction electricity costs in Great Britain by £549m in CP5 compared to Network Rail's SBP.
- We have reviewed Network Rail's proposals and we have concluded that the amount that Network Rail pays for British Transport Police (BTP) costs could be lower. Our forecast of these costs for Great Britain in CP5 is £26m lower than Network Rail's SBP.
- Our final determination forecast of total expenditure on traction electricity, industry costs and rates in CP5 is £3,056m. This represents 8% of Network Rail's total expenditure.

## Main changes since our draft determination

- Our assessment of expenditure on traction electricity, industry costs and rates in CP5 has reduced by £58m since our draft determination. This is mainly due to the effect of revised forecast prices for traction electricity and a reduction in our business rates forecast.

## Introduction and background

- 6.1 This chapter summarises Network Rail's proposals and our assessment of Network Rail's CP5 expenditure on traction electricity, industry costs and rates.
- 6.2 This chapter is structured as follows:
- (a) introduction and approach to funding;
  - (b) Network Rail's proposals;
  - (c) summary of our draft determination;
  - (d) summary of the responses to our draft determination;
  - (e) our comments on the responses to our draft determination; and
  - (f) our decisions.

## Definition of traction electricity, industry costs and rates

- 6.3 Network Rail's influence over the costs covered in this chapter varies as described in the financial framework chapter (chapter 12). Therefore, as was the case in PR08,

each of these costs needs a bespoke treatment as discussed below. The costs include:

- (a) traction electricity;
- (b) business rates (i.e. cumulo rates);
- (c) British Transport Police (BTP) costs;
- (d) the Rail Safety and Standards Board (RSSB) levy;
- (e) ORR licence fee and the railway safety levy; and
- (f) other costs. This includes reporters' fees, Confidential Incident Reporting & Analysis System (CIRAS) fees and RDG contributions.

## Approach to funding

6.4 We have reviewed Network Rail's SBP submissions for industry costs and rates and considered the justification that it has provided us for its forecasts. As we set out in the financial framework chapter (chapter 12), our approach to these costs is as follows:

- (a) Network Rail's own use of traction electricity is controllable by Network Rail, so we have incentivised it to manage these costs efficiently;
- (b) we consider that Network Rail can sufficiently influence the transmission losses element of traction electricity costs and the costs of BTP, RSSB and reporters, so we have incentivised Network Rail to aid the efficient management of BTP and RSSB costs and manage reporters' costs efficiently;
- (c) for business rates, as long as Network Rail can satisfy us that it has negotiated them efficiently, we will log-up/down any variances in these costs between the assumptions in our determination and the actual costs. The variances will be included in the opex memorandum account and we will adjust Network Rail's allowed revenues in CP6; and
- (d) we do not think that the ORR licence fee, the railway safety levy and other industry costs (excluding reporters' costs), e.g. CIRAS fees are sufficiently controllable by Network Rail. Therefore, any variances in these costs between the assumptions in our determination and the actual cost will be logged-up/down in the opex memorandum account and we will adjust Network Rail's allowed revenues in CP6.

## Network Rail's proposals

6.5 With the exception of its own traction electricity costs, Network Rail does not consider that it can fully control these costs. As such, Network Rail's SBP did not include any efficiency assumptions for these costs. We have set out Network Rail's CP5 SBP

assumptions of CP5 traction electricity, industry costs and rates for Great Britain, England & Wales and Scotland in Tables 6.1, 6.2 and 6.3.

- 6.6 In its SBP, for CP5 Network Rail included an additional £77m of costs compared to Table 6.1 in traction electricity, industry costs and rates (the total was £3,701m). This reflected costs that Network Rail included in its SBP for the maintenance of assets transferred from the British Rail Residuary Board (£10m) and to reflect its estimate of the costs it could potentially incur from the asymmetry of the route-level efficiency benefit sharing (REBS) mechanism (£67m), i.e. although it may meet our efficiency assumptions in aggregate, underperformance in some routes and outperformance on others could lead to a net payment from Network Rail to train operators.
- 6.7 We have included no funding for these issues in our determination as we think the PR13 determination is deliverable by Network Rail and it would be inappropriate for us to assume ex-ante that Network Rail will underspend in some areas of the package and overspend in other areas. Also, we were informed that the effect of the transfer of British Rail Residuary Board assets should be cost neutral for Network Rail.
- 6.8 We have excluded these costs from Table 6.1 to make Network Rail's SBP comparable with our determination. However, in the executive summary and Network Rail's revenue requirements chapter (chapter 14), we have included these costs<sup>153</sup>.

**Table 6.1: Network Rail's SBP CP5 traction electricity, industry costs and rates (Great Britain)**

£m (2012-13 prices)	CP4		CP5				Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Traction electricity	238	247	480	495	532	589	1,240	2,343
Business rates	151	149	149	150	168	172	577	787
British Transport Police	71	71	71	71	71	71	382	355
RSSB	9	9	9	8	8	8	46	41
ORR licence fee and railway safety levy	17	16	15	15	14	14	87	74
Other industry costs	5	5	5	5	5	5	18	24
<b>Total</b>	<b>491</b>	<b>496</b>	<b>729</b>	<b>743</b>	<b>798</b>	<b>858</b>	<b>2,349</b>	<b>3,624</b>

<sup>153</sup> This is because, although we think it is inappropriate to include these costs in traction electricity, industry cost and rates, Network Rail has included them and that has increased Network Rail's view of the net revenue requirements, so to be comparable with Network Rail's net revenue requirements we need to include them.

**Table 6.2: Network Rail's SBP CP5 traction electricity, industry costs and rates (England & Wales)**

£m (2012-13 prices)	CP4		CP5				Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Traction electricity	224	232	447	461	498	553	1,163	2,192
Business rates	135	133	134	134	151	154	519	705
British Transport Police	66	64	64	64	64	64	349	320
RSSB	8	8	8	7	7	7	41	37
ORR licence fee and railway safety levy	15	14	14	13	13	12	78	67
Other industry costs	5	5	5	4	4	4	15	22
<b>Total</b>	<b>452</b>	<b>456</b>	<b>671</b>	<b>684</b>	<b>736</b>	<b>795</b>	<b>2,162</b>	<b>3,342</b>

**Table 6.3: Network Rail's SBP CP5 traction electricity, industry costs and rates (Scotland)**

£m (2012-13 prices)	CP4		CP5				Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Traction electricity	14	15	33	33	34	36	77	151
Business rates	16	16	16	16	18	18	58	82
British Transport Police	7	7	7	7	7	7	37	35
RSSB	1	1	1	1	1	1	5	4
ORR licence fee and railway safety levy	2	2	2	1	1	1	9	7
Other industry costs	1	1	0	0	0	0	2	2
<b>Total</b>	<b>40</b>	<b>40</b>	<b>58</b>	<b>59</b>	<b>62</b>	<b>63</b>	<b>187</b>	<b>282</b>

## Summary of our draft determination

6.9 Our draft determination included forecasts of traction electricity, industry costs and rates. The main issues were that we:

- (a) used an updated forecast of electricity prices in CP5 compared to Network Rail's SBP; and
- (b) applied efficiency assumptions to the amount Network Rail pays for BTP and RSSB costs.

## Summary of the responses to our draft determination

- 6.10 Only a small number of consultees commented on our draft determination.
- 6.11 Comments in relation to our approach to funding Network Rail in CP5 for traction electricity, industry costs and rates are covered in the financial framework chapter (chapter 12). Responses on our approach to the recovery of traction electricity costs are summarised in the access charges chapter (chapter 16).
- 6.12 Network Rail raised the following issues in relation to our draft determination assumptions:
- (a) our assumptions on the amount that Network Rail pays for BTP costs and RSSB costs were too low. Network Rail noted that these costs had been considered as part of a thorough review processes by the British Transport Police Authority (BTPA) and RSSB and that the benefits of the services provided by these bodies had already been reflected in its plan. Network Rail did not think that it was appropriate to include incremental efficiencies above those included in its SBP in our determination;
  - (b) in relation to the ORR fee and railway safety levy, that we should commit to stretching efficiency targets in our own costs over CP5;
  - (c) it did not expect the transfer of assets from British Railway Board (Residuary) Limited (BRBR) to be cost neutral and thought that funding should be provided for its on-going costs in relation to managing these assets; and
  - (d) it considered that funding should be provided for REBS asymmetry.
- 6.13 Other responses focused on our assumptions for the amount that Network Rail pays for BTP costs.
- 6.14 The BTPA did not agree with our draft determination assumptions for Network Rail's share of BTP costs. In its response, BTPA set out its responsibilities for determining BT Police's plans and budgets, i.e. the BTPA, and not us, determines how much Network Rail pays. It stated that its scrutiny ensures that the BTP budget is austere and is no more than is required to finance the policing plan that it has decided is necessary. BTPA provided its latest assumptions for BTP costs, showing a 3.5% increase in BTP costs (in real terms) between 2013-14 and 2016-17. BTPA also noted that Network Rail is not a member of BTPA but a Policing Service Agreement (PSA) holder and that the Network Rail director that is a BTPA member does not fulfil this role as a Network Rail representative. BTPA also noted that the cost of policing has fallen on a 'pence per passenger kilometre' basis.
- 6.15 Virgin Trains considered that we should satisfy ourselves that the assumed reduction on Network Rail's BTP costs should not risk the work done by BTP on suicide prevention, which it considered key to improved performance levels.

## Our comments on the responses to our draft determination

- 6.16 Our comments on BTP and RSSB issues are included in the ‘our decision’ part of this chapter. Our other comments are:
- (a) the ORR licence fee and railway safety levy are not set by our PR13 determination. We are just including an estimate of the fee in the calculation of Network Rail’s revenue requirement. We are committed to continuous improvement in the way that we use our resources to maximise the value of our regulation, while minimising our own costs;
  - (b) we had been informed that the transfer of BRBR assets was intended to be completed on a cost neutral basis. Network Rail has not adequately shown why there is a net increase in its costs that should be funded; and
  - (c) it is not appropriate that funding for this uncertain cost should be provided ex-ante but if there is a net payment for CP5, due to the asymmetry of the REBS mechanism, then we will fund that payment through the opex memorandum account.

## Our decisions

### Traction electricity

#### Background

- 6.17 Network Rail recovers the vast majority of its traction electricity costs from train operators who require electricity to run their electrified train services. Network Rail also supplies traction electricity to third parties such as London Underground.
- 6.18 Network Rail also uses traction electricity (approximately £10m per year) for railway operations. For example, for signalling and at the major stations that it operates, such as London Euston.
- 6.19 Our review of traction electricity costs has taken place alongside our work on traction electricity charges. In the access charges chapter (chapter 16), we set out how we have calculated our forecast of traction electricity costs and how Network Rail is incentivised to efficiently manage transmission losses and its own use of traction electricity.
- 6.20 We were content with the general approach that Network Rail has taken in calculating its forecast of traction electricity costs for CP5. However, Network Rail’s SBP calculations were underpinned by the Department of Energy and Climate Change (DECC) projections from 2011. In our draft determination, we used more recent DECC projections from September 2012. However, given the large amount of uncertainty over future electricity prices, we said that we would review our assumptions for our final determination.

## Our decision

- 6.21 For our determination, we have updated our analysis using the DECC latest (September 2013) forecast. Although this revised forecast is higher than the one we used for our draft determination, it is published in nominal prices and our determination is in 2012-13 prices. When we adjust for our forecast of inflation, which is higher than the forecast we used for the draft determination, the overall effect is a reduction in traction electricity costs of £26m.
- 6.22 Our assumptions for Network Rail's traction electricity costs in CP5 are set out in Table 6.4.

**Table 6.4: Our determination of traction electricity costs for CP5**

£m (2012-13 prices)	CP4			CP5			Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Great Britain	238	246	340	359	393	456	1,240	1,794
England & Wales	224	231	316	335	368	428	1,163	1,679
Scotland	14	15	23	24	25	28	77	115

- 6.23 Our overall assumptions for traction electricity costs in CP5 are £1,794m for Great Britain, £1,679m for England & Wales and £115m for Scotland. These are respectively lower than Network Rail's SBP forecast by £549m for Great Britain, £513m for England & Wales and £36m for Scotland<sup>154</sup>.

## Business rates (i.e. cumulo rates)

### Background

- 6.24 As a result of the previous rating revaluation in 2010, Network Rail's business rates are fixed in real terms for the first three years of CP5. The next rating revaluations for England, Wales and Scotland have been deferred by the governments and will now take effect in April 2017. Network Rail has provided an estimate of the potential effect of the next rating revaluation on the business rates that it will pay from 2017.
- 6.25 We said in our draft determination that we thought our business rates estimates for CP5 were probably too high and that, given the subjectivity and uncertainty involved in the assessment, we would review our assumptions for our final determination.

## Our decision

- 6.26 We have discussed this issue further with Network Rail since our draft determination and we have undertaken our own analysis. We consider that Network Rail's SBP was too high and so we have reduced our forecast of Network Rail's business rates in CP5 by £26m for Great Britain compared to our draft determination assumptions.

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<sup>154</sup> Network Rail's forecasts in its SBP were £2,343m for Great Britain, £2,192m for England & Wales and £151m for Scotland.



6.27 Our assumptions for Network Rail's business rates costs in CP5 are set out in Table 6.5.

**Table 6.5: Our determination of business rates for CP5**

£m (2012-13 prices)	CP4		CP5				Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Great Britain	151	149	149	149	168	175	577	789
England & Wales	135	133	133	133	151	157	519	707
Scotland	16	16	16	16	18	18	58	83

6.28 Overall our CP5 assumptions for business rates of £789m for Great Britain, £707m for England & Wales and £83m for Scotland are higher than Network Rail's SBP forecast by £2m for Great Britain, £2m for England & Wales and £1m for Scotland<sup>155</sup>. This difference is due to the effect of two issues:

- (a) in our draft determination, we corrected an error in Network Rail's SBP forecast which increased costs by £28m; and
- (b) in our final determination, we have taken a different view to Network Rail on the methodology supporting forecast business rates which reduced costs for Great Britain by £26m.

## British Transport Police costs

### Background

6.29 In support of our assessment of the amount that Network Rail pays for BTP costs, we have considered the following evidence:

- (a) the Winsor report on the pay and conditions of police officers and staff, which outlined 121 recommendations designed to facilitate an efficient, well-resourced and highly skilled police service with a modern system of remuneration;
- (b) the relevant sections of the RVfM study, which set out recommendations designed to deliver efficiency savings beyond those already planned by the BTPA. These included:
  - (i) the transfer of some of BTP's activities to other forces and the sharing of specialist functions and support activities;
  - (ii) extending efficiency opportunities, including a review of the staffing mix, merging HQ functions and revisions to rostering;
  - (iii) local alignment with train operators and infrastructure managers, and a revised service specification procedure; and

<sup>155</sup> Network Rail's forecasts in its SBP were £787m for Great Britain, £705m for England & Wales and £82m for Scotland.

(iv) major structural change, such as merging BTP with other forces in Great Britain in order to remove overhead costs; and

(c) discussions with Network Rail, BTPA and BTP which indicated that there was scope to make improvements in efficiency. However, these initiatives have not been quantified.

6.30 After consideration of this information and given that Network Rail provided insufficient justification of its SBP forecast of these costs, in our draft determination assessment we applied the top-down CEPA/Oxera average efficiency gain per annum<sup>156</sup> to our view of the pre-efficient amount that Network Rail pays for BTP costs, i.e. an average 3.7% efficiency gain per annum, which equates to a 17.2% cumulative efficiency gain over CP5.

### **Our decision**

6.31 We acknowledge the responses by Network Rail, BTPA and Virgin on BTP costs and have the following comments:

(a) we agree that it is for the BTPA to decide how much Network Rail should pay for the BTP. Therefore, Virgin's concern is not an issue for our determination;

(b) it is our responsibility to determine Network Rail's total efficient costs. This involves making assumptions on every type of cost that the company incurs and our assessment needs to be based on evidence;

(c) Network Rail is the largest funder of BTP and we think that it is capable of exercising industry leadership when commenting on BTPA's proposed budgets for BTP. Network Rail also chairs the Rail Delivery Group Policing and Security sub group, which also has representation from TOC MDs, the BTP Deputy Chief Constable and BTPA Chief Executive; and

(d) the Winsor report and the RVfM study identified a number of initiatives for reducing costs and Network Rail has not adequately explained why these initiatives are not appropriate.

6.32 It is very important that our determination is based on evidence and that Network Rail is incentivised to provide good quality evidence. Since our draft determination, Network Rail has not provided us with any further robust evidence of the efficiency of the amount that Network Rail pays for BTP costs and we have not changed our assessment.

6.33 Our assumptions for the amount that Network Rail pays for BTP costs in CP5 are set out in Table 6.6.

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<sup>156</sup> This is based on the average of two studies (CEPA 4.4% and OXERA 3.0).

**Table 6.6: Our assumptions for the amount that Network Rail pays for BTP costs in CP5**

£m (2012-13 prices)	CP4		CP5				Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Great Britain	71	71	68	66	63	61	382	329
England & Wales	66	64	61	59	57	55	349	296
Scotland	7	7	7	7	6	6	37	33

6.34 Overall our assumptions for the amount that Network Rail pays for BTP costs of £329m for Great Britain, £296m for England & Wales and £33m for Scotland are lower than Network Rail’s SBP forecast by £26m for Great Britain, £24m for England & Wales and £2m for Scotland<sup>157</sup>.

## Rail Safety and Standards Board (RSSB) levy

### Background

6.35 We have considered Network Rail’s SBP submission for the RSSB levy in CP5. Network Rail has provided insufficient evidence of its forecasts for this area of expenditure and so we have taken Network Rail’s forecast of the 2013-14 RSSB levy and applied the top-down CEPA/Oxera average efficiency gain to this forecast (average 3.7% per annum). Our approach gave the same costs over CP5 as Network Rail’s SBP assumption.

### Our assessment

- 6.36 It is important that our determination is based on evidence and that Network Rail is incentivised to provide good quality evidence. Since our draft determination Network Rail has not provided us with any further robust evidence of the efficiency of its share of RSSB costs and we have not changed our assessment.
- 6.37 Our assumptions for the amount Network Rail pays for RSSB costs in CP5 are set out in Table 6.7.

**Table 6.7: Our assumptions for the amount that Network Rail pays for RSSB costs in CP5**

£m (2012-13 prices)	CP4		CP5				Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Great Britain	9	9	8	8	8	8	46	41
England & Wales	8	8	8	7	7	7	41	37
Scotland	1	1	1	1	1	1	5	4

<sup>157</sup> Network Rail’s forecasts in its SBP were £355m for Great Britain, £320m for England & Wales and £35m for Scotland.

6.38 Overall, our assumptions for the amount that Network Rail pays for RSSB costs of £41m for Great Britain, £37m for England & Wales and £4m for Scotland are the same as Network Rail's SBP forecast.

## ORR licence fee and the railway safety levy

### Background

- 6.39 In our draft determination, we took the 2013-14 ORR licence fee and railway safety levy and converted these into 2012-13 prices to be consistent with our determination. The licence fee is paid only by Network Rail whereas railway service providers contribute to the safety levy, based on their level of turnover. For our draft determination assessment, we allocated a proportion of the safety levy to Network Rail using our 2012-13 allocation assumptions because the 2013-14 allocation was not yet known.
- 6.40 In our draft determination we assumed that Network Rail paid the same ORR licence fee and the same railway safety levy in each year of CP5 as we had forecast for 2013-14.

### Our assessment

- 6.41 We have reviewed our assumptions of the ORR licence fee and railway safety levy for our final determination. We have used our latest expenditure forecasts from 2013-14 to 2015-16 that have been agreed with HM Treasury and we have rolled forward these assumptions to the later years of CP5. Overall, we have assumed a 10% cost saving over CP5.
- 6.42 Our assessment of the forecast ORR licence fee and the railway safety levy that will be charged to Network Rail in CP5 are set out in Table 6.8.

**Table 6.8: Our assessment of the forecast ORR licence fee and the railway safety levy that will be charged to Network Rail in CP5**

£m (2012-13 prices)	CP4			CP5			Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Great Britain	17	17	16	16	16	15	87	80
England & Wales	15	15	14	14	14	14	78	72
Scotland	2	2	2	2	1	1	9	8

- 6.43 Overall, our assumptions for the ORR licence fee and the railway safety levy of £80m for Great Britain, £72m for England & Wales and £8m for Scotland are higher than Network Rail's SBP forecast by £6m for Great Britain, £5m for England & Wales and £1m for Scotland<sup>158</sup>.

<sup>158</sup> Network Rail's forecasts in its SBP were £74m for Great Britain, £67m for England & Wales and £7m for Scotland.

## Other costs

6.44 We used Network Rail's SBP forecasts for other industry costs, e.g. CIRAS and reporters' costs<sup>159</sup> in our draft determination. We have now reviewed our draft determination assumptions and consider that these assumptions are still appropriate for our final determination.

## Summary

6.45 Our assumptions on traction electricity, industry costs and rates are summarised in Tables 6.9, 6.10 and 6.11.

**Table 6.9: Our assessment of CP5 traction electricity, industry costs and rates (Great Britain)**

£m (2012-13 prices)	CP4			CP5			Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Traction electricity	238	246	340	359	393	456	1,240	1,794
Business rates	151	149	149	149	168	175	577	789
British Transport Police	71	71	68	66	63	61	382	329
RSSB	9	9	8	8	8	8	46	41
ORR licence fee and railway safety levy	17	17	16	16	16	15	87	80
Other industry costs	5	5	5	5	5	5	18	24
<b>Total</b>	<b>491</b>	<b>496</b>	<b>586</b>	<b>602</b>	<b>653</b>	<b>719</b>	<b>2,349</b>	<b>3,056</b>

6.46 Overall our assumption of Network Rail's CP5 traction electricity, industry costs and rates for Great Britain is £3,056m, which is 8% of Network Rail's total CP5 expenditure. This is £568m lower than Network Rail's forecast of £3,624m in its SBP and is largely due to a reduction in traction electricity costs of £549m, as we have used a more up to date forecast of electricity prices than Network Rail.

<sup>159</sup> Independent reporters are firms that provide independent expert advice and are used by us to review some aspects of Network Rail's performance, plans and activities, e.g. its financial reporting. They owe a duty of care to both ORR and Network Rail but Network Rail pays for their costs.

**Table 6.10: Our assessment of CP5 traction electricity, industry costs and rates (England & Wales)**

£m (2012-13 prices)	CP4		CP5				Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Traction electricity	224	231	316	335	368	428	1,163	1,679
Business rates	135	133	133	133	151	157	519	707
British Transport Police	66	64	61	59	57	55	349	296
RSSB	8	8	8	7	7	7	41	37
ORR licence fee and railway safety levy	15	15	14	14	14	14	78	72
Other industry costs	5	5	5	4	4	4	15	22
<b>Total</b>	<b>452</b>	<b>456</b>	<b>537</b>	<b>553</b>	<b>601</b>	<b>665</b>	<b>2,162</b>	<b>2,812</b>

6.47 Our assumption of Network Rail's CP5 traction electricity, industry costs and rates for England & Wales is £2,812m. This is £530m lower than Network Rail's forecast of £3,342m in its SBP and is largely due to a reduction in traction electricity costs of £513m as we have used a more up to date forecast of electricity prices than Network Rail.

**Table 6.11: Our assessment of CP5 traction electricity, industry costs and rates (Scotland)**

£m (2012-13 prices)	CP4		CP5				Total	
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CP4	CP5
Traction electricity	14	15	23	24	25	28	77	115
Business rates	16	16	16	16	18	18	58	83
British Transport Police	7	7	7	7	6	6	37	33
RSSB	1	1	1	1	1	1	5	4
ORR licence fee and railway safety levy	2	2	2	2	1	1	9	8
Other industry costs	1	1	0	0	0	0	2	2
<b>Total</b>	<b>40</b>	<b>40</b>	<b>48</b>	<b>49</b>	<b>52</b>	<b>55</b>	<b>187</b>	<b>245</b>

6.48 Our assumption of Network Rail's CP5 traction electricity, industry costs and rates for Scotland is £245m. This is £37m lower than Network Rail's forecast of £282m in its

SBP and is largely due to a reduction in traction electricity costs of £36m as we have used a more up to date forecast of electricity prices than Network Rail.

6.49 Tables 6.12, 6.13 and 6.14 set out the changes we have made in our final determination compared to our draft determination and Network Rail's SBP for Great Britain, England & Wales and Scotland.

**Table 6.12: Comparison of CP5 traction electricity, industry costs and rates (Great Britain)**

£m (2012-13 prices)	SBP	DD	FD	FD - SBP	FD - DD
Traction electricity	2,343	1,820	1,794	(549)	(26)
Business rates	787	815	789	2	(26)
British Transport Police	355	329	329	(26)	-
RSSB	41	41	41	(0)	-
ORR licence fee and railway safety levy	74	86	80	6	(6)
Other industry costs	24	24	24	0	-
<b>Total</b>	<b>3,624</b>	<b>3,114</b>	<b>3,056</b>	<b>(568)</b>	<b>(58)</b>

**Table 6.13: Comparison of CP5 traction electricity, industry costs and rates (England & Wales)**

£m (2012-13 prices)	SBP	DD	FD	FD - SBP	FD - DD
Traction electricity	2,192	1,702	1,679	(513)	(24)
Business rates	705	729	707	2	(23)
British Transport Police	320	296	296	(24)	-
RSSB	37	37	37	(0)	-
ORR licence fee and railway safety levy	67	78	72	5	(6)
Other industry costs	22	22	22	-	-
<b>Total</b>	<b>3,342</b>	<b>2,864</b>	<b>2,812</b>	<b>(530)</b>	<b>(53)</b>



**Table 6.14: Comparison of CP5 traction electricity, industry costs and rates (Scotland)**

<b>£m (2012-13 prices)</b>	<b>SBP</b>	<b>DD</b>	<b>FD</b>	<b>FD - SBP</b>	<b>FD - DD</b>
Traction electricity	151	117	115	(36)	(2)
Business rates	82	85	83	1	(3)
British Transport Police	35	33	33	(2)	-
RSSB	4	4	4	0	-
ORR licence fee and railway safety levy	7	8	8	1	(1)
Other industry costs	2	2	2	0	-
<b>Total</b>	<b>282</b>	<b>250</b>	<b>245</b>	<b>(37)</b>	<b>(5)</b>

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## 7. Operations expenditure

### Key messages in this chapter

- Operations costs are those incurred in 'operating' the infrastructure such as for signallers and control staff. Network Rail's main proposal in this area is to implement a new way to run its infrastructure, often referred to as the Network Operating Strategy (NOS), which changes signalling control so that more signals can be operated from a small number of operating centres.
- The operational benefits of this strategy have the potential to be wide ranging, including reduced safety risk and better management of disruption, with the latter meaning that passengers and freight users should have shorter delays and more accurate information when things go wrong. It should also result in lower costs as fewer posts will be needed.
- We have reviewed Network Rail's proposals against domestic and European benchmarks. We have also conducted our own assessment of whether the strategy can deliver the proposed benefits.
- Network Rail will compare favourably with international benchmarks once the strategy is implemented. The company is at an early stage but the timescales are underpinned by a sensible rationale and consistent with other infrastructure companies that have done something similar. However, the level of efficiency for activities outside signalling are below benchmarks with other UK regulated industries and we think this can be improved.
- We have assumed that approximately £2bn of expenditure is required for CP5 with a cumulative efficiency of 17% in England & Wales and 18% in Scotland, which is an increase from the SBP of four percentage points in England & Wales and three percentage points in Scotland, to bring it in line with domestic benchmarks. We think Network Rail can achieve this through, amongst other things, better management of inflation and better management of occupational health.
- The main issues raised in the consultation responses to the draft determinations were: the appropriateness of assuming top down efficiencies for non-signaller spend; the appropriateness of assuming efficiencies resulting from cross cutting issues; the pace for delivering cost reductions; and the safe implementation of the strategy. We considered these and concluded that they do not change our original decisions in the draft determination.

## Introduction

- 7.1 Network Rail has started to implement a long-term operating strategy that is introducing modern technology to operate the rail network more efficiently. It will centralise control so that more signals can be operated by fewer people and at fewer locations. This is expected to facilitate better decisions about managing the train service. For example, better technology and wider coverage of control should help staff to reduce the knock on effects caused by an incident and quickly get services back up and running. In addition to improved reliability the new technology should help Network Rail to plan capacity better meaning that more trains could be introduced. Passengers should also receive better and more timely information about their journey.
- 7.2 To make this happen, signals need to be controlled remotely which requires widespread deployment of advanced signalling technology across the network. This is planned to be done alongside other renewals, but in order to deliver the strategy an increase in the volume of signalling work of around 20%<sup>160</sup> is needed in CP5. Alongside this signalling work Network Rail plans to centralise staff into fewer operating centres (Figure 7.1) and introduce modern systems to manage train movements. A number of new centres will be built and a new system to manage traffic will be introduced. Eight of the proposed centres have already been built with the remainder due to be completed over the next two years. All of this combines to allow Network Rail to progressively change the way it operates the network over the next 15 years. It will be done in stages as signalling control is activated at the new centres and staff relocate to them.
- 7.3 The costs of this work are spread around Network Rail's business, for example updating signalling is part of the signalling renewals expenditure. Both the costs and benefits will influence other elements of the settlement, such as volumes of signalling renewals and levels of train service reliability. These are considered in the relevant chapters of this determination.
- 7.4 The main financial benefit will be lower operations expenditure as fewer posts will be required to manage the network. This chapter explains our examination of the operating strategy and presents our conclusions on assumed levels of efficient operations expenditure required for CP5.
- 7.5 Approximately 70%<sup>161</sup> of operations costs are affected by the operating strategy. We have assessed all operations costs but with a particular focus on those affected by the strategy.

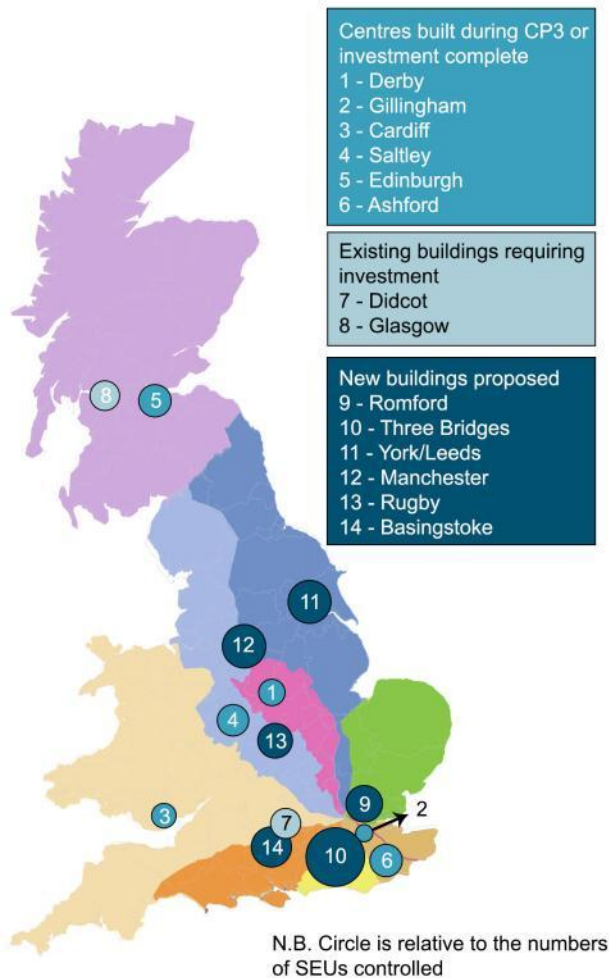
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<sup>160</sup> As set out in Network Rail's business case supplied in support of the SBP.

<sup>161</sup> From the costs supplied by Network Rail proposed signaller costs for CP5 are £1,365m from a total of £2,027m.

7.6 From our early consultations it is clear that the industry is broadly supportive of the strategy, although it is at an early stage and several parties have expressed caution. The RMT set out general opposition to various elements of the SBP, including the operations strategy. Network Rail is working with the main unions in developing the strategy and we explain in chapter 11 our conclusion that there is nothing in the determination that prevents Network Rail complying with Health and Safety law.

**Figure 7.1: New operating centres proposed in the SBP\***



\* SEUs are the signalling equivalent units which can be used as way of illustrating the span of control for each operating centre

## Description of operations costs

7.7 Operations costs include expenditure on activities that ‘operate’ the infrastructure to allow trains to run such as signalling, timetabling and managing disruption. Costs are broadly categorised as:

- (a) ‘signaller’, including signallers, level crossing keepers, controllers and electrical control room operators, which are affected by the operations strategy; and

- (b) 'non-signaller', including staff on the ground managing disruption, staff in the managed stations, teams attributing delays and those dealing with customer relations, which are directly affected by the operations strategy.

7.8 The SBP identified an additional category 'Central Network Operations', which include centralised functions such as timetable management and performance management. For our assessment we have considered these with the non-signaller costs and refer to them as such.

## Network Rail's proposals

7.9 The SBP set out Network Rail's operations expenditure for CP5. Some maintenance costs, such as maintenance at stations, were included because they are costs managed by the operations function. Because of the way we have assessed the level of efficient expenditure we have removed maintenance costs from our operations assessment and included them in our maintenance assessment.

**Table 7.1: Summary of Network Rail's SBP proposal for GB expenditure (with maintenance costs)**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	439	439	439	439	439	439	-	2,195
Annual efficiency	-	0.9%	2.1%	3.5%	2.9%	4.0%	-	12.8%
Post-efficient expenditure	439	435	426	411	399	383	2,239*	2,054

\* Taken from appendix 9 of the SBP databook which updates actual and forecast expenditure in CP4 and replaces the delivery plan update.

**Table 7.2: Summary of Network Rail's SBP proposal for GB expenditure (without maintenance costs)**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	433	433	433	433	433	433	-	2,165
Annual efficiency	-	0.7%	2.1%	3.6%	3.2%	4.1%	-	12.9%
Post-efficient expenditure	433	430	421	406	393	377	2,239*	2,027

\* Taken from appendix 9 of the SBP databook which updates actual and forecast expenditure in CP4 and replaces the delivery plan update.

## Signaller costs

- 7.10 Reductions in signaller costs will happen when existing signalling control is transferred to the new centres as part of the operating strategy. While Network Rail has started to implement some of the elements needed, there remain a number of key dependencies affecting the rate of change. These include the ability of Network Rail and its supply chain to complete the required signalling renewals and the company's approach to redeployment and redundancy in consultation with the trade unions. Network Rail has devised a programme for staffing the operating centres that it considers is the most efficient approach, taking into account the constraints. This programme drives the rate of cost reductions and consequently the levels of efficiency it can achieve in CP5.
- 7.11 The strategy will be delivered by many different parts of Network Rail and is coordinated centrally. The specific reductions in signaller costs will be delivered by each of the routes and were set out in the route plans.

## Non-signaller costs

- 7.12 Costs for the non-signaller activities in the routes remain broadly static in CP5 but there is a small efficiency saving on costs related to Network Operations HQ activities. This will mainly be the result of an initiative to improve the way Network Rail plans access and possessions.

## Benchmarking

- 7.13 In developing its plans Network Rail carried out some work to benchmark the operational cost of running the railway infrastructure in Great Britain against other European railway operators. We reviewed<sup>162</sup> this work and found that the task was approached thoroughly but there were a number of areas that could be strengthened, particularly around including non-signaller costs in the benchmarking, as well as considering internal comparisons of its own routes. Network Rail responded positively to these recommendations and revised its work accordingly. The revised findings were inconclusive but indicated that Network Rail is not currently at the frontier in terms of operations expenditure but implementing the operations strategy would take it closer.

## Progressive assurance

- 7.14 We put in place a number of assurance meetings in the period running up to the SBP and Network Rail worked openly and constructively. As a result the information provided in support of the SBP was in the format and to the level of detail that we required for our assessment.

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<sup>162</sup> Network Rail bottom up benchmarking review: benchmarking of operations costs: final report – executive summary, March 2012, available at: <http://www.rail-reg.gov.uk/pr13/PDF/arup-operations-costs-benchmarking-020312.pdf>.

## Our assessment

- 7.15 Network Rail's plans set out a new way to run its infrastructure. We reviewed this to determine efficient levels of expenditure required for CP5. We tested different aspects of its proposals and commissioned our own work from which to draw conclusions. We removed the maintenance costs for the purposes of our assessment to avoid double counting with our review of maintenance expenditure explained in chapter 8.

### Review of the operations strategy economic case

- 7.16 In our advice to the Secretary of State and Scottish Ministers we reviewed the initial business case and concluded that the rationale was sound. We told Network Rail to update the business case for the SBP submission and reformat it to take into account the strategic, financial, commercial and management cases as well as the economic case. Whilst the business case is GB wide the elements within it are disaggregated for Scotland and England & Wales. We checked the way that the economic appraisal had been calculated against standard industry practices (webTAG in England & Wales and STAG in Scotland) and concluded that the revised case still provides good value for money in both Scotland and England & Wales, with both having a benefit cost ratio of 3:1.

### Review of the operations strategy management case

- 7.17 Using our Rail Management Maturity Model (RM3)<sup>163</sup> we evaluated the capability of Network Rail to deliver the operating strategy and associated reduction in headcount. An ORR team of experts was used who had experience of applying this model to the safety management of a number of rail industry organisations. A five point scale was applied to a number of categories based on the team's judgement of the evidence collected. Further detail on the evaluation criteria can be found on our website<sup>164</sup>.
- 7.18 We found areas where we considered there was the potential to deliver excellence (level 5), in particular, governance, monitoring and review. Other areas were considered to be predictable (level 4) or standardised (level 3) with none at levels 1 or 2. These are summarised in Figure 7.2. We concluded that if performance in the excellent areas is maintained and improvements made in the other areas then the systems are capable of allowing successful delivery of the operating strategy programme. We also concluded that the way the programme has been planned and the systems developed offers Network Rail examples of excellence which should be shared through the organisation.

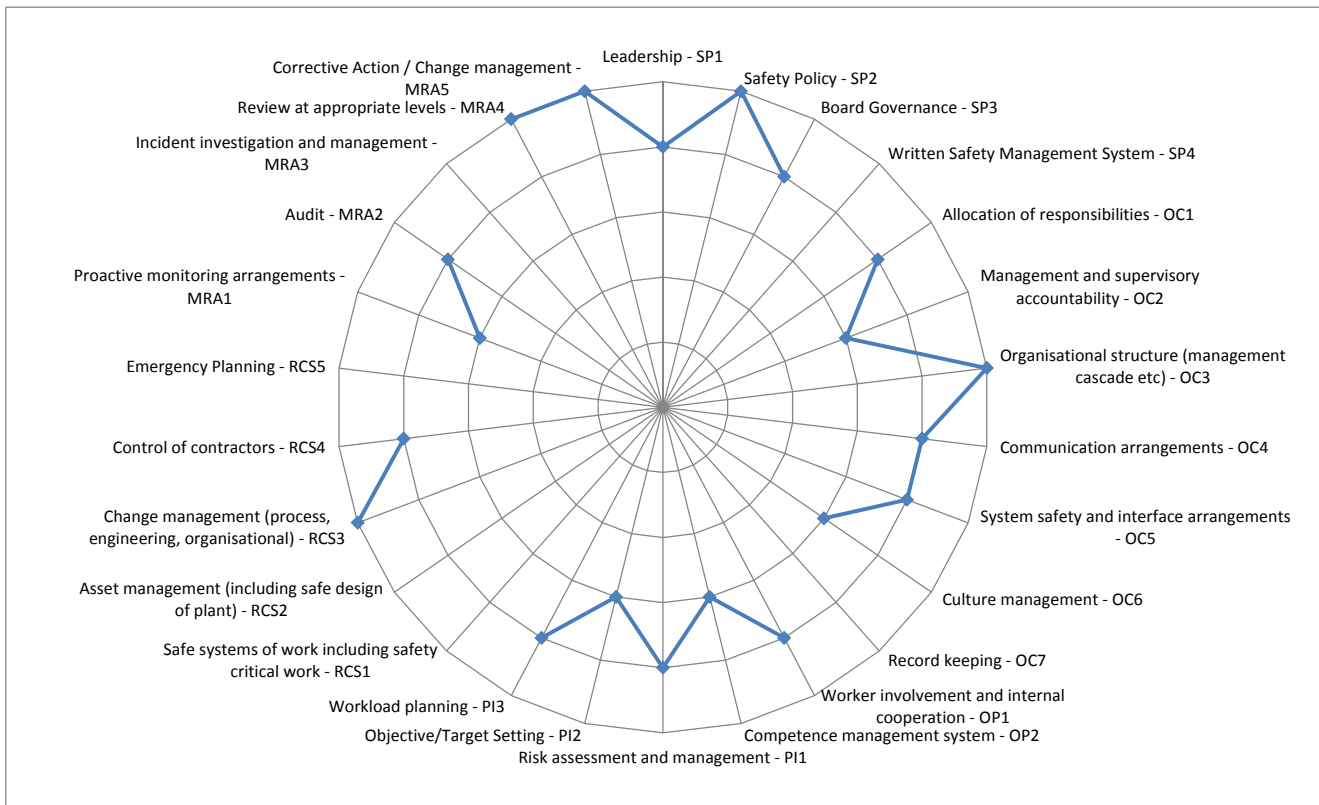
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<sup>163</sup> <http://www.rail-reg.gov.uk/pr13/PDF/nr-rm3-evaluation-sep2012.pdf>.

<sup>164</sup> <http://www.rail-reg.gov.uk/upload/pdf/management-maturity-model.pdf>.



**Figure 7.2: Summary of our RM3 assessment (the outside of the wheel is level 5 excellent)**



## Review of CP4 signalling volumes

7.19 The main constraint in delivering the strategy is the rate at which the volume of signalling renewals can be done with Network Rail’s own resources and those of its supply chain. It has devised a programme that accelerates signal renewals to align them with plans to migrate staff to the new control centres. Network Rail is broadly on course to deliver its CP4 volumes, although there is a peak of work required this year. For CP5 the total amount of work will almost double and, in CP4, testers<sup>165</sup> have been a scarce resource. Wherever possible, Network Rail has smoothed the profile and identified the times when it expects testers to be in short supply. Further explanation of our analysis of signalling volumes is set out in the renewals section of chapter 8.

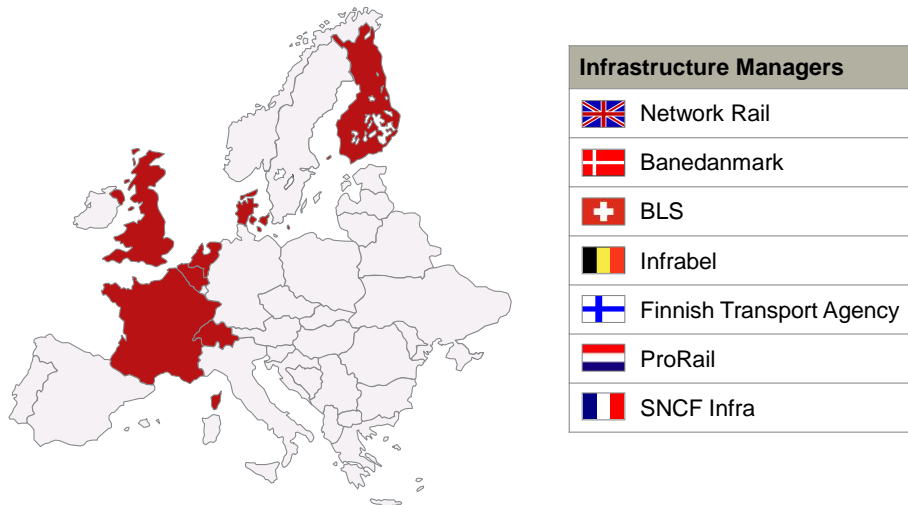
## International benchmarks

7.20 Network Rail’s own work on benchmarking was inconclusive, although we acknowledge the difficulties around benchmarking operations costs. We commissioned the management consultants Civity to benchmark Network Rail’s operations (and support) costs against other European railway infrastructure managers to see how they compare. This work was designed to build upon Network

<sup>165</sup> These are staff required to check that new or renewed signals function as designed and in a safe way.

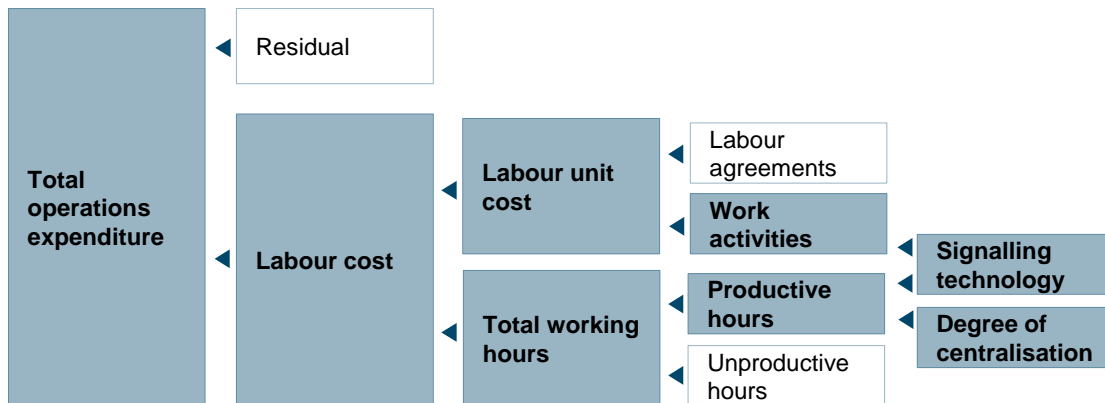
Rail's own work and other analysis done for the RVfM study. It looked at total operations costs, i.e. both signaller and non-signaller.

**Figure 7.3: European comparisons used in the Civity review**



7.21 Six peers agreed to take part in the study and provided comparable data, shown in Figure 7.3. From this data Civity concluded that most programmes that are similar to Network Rail's operating strategy take 15-20 years to implement. The analysis also showed that on completion of the operating strategy Network Rail would be at a leading position compared to this peer group in terms of cost efficiency. Figure 7.4 shows the areas that Civity analysed to inform its conclusions.

**Figure 7.4: Scope of the Civity review**



### Comparisons with UK regulated industries on catch up and frontier shift

7.22 In March 2012, we published a report<sup>166</sup> by CEPA on the assessment of the scope for efficiency improvements based on comparisons with other UK regulated industries. This concluded that an appropriate annual target for CP5 would be 4.4% per annum for both support and operations costs. Network Rail completed its own review of this

<sup>166</sup> <http://www.rail-reg.gov.uk/pr13/PDF/cepa-orr-om-productivity-over-cp5.pdf>

study using OXERA and included the findings alongside its SBP submission, which was a central estimate of 3% per annum. As we set out in chapter 6 (support expenditure), we have decided to use the average of these two studies as our top-down efficiency assumption.

**Table 7.3: Comparison of cumulative efficiency**

GB (2012-13 prices)	End CP4 (2013-14)	End CP5 (2018-19)	Cumulative Efficiency
<b>Mid-point between CEPA and OXERA analysis</b>			<b>17%</b>
Signaller costs in SBP	£298m	£246m	17%
Non signaller costs in SBP	£135m	£131m	3%

### Consultation responses to the draft determination

- 7.23 Network Rail’s response focused on the top down efficiency assumptions we had made to non-signaller expenditure and those we had made for cross cutting issues. It suggested that these savings were unrealistic and inappropriate.
- 7.24 The trade union TSSA confirmed that it had been fully engaged by Network Rail in developing the strategy but it had concerns about safe implementation. This was similar to a point raised by the RMT in its earlier response to the SBP, which we considered before publishing the draft determination.
- 7.25 The other main response included a suggestion that cost savings could be accelerated by using different traffic management technology to that currently being developed by Network Rail.

### Our conclusions

- 7.26 We reviewed the consultation responses and found that the points raised did not affect our original conclusions in the draft determination.
- 7.27 Table 7.4 summarises our decisions on the assumed level of efficient operations expenditure for Great Britain. We have assumed that approximately £2bn of expenditure is required for CP5 with a cumulative efficiency of 17% in England & Wales and 18% in Scotland, which is an increase from the SBP of four percentage points in England & Wales and three percentage points in Scotland.

**Table 7.4: Summary of our assumptions for operations expenditure (CP5 total) – Great Britain**

<b>£m (2012-13 prices)</b>	<b>SBP</b>	<b>FD</b>	<b>FD-SBP</b>
Signaller expenditure	1,366	1,366	0
Non signaller expenditure	661	606	(55)
Overlay for cross cutting issues	-	(4)	(4)
<b>Total</b>	<b>2,027</b>	<b>1,968</b>	<b>(59)</b>

***Signaller expenditure***

- 7.28 Network Rail is at the start of its programme to change the way it operates the network. We reviewed the business case and concluded that it represents value for money.
- 7.29 We agreed with the international benchmarking analysis showing that, compared to a group of European peers, Network Rail will be at a leading position once the strategy is completed in terms of costs and staff productivity.
- 7.30 We looked at whether Network Rail had the right approach to deliver the strategy. Using our own management maturity model we concluded that the current management arrangements should lead to successful delivery. However, the programme is at an early stage and there are risks from introducing new technology that need to be managed. We will monitor progress and Network Rail should report on progress in its Annual Return.
- 7.31 We considered whether there was scope to accelerate the programme and therefore bring about more cost savings earlier. In comparing Network Rail to its European peers we found that the expected time span to deliver the strategy is in line with other countries that have embarked on something similar. We also looked at the high level programme where the main constraint is Network Rail’s ability to deliver signalling renewals and re-control rather than, as suggested in the consultation responses, the type of traffic management technology. We have concluded that, at this stage, these cannot be accelerated any further. However, as the overall strategy will continue into CP6 and CP7 we will revisit this in the next periodic review when the programme will have matured and Network Rail has learnt from its experiences.

***Non signaller expenditure***

- 7.32 Compared to other regulated industries within the UK we have concluded that the level of efficiency for non-signaller expenditure can be improved from the SBP. In the draft determination we proposed the application of our top-down efficiency assumption to these costs. Network Rail disagreed with this approach on the grounds that it was inappropriate to apply an average to one specific area of expenditure. This issue is discussed in chapter 4.

## Cross cutting issues

7.33 In addition we also consider that Network Rail can make savings from cross cutting issues explained in chapter 4, i.e. better management of inflation and better management of occupational health.

## Comparisons with RVfM

7.34 The RVfM study examined the operating strategy and concluded that it was an opportunity to improve VfM. It did not make any additional recommendations in this area and did not include any further cost reductions in its calculations over and above those delivered by the strategy.

## Great Britain

**Table 7.5: Summary of our assumptions for operations expenditure – Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	433	433	433	433	433	433	-	2,165
Annual efficiency	-	2%	3%	4%	4%	5%	-	17%
Post-efficient expenditure	433	425	412	395	378	358	2,239	1,968

## England & Wales

**Table 7.6: Summary of our assumptions for operations expenditure – England & Wales**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	393	393	393	393	393	393	-	1,965
Annual efficiency	-	2%	3%	4%	4%	6%	-	17%
Post-efficient expenditure	393	385	374	358	344	325	2,034	1,787

## Scotland

**Table 7.7: Summary of our assumptions for operations expenditure – Scotland**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	40	40	40	40	40	40	-	200
Annual efficiency	-	1%	4%	4%	7%	4%	-	18%
Post-efficient expenditure	40	39	38	37	34	33	205	181

## Great Britain

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	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
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Post-efficient expenditure	393	385	374	358	344	325	2,034	1,787

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	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	40	40	40	40	40	40	-	200
Annual efficiency	-	1%	4%	4%	7%	4%	-	18%
Post-efficient expenditure	40	39	38	37	34	33	205	181

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## 8. Asset management: maintenance and renewals expenditure

### Key messages in this chapter

- This chapter covers our assessment of Network Rail's plans for managing its assets, for example its plans for maintaining and renewing track.
- How Network Rail manages its assets is closely linked to the performance and safety of the railways, and will have a major impact on what outputs it can deliver and at what cost, not only in the next five years but over the longer-term. Network Rail must maintain and renew the rail network in a timely, efficient and economical manner to the greatest extent reasonably practicable, as set out in its Network Licence.
- The costs associated with maintaining and renewing assets make up approximately 45% of Network Rail's total expenditure requirements in CP5.
- We, supported by the independent reporters, have carried out a comprehensive review of Network Rail's plan including the quality of its inputs (for example, asset base and cost information), its asset management approach (for example, its asset policies), its planned efficiency and its planned volumes, costs and outputs. We have also conducted our own international efficiency and benchmarking studies, looking at working practice and cost comparisons.
- Network Rail's maintenance and renewal plans are an improvement over those produced for PR08. The asset policies set a clearer direction in terms of what work needs doing, why and where.
- Plans have been submitted for each of Network Rail's ten operating routes. They have been produced by a process of challenge between the centre and routes which has resulted in better plans than would otherwise have been available.
- But there are areas of weakness which cut across the whole approach. For example: asset information management requires improvement; asset policies have not considered trade-offs between asset types; whole life costing analysis, which is crucially important in developing asset policies, needs strengthening by improving its inputs such as unit costs and understanding of degradation; Network Rail has more to do to understand how its asset management links to the delivery of high level outputs such as performance; and policies are weaker in defining the maintenance interventions and intervals required.



## Key messages in this chapter (continued)

- Because Network Rail's knowledge of its civils assets and some aspects of its electrification and drainage assets is poor, there is higher uncertainty in parts of its plans.
- Our final determination reflects our consideration of responses to the draft determination and our review of further evidence supplied by Network Rail. We summarise respondents' views and any resulting updates to our determination at the start of the chapter. Our review of the further evidence supplied by Network Rail has resulted in increases to our assessed efficient expenditure, including for track, signalling, and information management (IM) renewals, totalling £127m.

### Maintenance

- Maintenance work is crucial to safety and performance on the network. Plans should be built on a strong understanding of what work needs to be done (for example, the miles of track to be inspected). This can then be priced using current understanding of the costs of carrying out work and the future reductions in cost because of improved efficiency.
- But Network Rail has built its plans by projecting forwards its current resource requirements, with adjustments for the changing network and improved efficiency. It has not clearly demonstrated that its plans are linked to the work required. This means that the line of sight to its policies and the outputs that the company needs to deliver is weak.
- Our analysis finds that, over CP5, maintenance efficiencies of 10.1% are achievable, compared with 9.7% assumed by Network Rail. The higher efficiency is driven by better management of resources. However, we have changed the profile of the efficiency to reflect our concerns over delivery in CP4 when Network Rail reduced staffing levels before fully embedding more efficient ways of working. We have assumed lower efficiencies early in CP5; in the first year we have assumed 3.7% efficiency whereas Network Rail assumed 5.3%. Our efficiency profile assumes higher efficiency of 16.4% at the end of the control period, compared with 13.8% assumed by Network Rail. We have not assumed savings beyond this, partly because of our concern about how rapidly Network Rail can introduce changes without potentially compromising safety or performance.
- Overall we assess that Network Rail needs to spend £5.2bn on maintenance during CP5, £116m less than proposed in the SBP.

## Key messages in this chapter (continued)

- This means that Network Rail will have to move to a more predictive and preventative maintenance regime (rather than reacting to failures). A good example of this approach was seen when Network Rail carried out a detailed review of its overhead line assets in the Stratford area prior to the Olympics, identified defects and put in place a preventative work programme that resulted in improved performance both during the Olympics and beyond. Network Rail will also have to realise efficiencies from changes to its practices, such as carrying out more automated inspections, making sure the right work is done at the right location at the first visit and making sure that working arrangements allow the most productive use of time.
- Our assessed efficient expenditure requirement for maintenance is unchanged from our draft determination, except where we have improved information on reactive maintenance costs. This results in an accounting movement of £522m from renewals to maintenance, which is £14m higher than we assumed in the draft determination.

### Renewals

- Network Rail's renewal plans have, in general, a strong linkage to asset policies. They are built on a combination of workbanks in the shorter-term and modelled volumes in the longer-term.
- Some key national programmes of work have been proposed to deliver long-term improvements and efficiencies, and we support these. They include the Network Operation Strategy (NOS) to centralise signalling and electrical control, a programme to update the signalling system (by moving to the European Train Control System (ETCS)), and programmes aimed at improving asset management capability through improved asset information management (ORBIS), improved buildings and civils management (BCAM), and wider adoption of best practice asset management.
- Network Rail has conducted benchmarking to support its efficiency plans. This included a programme of international benchmarking of engineering practice which is far more extensive than it has ever previously carried out.
- But there are weaknesses in Network Rail's proposals. Its calculation of its current unit costs contains some errors and makes allowances for risk and contingency which are likely to be overestimated or duplicated. For buildings the proposed level of expenditure before efficiencies is not justified. For civils there are wide-ranging issues that need to be addressed to produce a robust plan.

## Key messages in this chapter (continued)

- Network Rail's management of its civil engineering assets (such as bridges and tunnels) has been a long-running issue. In 2010 concerns about its approach led to us and Network Rail commissioning Arup to carry out a fundamental review. Arup found widespread issues and made recommendations, for example, to improve asset policies, asset information, assessment of risk and resources. Network Rail has started to make significant improvements and this is reflected in its proposed CP5 policies. However, there remains a lot more to be done. It has not presented a complete or consistent set of plans, some parts of the plans were submitted late and they contained many errors.
- Network Rail proposed expenditure of £2.6bn on civils renewals during CP5, whereas we have assessed expenditure required to be £2.4bn. However, there is high uncertainty around the civils plans and we agree with Network Rail that civils should be dealt with differently. Recognising that the volume of work needs to increase we will provide increased funding (compared to CP4) for the first two years of CP5 where plans are more robust. For years three, four and five of the period we have assumed an increased level of expenditure but actual funding will be assessed by a 'civils adjustment mechanism' which requires Network Rail to submit further plans in the first year of CP5. This will allow us to review the work that is planned, to assess the efficiency of that work and to adjust accordingly.
- Across all asset categories our analysis finds that, over CP5, renewals efficiencies of 14.4% are achievable, compared with 12.6% assumed by Network Rail. Our analysis finds that efficiencies of 20.0% are achievable by the final year of CP5, whereas Network Rail has proposed equivalent efficiencies of 15.8%. We have assumed greater opportunities from improved management of possessions, improved management of the supply chain, improved asset management systems, better targeting of work and adoption of innovative renewals practices.
- In our draft determination we assessed efficient renewals expenditure to be £1.6bn lower than proposed in the SBP, due to adjustments to pre-efficient expenditure (for example, for buildings and information technology renewals), higher efficiency assumptions for most asset types (for example, track and civils) and different treatment of proposed investment expenditure (for example, funding for R&D).

## Key messages in this chapter (continued)

- Since the draft determination Network Rail has presented new evidence which we have reviewed and, where it was compelling, we have updated our assessment. This has resulted in an increase in funding (relative to the draft determination) for track, signalling, ORBIS and information technology renewals. We have also reviewed our approach to assessment of wheeled plant renewals, resulting in reduced funding for that category. In total the outlined changes increase our assessed expenditure by £127m. We have also made an accounting change which moves expenditure associated with fitting signalling equipment in trains from renewals to enhancements (a reduction of £194m compared to our draft determination).
- Our final determination assesses that Network Rail needs to spend £12.1bn on renewals during CP5. This is £1.5bn less than proposed in the SBP.

## Introduction

- 8.1 It is very important that Network Rail is capable of managing its assets effectively, including planning and delivering appropriate maintenance and renewal works. Effective asset management helps to deliver a safe, efficient railway which delivers the outcomes that stakeholders want, both now and in the future.
- 8.2 Our PR13 work has reviewed many aspects of Network Rail's asset management in great detail. We have assessed its development of asset management plans, from the definition of high level strategy, through development of asset policies to the planning of maintenance and renewal work in the routes. We have assessed the inputs to its plans: the asset information and understanding of costs that underpins them. We have also taken account of the company's delivery of work during CP4.
- 8.3 This chapter starts by giving a summary of Network Rail's CP5 plans for maintaining and renewing its assets safely, including:
- (a) an overview of its asset management plans, including its planned asset management capability improvements, key asset management programmes of work and new asset policies;
  - (b) an overview of its process for the development of planned volumes and expenditure; and
  - (c) a summary of its projected volumes and costs to maintain and renew the network, and forecasts of measures to demonstrate what the work delivers.
- 8.4 The chapter then presents our assessment of Network Rail's plans, including:
- (a) our approach to the assessment of efficient maintenance and renewal expenditure;

- (b) our assessment of each of the building blocks of Network Rail's maintenance and renewals plans;
- (c) our assessment by main asset category and by route; and
- (d) our conclusions on the efficient volumes of maintenance and renewal work and associated efficient expenditure required in CP5.

8.5 Our work in this area is supported by extensive independent reporter work.<sup>167</sup> The associated reports are published on our website. We have considered the reporters' findings in developing our view of maintenance and renewal efficient expenditure requirements for CP5.

## Our presentation of expenditure and efficiency in this chapter

### Expenditure

- 8.6 We present all CP4 expenditure on the basis of regulatory accounting in CP4 and therefore on the same basis as Network Rail presented its planned CP4 expenditure in its SBP. We exclude from CP4 expenditure the £250m associated with accelerating civil engineering works from CP5, which formed part of the additional investment measures announced by the UK Government in its Autumn 2011 budget statement.
- 8.7 We present all CP5 expenditure on a slightly different basis to CP4. In CP5, works which have previously been treated as renewals expenditure, but which are associated with small scale works on buildings and civil engineering structures, are treated as maintenance costs to align with Network Rail's statutory accounts. These works are termed 'reactive maintenance'. In its SBP Network Rail moved some of these costs from renewals to maintenance (approximately £250m over the control period associated with the Civil Engineering Framework Agreement (CEFA) contract, discussed later in this chapter). We have made a further adjustment to include all reactive maintenance costs as maintenance expenditure. In our draft determination we assumed that reactive maintenance costs were 4% of total renewals costs and applied the adjustment as a high-level overlay. In its response to the draft determination Network Rail set out its assumed level of reactive maintenance included in its plans. We have reviewed the assumptions made and consider them to be appropriate. Our final determination is therefore based on an improved understanding of likely reactive maintenance requirements in CP5 resulting in a post-efficient movement of £522m from renewal to maintenance (whereas the draft determination assumed a post-efficient movement of £507m). To provide a valid comparison we have applied the accounting adjustment based on Network Rail's

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<sup>167</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>

reactive maintenance assumptions to both Network Rail's figures and our own from CP5 onwards.

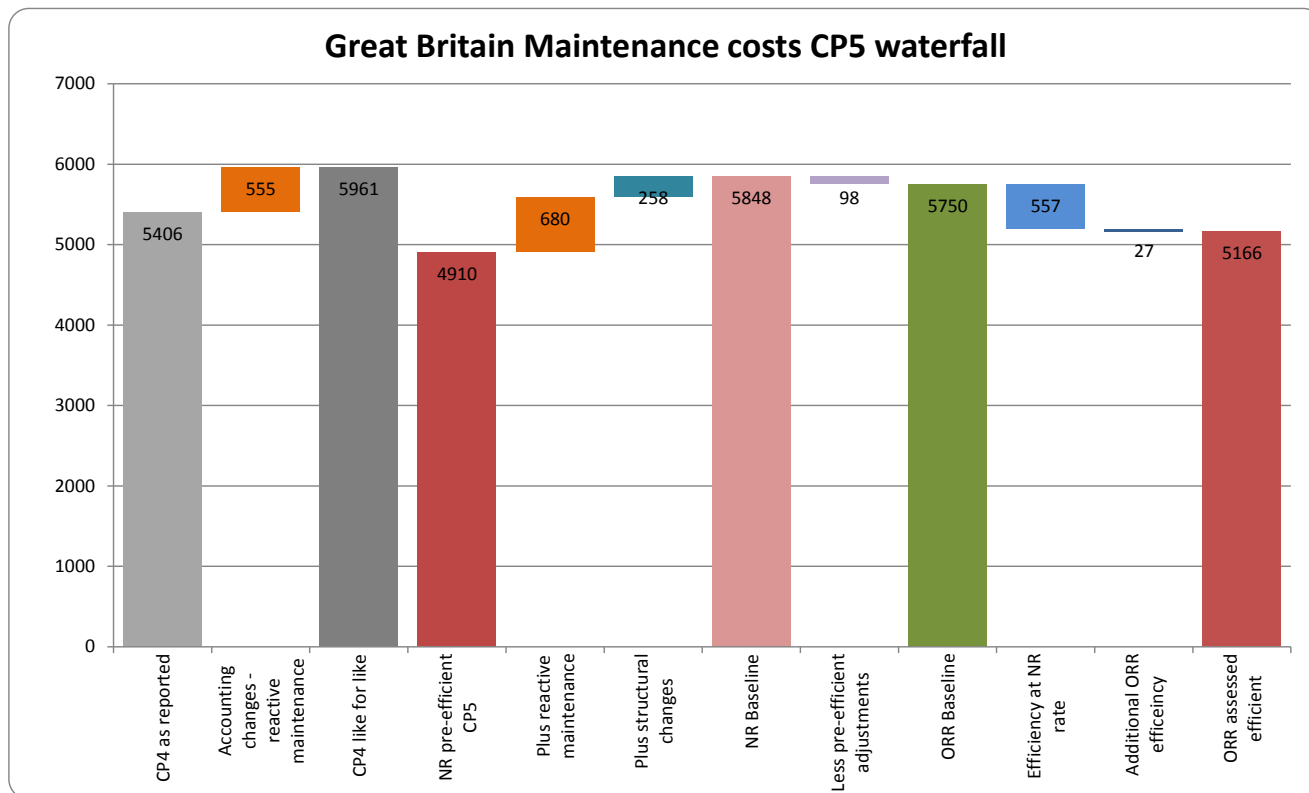
- 8.8 In our draft determination we presented costs associated with fitting ETCS equipment on trains as renewal expenditure but proposed that we would change this approach for the final determination. In our final determination we have treated these costs as enhancement and have removed them from both Network Rail's signalling renewals figures and our own.

## Efficiency

### Maintenance

- 8.9 In its SBP Network Rail presented its maintenance efficiency plans using the final year of CP4 as a baseline. We are also using the final year of CP4 as a baseline but we have made adjustments so that it represents the position before efficiencies more accurately. We have:
- (a) added reactive maintenance costs as discussed above;
  - (b) increased the baseline on a yearly basis for 'structural factors'. These increases are to take account of the increased traffic and enhancement projects which will drive the need for more maintenance works and to exclude 'special projects' from the baseline which are not representative of on-going expenditure requirements; and
  - (c) reduced the reactive maintenance part of the baseline for issues identified in how these costs have been forecast.
- 8.10 These adjustments create the 'ORR baseline' against which we have calculated our assessed efficiencies.

**Figure 8.1: Our presentation of maintenance efficiencies in CP5\***



\*Note: This chart is a simplified representation based on a number of high-level assumptions and will not fully reconcile to all relevant tables.

8.11 Where numbers in Figure 8.1 are different to those in our draft determination, this is due to improved information on reactive maintenance costs, resulting in a more accurate accounting movement from renewals to maintenance. Network Rail’s response to our draft determination forecast £680m of pre-efficient reactive maintenance expenditure during CP5, whereas our draft determination assumed the figure was £641m.

## Renewals

8.12 In its SBP Network Rail presented its renewals efficiencies against a pre-efficient baseline representing the volumes of work required by its new CP5 asset policies (discussed later in this chapter) and its assumed costs at the end of CP4. The new policies are intended to deliver sustainable outputs more efficiently, and therefore there are efficiencies embedded in its SBP pre-efficient expenditure. It presented its renewals efficiencies for certain key asset types. We have adjusted Network Rail’s SBP pre-efficient baseline by:

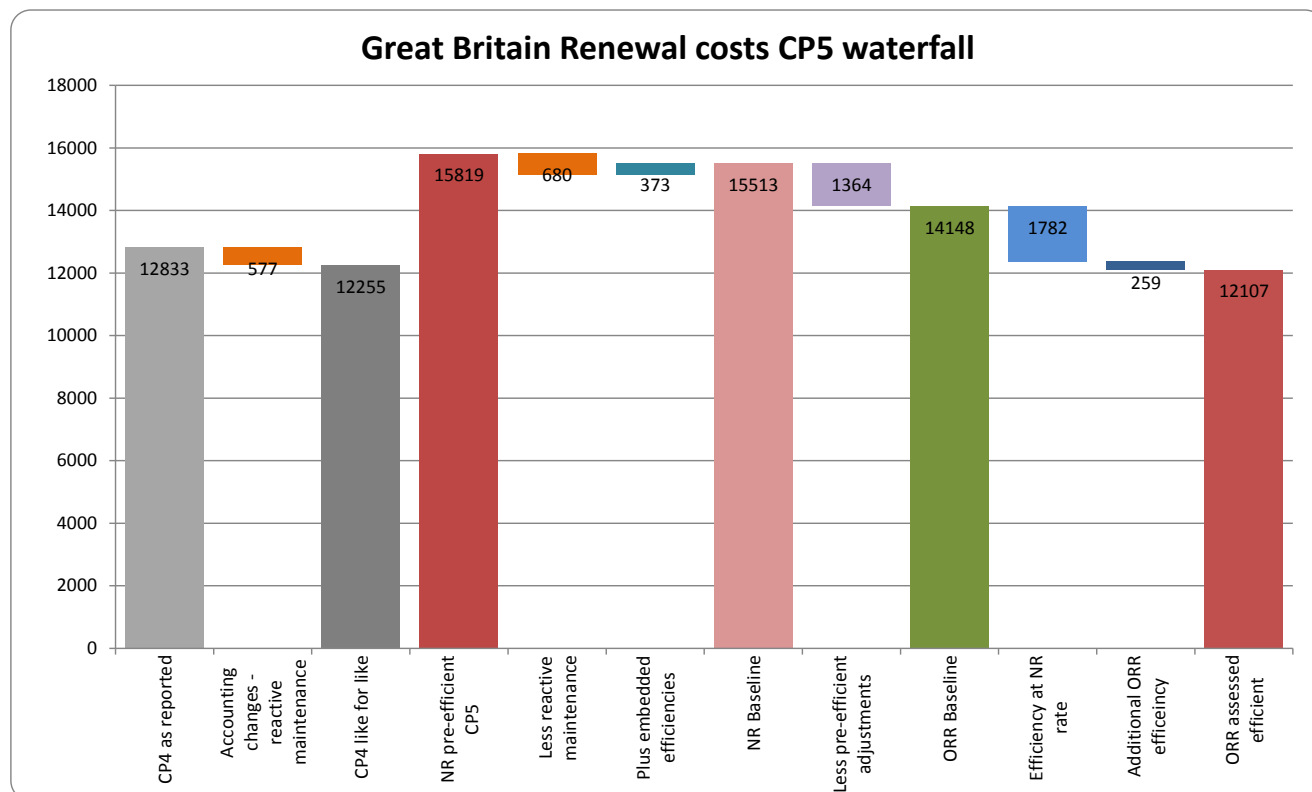
- (a) deducting reactive maintenance costs as discussed above;
- (b) adding on those efficiencies which we have assessed to be embedded in its asset policies to give a ‘Network Rail baseline’;
- (c) making reductions to the Network Rail baseline to reflect our assessment of its pre-efficient plans giving the ‘ORR baseline’; and



- (d) considering efficiency across all types of renewal expenditure, not just for certain asset types.

8.13 We have presented Network Rail’s proposed efficiencies as the difference between the Network Rail baseline and the post-efficient costs in the SBP. We have presented our assessed efficiencies as the difference between the ORR baseline and our assessed post-efficient expenditure. Our approach to renewals assessment is shown in Figure 8.2.

**Figure 8.2: Our presentation of renewals efficiencies in CP5\***



\*Note: This chart is a simplified representation based on a number of high-level assumptions and will not fully reconcile to all relevant tables.

8.14 Where numbers in Figure 8.2 are different to those in our draft determination, this is due to:

- (a) ETCS train fitment costs (£194m) being treated as enhancement expenditure, whereas our draft determination treated them as renewals. This affects all CP5 totals columns;
- (b) improved information on reactive maintenance costs, resulting in a more accurate accounting movement from renewals to maintenance. Network Rail’s response to our draft determination forecast £680m of pre-efficient reactive maintenance expenditure during CP5, whereas our draft determination assumed the figure was £641m;

- (c) our final determination making a smaller reduction to pre-efficient costs than applied in our draft determination; and
- (d) our final determination assessing a slightly lower level of efficiency than applied in our draft determination.

## Responses to our draft determination

8.15 Responses to our assessment of maintenance and renewals in the draft determination are highlighted here. In addition, some detailed commentary on the draft determination text was received, has been considered and, where accepted, we have made amendments to our final determination.

### Asset management capability

- 8.16 The majority of respondents were supportive of our proposed greater focus on asset management capability, including at route level, in CP5. Some stated a need for improved transparency of asset management data by route.
- 8.17 We agree on the need for greater transparency of asset management information by operating route and will continue to press for improvement. Network Rail's SBP included improved disaggregation of plans by operating route compared to PR08. We have set out our requirements for Network Rail's delivery plan, including greater visibility by operating route, and our monitoring regime for CP5 requires more disaggregated reporting of asset management information than was required in CP4.
- 8.18 Respondents, including Network Rail, were supportive of our approach to funding improved civils asset management and to introducing a civils adjustment mechanism. RIA's response recognised our concerns driving the civils adjustment mechanism but considered that it introduced uncertainty which could lead to supply chain inefficiencies.
- 8.19 We consider that the civils adjustment mechanism is appropriate to deal with the uncertainty of Network Rail's civils renewals plans as submitted in the SBP. We have included a provision for civils renewals expenditure in our final determination which reflects our best view of the likely, significantly increased levels of activity. Network Rail is expected to deliver the civils renewals volumes proposed in the SBP for the first two years of the control period and this gives the supply chain increased certainty for those years. We expect Network Rail to present its proposals for years three to five in good time to enable the supply chain to plan effectively.
- 8.20 ATOC and several TOCs responded that Network Rail should improve its asset management policies in relation to depots. They also said that Network Rail's renewals policy should ensure that the modern equivalent replacement considers the needs of current and future operators, passengers and stakeholders. Stagecoach's and Virgin's responses questioned whether Network Rail was ensuring that whole

industry costs are minimised. They highlighted infrastructure asset management concerns on their routes.

- 8.21 We agree that asset management policy with respect to depots can be improved. We have set asset management capability outputs to ensure continuous improvement in CP5, including for depots. We have made no adjustment to Network Rail's proposed levels of renewal expenditure on depot plant. Network Rail has a licence requirement to manage its assets efficiently. This includes renewing and/or enhancing assets with a modern equivalent asset which is capable of meeting the needs of current and future stakeholders. It also includes ensuring that whole industry costs are minimised over the lifetime of assets.
- 8.22 Chiltern and Arriva considered that work volumes and asset condition should be monitored as outputs. Passenger Focus questioned whether asset condition should be improved over the period.
- 8.23 We consider that it is important to monitor volumes and asset condition as indicators of whether assets are being managed sustainably. We have made improvements to our monitoring framework for CP5. However, we believe that it is important that Network Rail has the flexibility to manage its activity during the period to deliver in the most efficient way possible and to respond to new information. Where delivered volumes and/or condition fall materially short of its plans we will expect Network Rail to demonstrate that this is not at the expense of sustainable asset management.
- 8.24 GB Railfreight's response raised concern over a shortage of electrical engineering expertise in the industry and therefore concern over deliverability of electrification works.
- 8.25 We agree that availability of electrical engineering expertise is a risk. Network Rail's SBP included its assessment of deliverability which considered resourcing of the electrification programme. We have carried out our own assessment of deliverability and agree with Network Rail's overall assessment. It has identified the key factors constraining delivery and has action plans in place to deal with them.
- 8.26 Network Rail's response to our draft determination set out its plans to improve its approach to asset management with respect to climate change and weather resilience. It provided an update to its Climate Change and Weather Resilience document. RIA expressed concern over the resilience of the network and welcomed our recognition of the scale of the issue. TSSA questioned why there was no significant funding to achieve resilience.
- 8.27 We will monitor Network Rail's progress against its climate change and weather resilience plans. We consider our assessed level of efficient maintenance and renewal expenditure to be sufficient for Network Rail to manage its assets at minimum whole life cost, and expect Network Rail to be able to demonstrate that its asset management adequately includes consideration of climate change and weather resilience.

## Maintenance and renewal efficiency

- 8.28 ATOC and Transport Scotland supported our view that greater efficiency can be driven through wider industry collaboration, including through Network Rail's improved interaction with its supply chain and through closer working with operating companies. RIA welcomed Network Rail's progress in collaborating with its supply chain but stressed the need to ensure this approach continues, stating its view that a regular measure of collaborative working needs to be introduced. TfL expressed concern that alliancing might lead Network Rail to favour TOCs that are part of alliances over those with competing needs to access the network.
- 8.29 We think that greater collaboration is vital to drive efficiency within the industry. We have considered this in our assessment of efficiency and are incentivising it through our determination. We have set out our approach to rail industry alliances, making it clear that Network Rail must treat all operators fairly in negotiating, agreeing and operating alliances.
- 8.30 Network Rail, DfT and FirstGroup stated support for our focus on bottom-up benchmarking to inform efficiency assumptions. RMT expressed concern over our top-down benchmarking given the comments in Network Rail's SBP, which cited serious problems with data and their use for analysis. RMT also expressed concern over our bottom-up benchmarking, commenting that it lacked transparency and credibility. TSSA said that a cautious approach to efficiency should be taken and that it is unconvinced that new technologies might deliver efficiencies.
- 8.31 We note the general support for our bottom-up approach to benchmarking and we have put greater emphasis on this compared to PR08. We believe that top-down benchmarking also has an important role to play and we have used this as a cross check on our bottom-up work. We have addressed issues identified with previous top-down benchmarking through a substantial data evaluation and correction exercise, discussed later in the chapter. The bottom-up efficiency assumed in our draft determination was based on the outputs of wide-ranging reporter and consultancy studies which we have published, and Network Rail's own efficiency evidence. Our model has been reviewed by Arup and found to be logical, transparent and supported by a comprehensive evidence base.
- 8.32 RMT and TSSA raised concerns over assumed maintenance efficiencies including risk based maintenance and multi-skilling. They considered that maintenance efficiencies may lead to increased safety risk.
- 8.33 We have taken account of Network Rail's delivery of maintenance efficiencies in CP4 in developing our view of efficient expenditure requirements. We consider that there are both safety and efficiency benefits to be gained from adoption of maintenance best practice, including properly managed implementation of reliability centred maintenance and an appropriate level of multi-skilling. We have conducted a consultancy study which has identified the efficiencies available to Network Rail if it

adopts best practice, without compromising health and safety. We are strengthening the outputs framework and indicators for asset management and will be monitoring Network Rail's delivery of planned asset maintenance and renewal volumes. We expect Network Rail to produce an overall maintenance strategy which clarifies how the various maintenance initiatives will be optimised and integrated across the asset base. This strategy should include a change management plan to show how the strategy will be delivered taking account of human factors and staff competency issues.

- 8.34 RIA's response supported our endorsement of a whole life cost approach to asset management but considered that this might result in initial upward pressure on unit costs and further pressure on supplier's margins. It also considered there to be an issue around whether Network Rail delivers its assumed end-of-CP4 efficiency and the further pressure on supplier margins that could result if it does not.
- 8.35 Our assessment has reviewed Network Rail's planned volumes and costs which rely on its asset polices, which in turn rely on its whole life cost analysis. Our assessment has therefore considered appropriate funding to deliver a whole life cost approach, but we recognise that Network Rail has further work to do to refine its analysis. We have tempered our assessment of efficiency by weighting between Network Rail's analysis and ours. We consider our proposed efficiency to be achievable within the range of likely end-of-CP4 outturn. In responding to our determination we expect Network Rail to manage its activities in a sustainable way to deliver whole industry efficiency.
- 8.36 Arriva's and GB Railfreight's responses considered that Network Rail can realise efficiencies through improved planning and management of possessions. Freightliner stated the importance of Network Rail maintaining a steady volume of renewals work throughout CP5.
- 8.37 We agree that improved possession planning and management is vital to deliver further efficiency. We commissioned a consultancy study to consider the opportunities in CP5 and have reflected its findings in our efficiency analysis. We also recognise the importance of managing workbanks to ensure efficiencies within the industry. We have reflected this in our assessment of efficiency.
- 8.38 RIA's response raised its concern that there must be no hiatus in workload at the start of CP5, as this leads to inefficient planning and allocation of resources for suppliers and a consequent adverse impact on delivery and cost.
- 8.39 We recognise the importance of Network Rail profiling its work and providing sufficient visibility of its plans to improve efficiency throughout the supply chain, and have considered this in our assessment of efficiency. In PR13 the transparency and disaggregation of Network Rail's plans has improved but further improvements can be made. We have made it clear that its CP5 delivery plan must be consulted on and published before the start of CP5 and we have updated our monitoring and reporting

requirements to improve transparency. We have also introduced a mechanism to enable early investment for enhancement works as discussed in chapter 9.

## Track renewals

- 8.40 Network Rail stated that the pre-efficient reductions to track unit costs applied in the draft determination were incorrect, and cannot be delivered through central management of risk and contingency.
- 8.41 We have reviewed the assumptions applied at draft determination, the evidence available in the SBP and the independent reporter's review of unit costs. The adjustment applied reflected several issues identified by the reporter with respect to Network Rail's oversight of risk estimation in the planning process, its application of further overlays and its methodology for producing pre-efficient costs based on the planned 2012-13 workbank. Since our draft determination we have commissioned Arup to undertake a review of our adjustment to track unit costs considering the findings from its reporter study and Network Rail's response. Arup found that the 2% adjustment was, in its view, potentially too high. We have also reviewed new evidence from Network Rail relating to the detail of its track unit cost and efficiency modelling. We found the modelling to be comprehensive and in line with best practice. As a result, we have reduced our adjustment to 0.25% in our final determination.
- 8.42 Network Rail said that track efficiencies assumed by us in the draft determination are unrealistic. It stated that work volumes are 'locked-down' and efficiencies are constrained by access. It said that its benchmarking and efficiency work should be graded 'good' rather than 'fair', which would result in more weight being given to its efficiency analysis. RIA stated that, in its view, the draft determination's assumptions for track renewal unit cost reductions were particularly challenging and that it had no confidence that the target figures could be achieved within the CP5 timescales.
- 8.43 We accept that delivering track renewals efficiencies will become more challenging in CP5 due to access constraints and the focus of its asset policy on more critical routes, but this has been considered in our efficiency assessment. We have reviewed further, detailed information submitted by Network Rail setting out the modelling and evidence base behind its track efficiency projections. On the basis of the further information provided we accept that Network Rail's track efficiency analysis is of good quality. For this reason we have given Network Rail's analysis greater weighting in deriving our assumed CP5 efficiency.

## Signalling renewals

- 8.44 Network Rail's response stated that the pre-efficient reductions to signalling unit costs are incorrect. It said that its ability to reduce signalling unit costs beyond the level proposed in the SBP is limited, due to contracts having been let and workbanks which are locked down. It stated that our draft determination was wrong to assume that the new signalling contracts have transferred more risk to its contractors. Network Rail's



response also said that the pre-efficient reduction to level crossings unit costs was unjustified.

- 8.45 We have reviewed the adjustments applied in our draft determination to pre-efficient signalling and level crossings unit costs. The adjustments reflected the findings of the independent reporter with respect to the levels of overlay applied, the overall reduction in risk through the new supplier contracts and the levels of uncertainty driven by the unit cost development methodology applied. Having reviewed Network Rail's response, we consider that there remains justification for a pre-efficient unit cost reduction for signalling and level crossings. This is discussed further in our assessment of signalling and level crossings renewals costs. We recognise that Network Rail will have limited ability to influence signalling expenditure in early CP5 and have reduced our adjustment in the early years of the period to reflect this.

### **Other core renewals**

- 8.46 Network Rail said that it considered the assumptions on other core renewals to be unrealistic. It considered the reduction in the scope of buildings renewals implied by the draft determination would have implications for the sustainability of outputs and will lead to sub-optimal whole life costs.
- 8.47 We consider that the adjustments which we have applied to other renewals asset categories are appropriate. For buildings, telecoms and electrical power assets the extent to which projections are based on non-unitised costs results in greater uncertainty in plans. Network Rail's limited oversight of the risk estimation process and overlays, particularly for non-unitised costs, is likely to lead to an overstatement of requirements. We consider Network Rail's plans for buildings to be more uncertain than for other asset categories. This is the result of uncertainties in all stages of the planning process. Further detail is provided in our assessment of buildings renewals costs.

### **IM renewals and ORBIS**

- 8.48 Network Rail considered that the level of investment that we assumed for IM renewals will enable it to deliver the core IT infrastructure renewals but that it would not allow for investment in new systems to deliver CP5 outputs. Network Rail submitted further information as part of its draft determination response relating to £181m of IM investment which it believes is required to support CP5 outputs. It also stated its view that our draft determination should not have assessed ORBIS and IT expenditure together.
- 8.49 We have reviewed and updated our assessment of Network Rail's CP5 IM renewals and ORBIS expenditure. In the draft determination we assessed IM renewals and ORBIS expenditure together. For our final determination we assessed these two areas of expenditure separately because less than one third of ORBIS costs relate to IM expenditure, the rest relating to business change activity. The updated assessment



increases our assessed IM renewals requirement by £52m and our assessed ORBIS expenditure by £14m.

## Reactive maintenance

8.50 Network Rail's response included its assessment of likely reactive maintenance costs over CP5. In our draft determination we made an accounting adjustment to treat reactive maintenance costs as maintenance expenditure rather than renewal. We assumed that reactive maintenance costs were 4% of costs accounted as renewals. We have updated this assumption to reflect the new information provided by Network Rail. This has no effect on the overall total for maintenance and renewals but moves expenditure between the categories.

## Other developments since our draft determination

8.51 We have completed further work to assess Network Rail's proposed £71m expenditure on a new design of excavator, optimised for the rail environment, to replace the existing fleet. Our final determination assumes £10m of renewal expenditure to fund development works (see chapter 11).

8.52 We have further considered treatment of costs for fitting new signalling equipment in trains. We consider that there are very significant uncertainties in the programme for CP5 and therefore the likely outturn costs. We have therefore decided to treat these costs on an efficient emerging cost basis, with the efficient cost validated progressively through ex-post efficiency reviews. We have included a provision of £194m within our assessment of enhancements expenditure and removed these costs from our assessment of renewals expenditure. Our reasoning is detailed in chapter 9.

8.53 We have commissioned an audit of our maintenance and renewal efficient expenditure model which has resulted in the correction of some minor errors. We have also made some minor improvements to the model, for example to improve the accuracy of costs at a disaggregated level. These changes account for small variations in expenditure figures between the draft determination and final determination.

## Network Rail's proposals for management of its assets

8.54 Network Rail is improving its asset management capability and plans to improve further in the remainder of CP4 and CP5. It has set out its key initiatives for CP5, including:

- (a) optimisation of asset policies;
- (b) further development of risk-based maintenance;
- (c) improved asset information;
- (d) further rollout of remote condition monitoring;

- (e) development of the Asset Management Services (AMS) organisation; and
- (f) development of improved asset management competence and culture.

8.55 Network Rail's SBP submissions are based on the new and improved ways of managing its assets which will be delivered by asset management capability improvements from specific programmes of work. The key programmes are set out below.

### **Asset Management Improvement Plan (AMIP)**

- 8.56 We have consistently stressed the importance of Network Rail developing its asset management capability. Since 2006 we have measured this using the Asset Management Excellence Model (AMEM). Early in CP4 we and Network Rail agreed targets for improved capability as measured by AMEM to be delivered by the end of the control period. Network Rail set out how it would deliver these in its Asset Management Improvement Plan (AMIP). We have been monitoring progress against the agreed targets. Whilst Network Rail is delivering real improvements it is behind the targets in key areas and must catch up to deliver our requirements for the end of CP4.
- 8.57 The company has set out its proposed trajectory for further improved capability in CP5 as discussed in chapter 3. In summary it is proposing continued improvement to reach an average AMEM score of 73% at the end of CP5.

### **Offering Rail Better Information Services (ORBIS)**

- 8.58 Good asset information management is essential to good asset management. We have pressed Network Rail to develop and implement plans for improved data quality, including improved processes for the collection, management and reporting of data and improved asset information systems.
- 8.59 Network Rail has acknowledged the need for better asset information management and has proposed a large investment in an improvement programme, ORBIS. This includes the Asset Data Improvement Programme (ADIP) aimed at delivering asset information improvements in the short-term in order to improve inputs to the planning process for CP5. Its proposed investment in ORBIS is £173m in CP5. This investment is forecast to deliver wide-ranging benefits, including £270m of efficiencies within CP5. We consider these efficiencies in our total assessment of efficiencies.
- 8.60 Since publication of the SBP, Network Rail has written to us to set out the key milestones associated with ORBIS which it intends to use to monitor progress. As set out in chapter 3, we will monitor delivery of these milestones as regulated outputs.
- 8.61 Network Rail's asset data feed into its asset policy modelling and workbank development. We have audited the quality of its asset data as discussed in more detail later in this chapter.

## Buildings & Civils Asset Management transformation programme

- 8.62 In summer 2010, we and Network Rail commissioned a comprehensive independent reporter study into all aspects of civil structures management in response to evidence of poor practice, including:
- (a) Network Rail's difficulty in producing a credible PR08 civil structures and earthworks expenditure programme;
  - (b) its declaration that it could not guarantee sustainable stewardship beyond CP6;
  - (c) three bridge failures within an 18 month period; and
  - (d) the serving of a safety improvement notice on the Southern route. (Subsequently other improvement notices were served network-wide.)
- 8.63 The resulting report<sup>168</sup> revealed numerous shortfalls in efficient, effective stewardship and recommended a 77 point improvement plan. Network Rail accepted this and has now converted it into a detailed action plan, the Buildings & Civils Asset Management (BCAM) transformation programme. A report on progress to December 2012 is available on our website<sup>169</sup>. We are continuing to monitor its delivery and have again commissioned Arup to review its embedment into the routes' normal daily activities.
- 8.64 Improvements arising from the review have included better asset knowledge, the new civil structures and earthworks asset policies that have been used for the SBP submission, and a review of appropriate staffing levels. These have all influenced Network Rail's proposals for civils maintenance and renewal expenditure in CP5. The improvements must be embedded in the routes throughout the control period.

## Network Operating Strategy

- 8.65 Network Rail's plans include proposals for investment of £1,485m to deliver NOS. £876m of this is expenditure to accelerate signalling renewal work, over and above the work required due to condition. The investment will centralise signalling and electrical control to 14 control centres. The plans indicate that this investment will result in operational efficiencies. Our review of the NOS business plan, including the associated efficiencies, is discussed in more detail in chapter 7.

## Intelligent Infrastructure

- 8.66 Intelligent infrastructure is Network Rail's initiative to increase its Remote Condition Monitoring (RCM) of assets. RCM uses technology to detect asset degradation, making it possible to defer intervention until shortly before assets fail. Network Rail has started implementing this technology during CP4 and plans to increase its rollout in CP5 to cover further signalling, telecoms, and electrification and plant assets. Since publication of the SBP the company has written to us setting out some further details

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<sup>168</sup> <http://www.rail-reg.gov.uk/upload/pdf/reprters-audit-rev-policy-arup-mar11.pdf>.

<sup>169</sup> <http://www.rail-reg.gov.uk/upload/pdf/arup-transformation-2013-05-01.pdf>.

of the volumes of assets to be fitted with RCM over CP5. We expect Network Rail's milestones associated with intelligent infrastructure to be set out fully in its delivery plan and will monitor delivery of these as indicators.

8.67 The CP5 plans include expenditure of £95m on intelligent infrastructure.

### **New asset policies**

8.68 Network Rail's asset management capability improvements have driven some significant improvements in its business planning. In particular the company has produced a suite of new asset policies which set out how it will manage its assets in CP5. The policies provide a framework to plan the volume of work activity that Network Rail considers is appropriate to manage its assets safely, efficiently and sustainably, whilst meeting the required outputs.

8.69 The new policies are set out in a consistent format using a ten stage framework:

- (i) asset description;
- (ii) historical analysis;
- (iii) asset criticality;
- (iv) route criticality;
- (v) asset degradation;
- (vi) intervention options;
- (vii) planning and funding scenarios;
- (viii) model development;
- (ix) investment options; and
- (x) policy selection.

8.70 Network Rail has, for the first time, developed a suite of whole life cost models to support its asset policies. The policies set out the asset specific outputs which it believes will be delivered by the proposed interventions.

8.71 The company has set out its own analysis of the robustness, sustainability and whole life cost efficiency of its policies. It has assessed the extent to which its route maintenance and renewal plans align with central policy. Its findings are summarised below. We set out our assessment of asset policies later in the chapter.

**Figure 8.3: Network Rail’s assessment of its asset policies**

Asset	Policy maturity (Robustness / sustainability / efficiency)	Alignment of route renewal plans with policy	Alignment of route maintenance plans with policy
Track			
Signalling			
Structures			
Earthworks			
Drainage, fencing and other off-track			
Electrical Power			
Telecoms <small>* Centrally developed plan by Network Rail Telecoms</small>			
Buildings			

8.72 Network Rail does not consider that any of its CP5 asset policies has been demonstrated to meet all three tests of robustness, sustainability and efficiency. It considers the track and signalling policies to be the most mature and structures, earthworks, drainage and telecoms to be less mature. It recognises that its structures policy is not yet fully aligned with route renewal plans.

8.73 We summarise key features of the CP5 asset policies below.

**Track asset policy**

8.74 Track assets include rail, sleepers, ballast, plain line, and switches and crossings (S&C).

8.75 Network Rail’s CP5 track policy is a refinement of previous policy, applying differing intervention options depending on the performance requirements of different parts of the network. This is achieved by moving from the banding of routes into four ‘quadrants’ to the new policy of using five ‘criticality bands’. The policy promotes a focus on high specification interventions, such as full renewal, for track on more critical routes and a greater focus on refurbishment and maintenance to extend asset lives on lower criticality routes. Whole life costing has been applied to help define the optimum intervention regime.

8.76 The policy introduces a move from more manual based inspections towards greater use of automated train-borne inspection and measurement and improved assessment of ballast, formation and drainage condition. On the back of improved information it aims to deliver better planning and targeting of work, including better use of wheeled

plant (such as high output track renewals plant). The policy requires a move towards preventative maintenance addressing root causes and a risk based approach to inspection and maintenance. The track policy is supported by the new drainage policy.

- 8.77 Network Rail forecasts that the condition and performance of track will be maintained both in the short- and long-term. Ballast fouling and S&C condition are expected to improve. The policy is predicted to result in a steady state or reduced number of safety related track infrastructure failures such as rail breaks and geometry faults, with priority given to high criticality routes and critical S&C.

### **Off-track asset policy**

- 8.78 The off-track asset policy addresses the management of boundary fencing and vegetation. This is the first time that the off-track policy has been produced as a separate document. (Management of these assets was previously included in the track policy.)
- 8.79 The policy requires more proactive management of fencing and vegetation, rather than the reactive approach that has been prevalent in CP4. Network Rail plans to improve a significant percentage of the asset base and this has resulted in a substantial investment in off-track assets being proposed for CP5.
- 8.80 The policy for boundary fencing aims to reduce unauthorised access and thereby reduce the safety and performance risk to the railway. It is supported by improving asset knowledge which has allowed modelling of renewal and maintenance volumes and has led to an improved specification of materials. This should result in better whole life costs while ensuring that the most appropriate type of fencing is used, taking account of current and future adjacent land use.
- 8.81 The policy for vegetation management requires a proactive, cyclical approach to manage vegetation sustainably and to manage risks such as obscured signals, leaves on the line, damage to structures and falling trees. It specifies a range of interventions, ranging from routine maintenance to highly mechanised or chemical treatment.
- 8.82 Network Rail forecasts that its off-track policy will deliver boundary measures that meet its legal obligations and in doing so proactively manages the safety and performance risks posed by unauthorised access to the railway by people or animals. It will also manage vegetation, through a cyclical maintenance regime, in a way which best supports safe and punctual rail operations.

### **Signalling asset policy**

- 8.83 The CP5 signalling asset policy covers the management of signals, their control and communication systems, interlockings (which ensure trains are routed safely), points, train detection and level crossings. Level crossings are also the subject of a separate policy which primarily addresses the management of safety risk.

- 8.84 The policy has been developed based on whole life cost modelling to consider the trade-off between different intervention strategies and to identify the most appropriate technology to apply. It proposes a move from conventional re-signalling to a more targeted approach of component renewal to maximise the asset life. This approach has been integrated with programmes of major interventions relating to the European Train Control System (ETCS) and implementation of NOS. The policy proposes to migrate control of signalling to centralised operational control centres at renewal. It proposes that signalling is converted to ETCS operation when renewal is required and there is sufficient rolling stock equipped for ETCS operation.
- 8.85 Signalling maintenance regimes are to be based on the criticality of the asset and tailored to asset type, configuration and location. The policy makes greater use of reliability centred maintenance and remote condition monitoring to achieve this. For high criticality routes the policy involves a move towards more predictive maintenance, informed by remote condition monitoring; for low criticality routes it means a move towards more reactive maintenance. The policy also proposes the use of extended maintenance to manage assets until their renewal through major programmes of intervention such as those driven by ETCS and NOS.
- 8.86 Application of the policy is forecast to result in a peak of signalling renewals expenditure in CP5 and a peak in remaining life in CP7, largely driven by the pattern of ETCS re-signalling.

### **Level crossing asset policy**

- 8.87 Network Rail has produced a level crossing asset policy for the first time. This reflects a need to increase the focus on level crossings as a system rather than as a collection of separate components.
- 8.88 The policy proposes to reduce the safety risk that level crossings contribute to the rail network, to maintain or improve condition and capability, and to move to a targeted renewal of subsystem parts. The policy sets out Network Rail's planned reduction of level crossing safety risk and its plans to facilitate closure, using the funds specified in the HLOSs: £65m for England & Wales and £10m for Scotland (both 2011-12 prices)
- 8.89 Whilst the policy considers renewal and maintenance issues, the focus is on reducing risk. Network Rail has developed a model to assess the risk reduction that can be achieved by a range of potential interventions.
- 8.90 There is a particularly close association between level crossing systems and signalling. The policy recognises the relationship between level crossings and the introduction of ETCS and NOS which are key components of the signalling policy.
- 8.91 A key output of the policy is the assessment of how the level crossing safety fund can be applied to achieve the greatest reduction in risk.



## Structures asset policy

- 8.92 The CP5 structures asset policy covers assets including underbridges, overbridges, major structures, tunnels, retaining walls, culverts, coastal defences and minor structural assets.
- 8.93 The policy represents a substantial change to previous policy. It applies a risk based approach to deliver defined levels of safety, availability and capability. For bridges, the policy proposes application of different maintenance and renewal interventions to address the risk associated with the condition of key structural components called principal load bearing elements (PLBEs). The associated intervention strategy is captured in a suite of 'policy-on-a-page' documents which aim to articulate policy clearly and simply, and to achieve a consistent approach to structures asset management across the network. The policy-on-a-page documents cover the main bridge types, substructures, culverts, retaining walls, tunnels and footbridges.
- 8.94 Network Rail has continued to develop a whole life cost model for structures, an approach it started for CP3. The bridges model analyses intervention strategies for the main bridge types. Significant groups of structures such as tunnels, major structures, and coastal, estuarine and river defences are not captured in the modelling but are assessed using individual bottom-up intervention or management plans.
- 8.95 The policy requires maintenance of structures on a newly developed programme of planned preventative works. Application of reliability centred maintenance is being considered but is not yet fully integrated. The case for wider application will be considered in CP5.
- 8.96 Network Rail's plans, based on improved condition data and the new policy, include a large increase in renewal volumes to restore the assets to a robust and sustainable position. The company proposes that the new policy is implemented over two control periods to manage funding and deliverability, with interventions focused on high criticality assets during CP5. This approach results in a peak level of expenditure in CP5 and high expenditure in CP6. Network Rail states that its understanding of civil assets is continuing to improve and the predicted volumes of work may change as a consequence. Application of the policy is forecast to improve average asset condition scores for PLBEs on bridges, reducing risk over CP5 and CP6.

## Earthworks asset policy

- 8.97 The CP5 earthworks asset policy covers the management of embankments and cuttings.
- 8.98 The policy differs from the previous policy because, instead of undertaking work based on condition alone, it applies a risk-based approach to decide what work needs to be done, where and when. Work to be carried out is prioritised according to a risk metric, which is assessed on asset type, condition and criticality. For example, cuttings are considered a higher risk asset type and, within this group, rock cuttings

pose the highest risk. Condition is banded against four headings: top poor, poor, marginal and serviceable.

- 8.99 Four main work types are defined for earthworks assets: examination to assess condition, maintenance (for example minor repairs) to maintain asset condition, refurbishment to improve asset condition, and renewal of poor, top poor and failed assets. Drainage work (renewal, refurbishment or maintenance of the drainage) is also a key priority for earthworks, as covered by the new drainage policy.
- 8.100 Network Rail has developed an earthworks whole life cost model. The model has been used to investigate a wide range of policy options and intervention strategies to support the CP5 policy.
- 8.101 The policy aims to maintain asset condition and risk levels throughout CP5 and in the long-term. To achieve this there will be increased levels of maintenance and refurbishment and a reduction in full renewal work compared to CP4.

### **Drainage asset policy**

- 8.102 Network Rail has produced a drainage asset policy for the first time, recognising the importance of drainage for performance and asset management across other key asset types. The policy covers drainage relating to earthworks, track, tunnels, structures and buildings. The document concentrates on the track and earthworks drainage, as this forms the majority of the drainage assets and has higher associated expenditure.
- 8.103 Network Rail's knowledge and management of its drainage assets has historically been poor. To start to address this it has carried out the Integrated Drainage Project (IDP), to review asset knowledge, carry out a survey where records are incomplete and establish a national drainage database. The policy draws on the outputs of the IDP.
- 8.104 The policy considers two components to drainage asset condition: its structural integrity and its service condition. Structural integrity defects are addressed by repairing or replacing the asset. Service condition relates to the water carrying capacity of the asset and defects are addressed through works such as cleansing or vegetation clearance. In both cases pipework condition is measured on a one to five grading system. Condition data for drainage remain incomplete and will be assessed over a period of years.
- 8.105 The criticality of the drainage assets is based on the criticality of those other asset groups which it impacts and benefits, such as track and earthworks. The policy defines various intervention options (inspect, survey, maintain, refurbish, renew and new build) depending on criticality, which are intended to minimise costs over the lifetime of the asset. For higher criticality assets the policy requires a more proactive approach to inspection and maintenance. Application of the policy is forecast to result in significantly increased renewals costs in CP5 compared to CP4 in order to bring the

condition of the drainage assets up to a sustainable level, but this should reduce expenditure on dependent assets such as track and earthworks.

### **Buildings asset policy**

- 8.106 The buildings asset policy covers maintenance, repair and renewal works on managed stations, franchised stations, light maintenance depots, maintenance delivery unit buildings and lineside buildings.
- 8.107 The policy is in two parts, 'building fabric' and 'mechanical & electrical equipment'. It extends the strategy applied in CP4 to cover better the range of operational property assets. The policy categorises stations into six groups, A to F, based on revenue and the number of people using the station (as was the case with the previous policy).
- 8.108 It utilises an improved asset information system to understand better the condition and degradation of assets, to understand the impact of interventions and to facilitate whole life costing.
- 8.109 The policy requires station and light maintenance depot condition, as measured by the Station Stewardship Measure (SSM) and the Light Maintenance Depot Stewardship Measure (LMDSM), to be maintained at the levels achieved at the end of CP4. For buildings Network Rail is proposing to use the yearly number of 2 and 24 hour reactive faults to measure robustness and Percentage Asset Remaining Life (PARL) to measure sustainability. It forecasts that reported reactive faults will remain static in CP5, but that PARL will improve by 1% in CP5 and 16% by CP11 to give 58% PARL at that point. Across the buildings asset categories the policy requires maintenance, repair and renewal works to be carried out to ensure that the properties remain fit for purpose.
- 8.110 Further franchising of maintenance and renewal activities to TOCs may also result in review and development of SSM during the control period and a reduction in Network Rail's funding requirement.

### **Electrical power asset policy**

- 8.111 The CP5 asset policy for electrical power covers the management of traction power supply systems (including power from overhead lines and from conductor rail), and non-traction power supplies (including power for signalling, point heaters and conductor rail heating).
- 8.112 The policy is a significant development of the policy used in CP4. Network Rail has changed its approach, from age-based to condition based, to achieve a lower whole life cost to manage the assets. The CP5 policy also introduces asset and route criticality and improved safety principles. It is supported by the use of whole life cost modelling to identify the optimum intervention options for the key assets covered by this policy. Modelling has been carried out for: overhead line equipment; signalling power supply systems (PSPs and signalling power distribution cables); HV switchgear

for the AC and DC electrification systems; conductor rail; and HV cables on the DC electrification systems.

- 8.113 There is an increased focus on safety in the asset policy (also discussed in chapter 11), including actions to reduce the amount of working on or near live conductors. The policy considers management of capacity on the network through improved system planning for electrification infrastructure. It proposes investment in metering and management systems to support the more efficient use of energy.
- 8.114 Network Rail forecasts that its electrical power policy will deliver a slight increase in the number of traction power failures causing delays of ten minutes or greater. This is due to a significant increase in electrical power assets in CP5, driven by the major programmes of electrification across the network. If the asset base was to remain the same as at the end of CP4, Network Rail forecasts levels of performance consistent with the end of CP4. Network Rail has modelled remaining life until CP11. These long-term forecasts highlight a reduction in remaining life, but this is again driven by the introduction of new assets due to the programme of CP5 electrification.

### **Telecoms asset policy**

- 8.115 Network Rail Telecom's (NRT) CP5 asset policy for telecoms proposes a move from conventional renewals to a more targeted approach of component renewal to maximise the asset life. Whole life cost modelling has been carried out to consider the trade-off between different intervention strategies. The policy is aligned with programmes of major interventions relating to implementation of NOS.
- 8.116 Telecoms maintenance regimes are to be based on the criticality of the asset and tailored to asset type, configuration and location by means of implementing Service Level Agreements (SLA) with clients (the routes). The success of the asset policy is predicated on developing these SLAs that are not yet in use and therefore not proven to be achievable. NRT states that it will not be in a position to know whether the SLAs are achievable until around the middle of CP5. The policy also relies on the greater use of remote condition monitoring and the development of Risk-based maintenance Of Telecoms Equipment (ROTE) to release maintenance staff to resource the planned in-house renewal activity.
- 8.117 The policy aims to continue to meet the CP4 exit performance KPIs throughout CP5 despite a significant increase in asset quantities due to the introduction of GSM-R/FTN.

### **Wheeled plant asset policy**

- 8.118 The CP5 asset policy for wheeled plant is a development of CP4 policy and covers management of a diverse collection of rail and road vehicles.
- 8.119 The policy is based on the requirements of the vehicle maintenance and overhaul instructions, assessment of fleet condition and known demands driven by routes and central requirements. It promotes a mix of new fleet procurement, life extension and

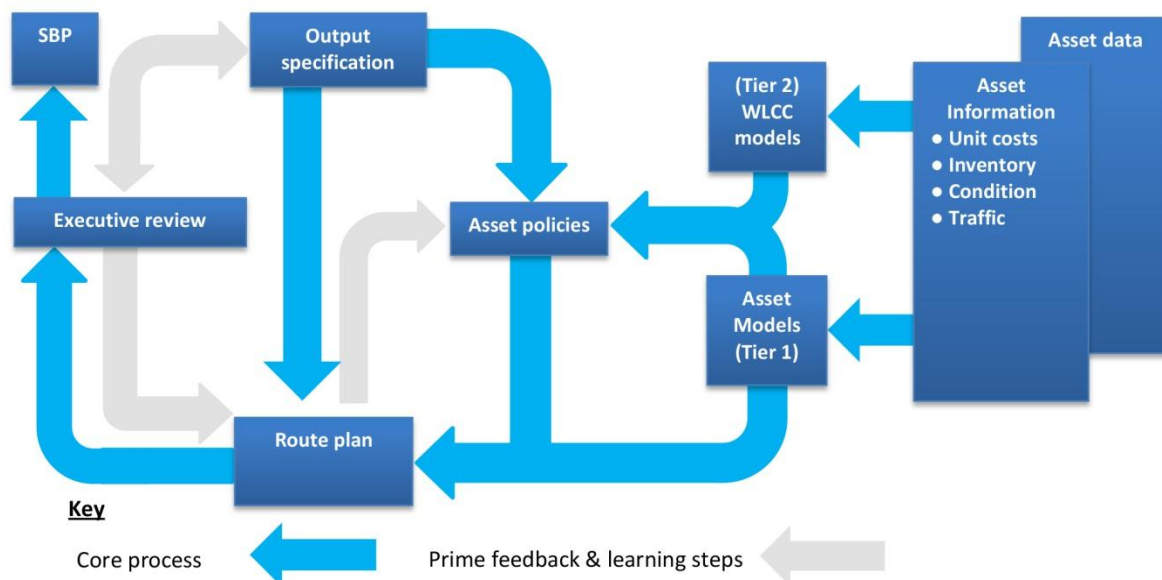
maintaining the fleet to the existing condition. The policy drives efficiencies by extending the periods between maintenance and overhaul. The proposed intervention regime for fleet maintenance is based upon engineering information which Network Rail acknowledges is currently limited and inconsistent across some fleets.

8.120 The policy aims to deliver an overall condition, reliability and availability of fleet at the end of CP5 which is no worse than at the end of CP4, except where driven by customer demand.

## Network Rail’s development of its maintenance and renewals plans

8.121 Network Rail’s SBP set out the process by which it developed its maintenance and renewal plans. This process is illustrated in Figure 8.4.

**Figure 8.4: Network Rail’s process for development of its maintenance and renewal plans**



### Development of maintenance plans

8.122 The key inputs to its maintenance plans are its current resource levels (labour, plant and materials), its projections of how these will need to change in CP5 (for example, to maintain new electrification assets) and its view of available efficiencies during the period. These have been used to develop its route plans for maintenance which feed directly into the SBP.

8.123 Network Rail is also developing new approaches to maintenance which are referenced in its asset policies and maintenance strategy. These have been modelled to develop a central view of future volumes and therefore costs of work.

8.124 We discuss our view of Network Rail’s maintenance planning process in further detail later in the chapter.

## Development of renewals plans

- 8.125 The key inputs to Network Rail's renewals plans are its asset information (type, number, condition, location, criticality etc.), its asset degradation information and its cost information (for example unit costs).
- 8.126 The fundamental building block of the renewal plans is the company's suite of asset policies which set out the interventions that it will carry out in managing its assets. The policies are used in two parallel but linked processes: they are modelled to develop a central view of future volumes and therefore costs of work; and they are used by Network Rail's ten operating routes to develop route-based workbanks, volumes and costs. The plans developed by the centre and those developed by the routes are used to challenge each other at all stages of their development. The final SBP submissions are developed from a combination of the two.
- 8.127 We discuss our view of Network Rail's renewals planning process in further detail later in the chapter.

## Route plans

- 8.128 Network Rail has, for the first time, presented its maintenance and renewals plans in ten operating route plans. This reflects the recent organisational change which has devolved some asset management decision making to the routes.
- 8.129 For maintenance its expenditure plans are based on route estimates of the resource required to safely maintain the railway. The route-based figures include consideration of the impact of increased traffic and new infrastructure.
- 8.130 Network Rail's renewals expenditure plans are based on the outputs of a challenge process between modelled expenditure requirements and plans developed by the routes. The company's models produce route renewals expenditure forecasts which consider route specific asset information, unit costs disaggregated by structural factors and efficiencies applied by local asset mix. The routes produced their plans based on their local knowledge of the asset base, knowledge of delivery constraints, understanding of local costs and local efficiency initiatives. The challenge process between modelled expenditure and route-based plans has helped to improve the robustness of the route plans.
- 8.131 Key route specific issues are discussed in the Maintenance and Renewals sections below.

## Network Rail's maintenance plans

### Volumes

- 8.132 As discussed previously the company has built up the maintenance plans in its SBP by forecasting its resourcing requirements. In general it has not used volumes of required work as the basis for developing its maintenance expenditure plans.



8.133 Following submission of the SBP we have required Network Rail to submit its planned volumes of maintenance work to be delivered by its maintenance expenditure plans. Certain volumes have been submitted for track, electrification and power, and signalling maintenance activities, a subset of which are shown in Table 8.1. We have worked with Network Rail to develop appropriate maintenance volume measures for use as indicators in CP5 and these will be included in its delivery plan.

**Table 8.1: Network Rail's planned maintenance volumes, Great Britain**

Description (unit)	CP5					CP5 Total
	2014-15	2015-16	2016-17	2017-18	2018-19	
Tamping (km)	6,933	6,873	6,749	6,688	6,781	34,023
Stoneblowing (km)	3,738	3,712	3,668	3,649	3,687	18,454
Manual wet bed removal (bay)	20,608	20,457	19,784	18,916	18,316	98,081
S&C tamping (point end)	4,480	4,395	4,372	4,320	4,331	21,899
Mechanical spot re-sleepering (sleeper)	5,486	5,415	5,368	5,425	5,391	27,084
Replacement of S&C bearers (each)	8,512	8,340	8,021	7,416	8,055	40,344
S&C arc weld repair (number)	10,673	10,696	10,711	10,714	10,783	53,578
Mechanical wet bed removal (bay)	12,189	12,152	12,023	11,249	10,962	58,575
Level 1 patrolling track inspection (mile)	206,577	201,836	197,972	197,901	199,631	1,003,918
Mechanised patrolling track inspection (mile)	8,372	7,462	7,162	7,162	7,241	37,399
Replacement of pads & insulators (sleeper)	553,385	544,931	538,586	515,209	529,333	2,681,444
Jointed track hot weather preparation (joint)	552,404	547,527	538,101	532,860	531,832	2,702,724
Manual correction of PL track geometry, CWR (track yard)	1,152,599	1,164,832	1,121,455	1,070,372	1,070,232	5,579,489
Manual rail grinding (rail yard)	418,045	417,777	417,517	417,365	417,659	2,088,363
Rail changing (rail yard)	201,615	197,715	193,905	190,932	191,793	975,960
Fences and boundary walls (yard)	1,010,959	1,045,381	1,036,425	1,049,740	1,082,847	5,225,352



Description (unit)	CP5					CP5
	2014-15	2015-16	2016-17	2017-18	2018-19	Total
S&C inspection, other (point end)	205,544	206,526	208,930	211,437	215,341	1,047,778
S&C maintenance, other (point end)	422,003	420,720	421,167	420,365	422,869	2,107,125
S&C renew half set of switches (each)	874	864	851	835	865	4,289
S&C stoneblowing (point end)	858	949	1,073	1,043	1,037	4,961
Track inspection, other (miles)	312,536	313,560	314,742	315,743	316,517	1,573,097
Train grinding - S&C (point end)	3,985	3,997	4,003	4,015	4,145	20,144
Signalling cables (various)	124,454	124,483	124,485	124,418	124,412	622,251
Equipment housing locations (each)	296,870	296,757	296,431	296,319	296,206	1,482,583
Point end routine maintenance powered (point end)	477,654	477,761	477,862	478,064	478,076	2,389,416
Signals routine maintenance colour lights (each)	192,955	193,027	192,488	192,624	192,427	963,520
Train detection - axle counters (each)	15,096	15,750	16,380	17,024	17,115	81,366
Train detection - TC's AC (each)	100,431	99,916	99,894	99,860	99,852	499,951
Train Detection - TC's DC (each)	137,104	136,054	134,481	133,254	133,079	673,972
Level crossings (each)	84,001	84,001	83,927	83,868	83,815	419,612
Maintain conductor rail (various)	47,641	47,641	47,489	47,263	47,114	237,147
Maintain OHL components (various)	194,666	199,649	204,566	204,536	222,871	1,026,287
Maintain points heating (each)	140,549	140,550	140,551	140,552	140,552	702,753
Maintain signalling power supplies (number)	42,964	42,964	42,964	42,964	42,964	214,821

## Efficiency

8.134 When directly comparing expenditure forecast for the final year of CP5 with proposed expenditure in the final year of CP4, maintenance costs appear to increase. However,

this excludes the effect of the CEFA and reactive maintenance accounting change between the two control periods, ignores the effects of traffic and network growth, and does not adjust for projects which are not representative of on-going expenditure requirements. When the expenditure forecast for the final year of CP4 is adjusted for these effects the network total efficiency proposed is 13.8%, for Scotland it is 10.0%, and for England & Wales it is 14.2%.

- 8.135 The forecast maintenance efficiencies are planned to come from a wide range of initiatives including:
- (a) a risk based approach to maintenance ensuring that maintenance regimes are tailored to the configuration, condition and location of individual assets;
  - (b) improved information management allowing better targeting of work, improved response to infrastructure faults and reduced reliance on paperwork processes;
  - (c) further implementation of remote condition monitoring;
  - (d) improved working practices and multi-skilling;
  - (e) increased standardisation of maintenance tasks;
  - (f) further mechanisation, including the full rollout of plain line pattern recognition and new vegetation clearance plant;
  - (g) improvements to the maintenance support and administration organisation;
  - (h) further recycling of materials; and
  - (i) optimisation of contracting strategy where appropriate.
- 8.136 Network Rail has included some 'stretch' (approximately £140m) in its maintenance efficiency targets, over and above the efficiencies which it has allocated to specific initiatives.

## **Expenditure**

- 8.137 Network Rail's SBP sets out proposed maintenance expenditure in CP5 of £5.3bn, of which £4.8bn relates to England & Wales and £0.52bn relates to Scotland. This compares to maintenance expenditure of £5.4bn in CP4, of which £4.9bn is in England & Wales and £0.48bn is in Scotland. The following tables set out its high level maintenance expenditure plans.

**Table 8.2: Network Rail's plans, maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	1,165	1,172	1,174	1,172	1,166	-	5,848
Efficiency	-	5.3%	2.6%	2.3%	2.1%	2.4%	-	13.8%
Post-efficient expenditure	982	1,103	1,082	1,058	1,035	1,004	5,406	5,282

**Table 8.3: Network Rail's plans, maintenance, England & Wales**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	1,052	1,055	1,056	1,054	1,052	-	5,269
Efficiency	-	5.4%	2.1%	2.5%	2.2%	2.9%	-	14.2%
Post-efficient expenditure	893	995	976	953	930	903	4,928	4,757

**Table 8.4: Network Rail's plans, maintenance, Scotland**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	113	118	117	118	113	-	579
Efficiency	-	3.9%	6.4%	1.0%	1.0%	-2.0%	-	10.0%
Post-efficient expenditure	89	108	106	104	104	102	478	525

## Maintenance by asset

8.138 Network Rail has set out its maintenance plans by asset as described below.

### Track

8.139 Network Rail's plans for track maintenance costs incurred by the routes (i.e. excluding the maintenance costs incurred by NDS) are set out in Table 8.5.

**Table 8.5: Network Rail's plans, track maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	434	439	439	438	435	2,185
Efficiency	-	4.7%	3.5%	2.4%	2.3%	2.6%	14.5%
Post-efficient expenditure	420	414	404	395	384	372	1,969

8.140 The plans show increased pre-efficient levels of track maintenance expenditure compared to the final year of CP4 due to the effects of increased traffic and enhancement works. The company's modelling of the off-track and drainage policies suggest that increased expenditure is required to address a substantial backlog of work and to improve asset condition to a sustainable level.

8.141 Maintenance volumes show an increase in proactive maintenance activities to improve and maintain track quality, particularly the increased use of mechanised stoneblowing. Work items such as ballast replacement and wet-bed removal are forecast to reduce as a result of better drainage management and more targeted refurbishment items.

8.142 For track maintenance Network Rail is proposing efficiencies of 14.5% by the final year of CP5. These efficiencies are projected to come from better asset management (including improved whole life cost analysis, more proactive risk based maintenance, improved ability to automate inspection and maintenance works and improved data quality) and from improved unit costs (through better programming of work, more specialised teams but with greater multi-skilling and better management of possessions).

## Signalling

8.143 Network Rail's plans for signalling maintenance are set out in Table 8.6.

**Table 8.6: Network Rail's plans, signalling maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	158	158	158	159	160	793
Efficiency	-	4.6%	1.9%	1.6%	2.3%	2.0%	11.8%
Post-efficient expenditure	158	151	148	146	143	141	729

8.144 The volume of signalling maintenance is projected to increase in some routes due to enhancement works, for example Thameslink and Crossrail. Some reduction in

maintenance activity is driven by the simplified maintenance regimes associated with new asset types, but this is countered by increased maintenance work driven by installation of new obstacle detection assets at level crossings.

8.145 Network Rail's plans for signalling maintenance include proposed efficiencies of 11.8% for Great Britain by the final year of CP5. These efficiencies are projected to come from a range of initiatives, many of which are common for maintenance of different asset types. They include improved asset information management, a more targeted risk-based approach, better programming of work, greater multi-skilling, better management of possessions, improved rapid response and adoption of remote condition monitoring (for example on level crossings).

## Civils and buildings

8.146 Network Rail's plans for civils maintenance are set out in Table 8.7.

**Table 8.7: Network Rail's plans, civils and buildings maintenance, Great Britain**

£m (2012-13 prices)	CP4		CP5				CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	82	82	82	81	82	408
Efficiency	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Post-efficient expenditure	35	82	82	82	81	82	408

8.147 Activities associated with maintaining structures, earthworks and buildings are largely reported within the renewals budgets. The only activities reported as 'maintenance' are examinations and assessments which are currently subcontracted out through the national Civil Engineering Framework Agreement (CEFA). The CEFA contract covers inspection of assets such as bridges, tunnels, stations, lineside buildings, earthwork cuttings and slopes. Network Rail is restructuring and retendering this arrangement for CP5.

8.148 In its SBP submission, Network Rail treated all CEFA costs in CP5 as maintenance. In the final year of CP4 £35m of CEFA costs are treated as maintenance and £49m are treated as renewals. Total CEFA costs remain steady over CP4 and CP5 at slightly over £80m.

8.149 Network Rail has not forecast efficiencies associated with examinations and assessments during CP5.

## Electrical power and fixed plant

8.150 Network Rail's plans for electrical power and fixed plant maintenance are set out in Table 8.8.

**Table 8.8: Network Rail's plans, electrical power and fixed plant maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	94	101	104	105	108	512
Efficiency	-	9.6%	3.7%	3.5%	1.2%	2.2%	18.9%
Post-efficient expenditure	73	85	88	87	87	88	435

8.151 Network Rail forecasts that its pre-efficient expenditure on maintenance of electrification and plant assets will increase substantially during CP5. This is due to new electrification assets being delivered through widespread enhancement works. The Western route is forecast to see a trebling of expenditure due to Great Western electrification, and Wales and East Midlands routes will also require increased maintenance activity due to enhancement works. Increased activity is also driven by additional cable testing work to comply with legislative requirements.

8.152 Network Rail's maintenance plans for electrical power and fixed plant are largely based on historical headcount with overlays applied for maintenance of new assets and increased efficiencies. Efficiencies are projected to be generated by activity reductions from initiatives such as improved planning and targeting of work, adoption of improved remote condition monitoring and application of risk based maintenance. Unit cost efficiency initiatives include developing a multi-skilled workforce, improving resourcing strategy and improving possession strategy. Network Rail projects electrification and fixed plant maintenance efficiencies of 18.9% for Great Britain by the final year of CP5.

## Telecommunications

8.153 Network Rail's plans for telecoms maintenance incurred by the routes (i.e. excluding the maintenance costs incurred by NRT) are set out in Table 8.9.

**Table 8.9: Network Rail's plans, telecoms maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	22	22	21	21	21	107
Efficiency	-	3.9%	3.7%	2.6%	3.3%	5.0%	17.1%
Post-efficient expenditure	21	21	20	19	19	18	97

8.154 Telecoms maintenance activity will increase at the start of CP5 due to the increased asset base driven by the FTN / GSM-R project. During the period maintenance requirements will be reduced as obsolete assets are removed. Telecoms maintenance efficiencies are forecast to come from increased productivity with more renewals work being delivered and charged out.

### Other Network Operations maintenance

- 8.155 Network Rail's plans include significant expenditure against other maintenance cost items, such as indirect staff within the routes and at headquarters, route asset management teams, asset management services and national delivery service.
- 8.156 Asset management services costs in maintenance include the costs associated with the asset information directorate, asset management technical services and asset management telecoms. Across support and maintenance activities, asset management services are forecast to deliver 20% efficiencies.
- 8.157 National Delivery Service (NDS) forms part of Network Rail's corporate services function and is its national logistics and procurement service provider. Its maintenance activities include operation and servicing of strategic plant (e.g. rail grinding and infrastructure monitoring plant), support logistics (e.g. train network runs and shunting) and associated staff costs. NDS activities are forecast to deliver 15% efficiencies during the period (over both support and maintenance activities).

### Maintenance – route specific issues

8.158 All routes have assessed their maintenance expenditure requirements for CP5 through resource based plans. The routes have generally accepted central proposals for efficiency opportunities and, in some cases, set out their own initiatives. Network Rail's post-efficient plans are set out by route in Table 8.10.

**Table 8.10: Network Rail's post-efficient maintenance plans, by route**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Anglia	99	104	101	100	98	92	494
East Midlands	50	57	58	56	54	54	280
Kent	67	75	72	70	70	66	352
LNE	154	161	161	157	155	155	789
LNW	252	280	269	267	259	250	1,326
Scotland	89	108	106	104	104	102	525
Sussex	52	58	60	54	52	49	273
Wales	52	62	61	61	61	60	306
Wessex	78	87	84	81	76	73	402
Western	87	110	109	107	105	103	535

Note: CP5 expenditure includes additional costs associated with reactive maintenance.



8.159 We highlight some of the key route specific factors included within the SBP below.

## **Anglia**

8.160 The Anglia route plan includes incremental maintenance expenditure required for Crossrail and the introduction of an additional OLE team on the North London Line.

8.161 Some local efficiencies have been identified, including those resulting from delivery of capital expenditure, improved S&T response, rationalisation of depots and reorganisation of works delivery.

## **East Midlands**

8.162 The route plan includes significant maintenance efficiencies but these will be offset by the increased maintenance requirements introduced by the Thameslink programme and electrification of the Midland Main Line.

8.163 Forecast efficiencies are in line with central submissions and include gains through remote condition monitoring and plain line pattern recognition.

## **Kent**

8.164 The Kent route plan includes extra resource for measuring the condition of signalling power supply cables. Its electrical power asset base will increase due to enhancements including Thameslink, Crossrail and other HLOS associated power supply upgrades.

8.165 Kent's maintenance costs are influenced by a high number of structures which require additional maintenance resource (bridges which support the rails on longitudinal timbers) and by a high density of S&C with difficult access. It is also proposing changes to practice through, for example, mechanised vegetation management, more remote condition monitoring, use of plain line pattern recognition and mobile maintenance units.

## **LNE**

8.166 The LNE route maintenance plan considers the requirement for increased resource to service the new electrification assets between Leeds, Selby and at Colton Junction. It also includes the introduction of mobile maintenance units to make best use of track access opportunities, and two dedicated drainage teams to mitigate the risk of bank slips in extreme weather. The impact of NOS is considered to be cost neutral. The route sees real efficiency gains to be made through better front-line planning and assumes further efficiencies will be delivered through the centrally identified initiatives.

## **LNW**

8.167 LNW's plan is generally in line with policies and centrally identified efficiencies but some further efficiencies have been identified by the route. It proposes routine helicopter patrols of OLE, enhancing the train-borne collection of conducting systems information and efficiencies in the management of track geometry.

8.168 The scope of the route's maintenance activity is increased due to enhancement works including electrification in the north-west and at the south end of LNW. The plan includes a significant increase in resource for testing of cables and for introduction of dedicated lookout operated warning system teams.

## Scotland

8.169 The Scotland route plan commits to delivering the volumes of maintenance work determined by the asset management organisation to reflect asset policy. It has made some changes to route criticality classifications to reflect their importance to the Scottish network.

8.170 The route plan includes a significant increase in volumes of track work such as tamping, rail replacement and fencing to address areas of non-compliance and remove temporary non-compliances. The higher volumes partly reflect an increased asset base due to enhancements and the Borders rail link.

8.171 The route has carried out an aerial survey of vegetation to target its vegetation management programme to return the asset to a sustainable position. Its drainage plans are also based on improved asset knowledge from the national drainage survey and include routine drainage surveys within the maintenance remit.

8.172 Further electrification resource has been planned to deliver increased work driven by improved asset knowledge, signalling power cable testing requirements and enhancement schemes such as EGIP and the Borders rail link.

8.173 The plan includes consideration of the impact of central efficiency initiatives which particularly drive efficiency for track and electrification. Although centrally derived efficiencies are thought to deliver benefits for signalling and telecoms delivery, the plan assumes that they will not generate savings to headcount, as resource requirements are driven by the need to provide an emergency response. The route has developed a local initiative to move to two person signalling and telecoms teams to deliver efficiency.

## Sussex

8.174 The route has, in the main, accepted centrally identified maintenance efficiencies and identified some additional local efficiencies. Its plans include the consolidation of delivery units into one route-wide delivery unit and the rationalisation of depots. Track efficiencies are envisaged from higher productivity of new on-track machines and better rail management (tamping and rail-head grinding). Signalling efficiencies are lower than national efficiencies due to the plan not to fit lightweight structures until halfway through CP5.

8.175 In some areas it identifies drivers of increased work load, for example where there is an increase in the asset base, as is the case with the GSM-R network.

## Wales

8.176 The Wales route maintenance plan aims to deliver central policy and to implement centrally identified maintenance efficiencies. It identifies that enhancement schemes will impact the route's maintenance requirements for electrification.

## Wessex

8.177 The route considers its maintenance plan to be in line with asset policy but identifies a need to improve track maintenance in CP5 as it recognises that it may not meet the CP4 exit targets. Additional volumes of track maintenance are forecast in response to tonnage increases following enhancements in CP4. Vegetation management is identified as a particular problem for the route, with a proposed programme of lineside de-vegetation and weed killer treatment.

## Western

8.178 Western's plans for maintenance in CP5 are driven by major investments over the period, including Crossrail, Reading remodelling and electrification. Maintenance activities will be impacted by increased traffic and resulting degradation rates, an increased asset base and a reduction in access. The route will significantly increase its electrical power resource to maintain the increased asset base. In other asset disciplines maintenance and renewal works carried out in possessions will be impacted by the increased need for electrical isolations towards the end of the period.

8.179 Efficiencies in the Western plan are aligned with the nationally identified strategies and include the move towards risk based maintenance regimes, increased mechanisation and a multi-skilled workforce. The route sees key opportunities in maintaining assets as systems (particularly S&C), taking a holistic approach to the risks being controlled.

## Network Rail's renewals plans

8.180 This section covers Network Rail's plans for renewals in CP5. Its proposed volumes of asset renewal during the period are set out in Tables 8.11 to 8.13. These tables set out some of the key volumes planned by Network Rail; they do not capture all volumes proposed. We have worked with Network Rail to develop appropriate renewal volume indicators for CP5 and these will be included in its delivery plan. The company's planned renewals expenditure and efficiencies are set out in Tables 8.14 to 8.16.

## Volumes

8.181 Network Rail has forecast track renewals volumes for CP5 based on the new ways of working defined by its track policy. This has made comparison of volumes to CP4 difficult. Conversion of the volumes to kilometres of rail, sleeper and ballast renewal, and number of S&C units show that the company plans to deliver fewer kilometres of

rail and sleepers, more kilometres of ballast and significantly more S&C units. These changes are mainly driven by the new policy, but also include accelerated renewals.

- 8.182 Signalling volumes, as measured in Signalling Equivalent Units (SEUs), are forecast to be much higher in CP5 than in CP4. Total SEU renewals almost double, from approximately 5,800 in CP4 to approximately 11,000 in CP5. The increase is largely driven by renewals associated with delivery of NOS. The SEU volume for CP5 shows a marked increase in ETCS delivered units, in line with the national strategy. The number of level crossings renewals to be delivered also increases from 123 in CP4 to 499 in CP5, again largely driven by NOS and requirements for obstacle detection.
- 8.183 Network Rail forecasts that its new civils asset policy requires a step-change in civil asset renewals volumes, with increases relative to CP4 in almost all work types. Volumes of underbridge works are forecast to increase by 101%, volumes of overbridge works by 7%, volumes of tunnels works by 58% and volumes of coastal and estuarial defence works by 141%.
- 8.184 Volumes of renewals relating to buildings assets have not been captured during CP4 but have been forecast for CP5 for franchised and managed station assets.
- 8.185 Plans for electrification and fixed plant show increased volumes of conductor rail and low voltage DC (LVDC) distribution cables compared to CP4. AC distribution volumes are significantly lower than in CP4 as are all DC distribution volumes with the exception of LVDC distribution cables. A high volume of signalling power cable renewals is planned to address a recently identified backlog of work. The plans include new volume measures for CP5, including volumes of overhead line mid-life refurbishments and of signalling power cable renewals.

**Table 8.11: Network Rail's planned renewal volumes (subset of main categories), Great Britain**

Volumes	Units	CP5					CP5
		2014-15	2015-16	2016-17	2017-18	2018-19	Total
Track							
Conventional plain line, heavy refurb (concrete, MO)	km	108	162	218	227	211	926
Conventional plain line, rail renewal	km	267	239	272	267	250	1,294
Conventional plain line, single rail	km	36	33	37	39	36	180
Conventional plain line, steel relay	km	11	11	16	22	10	70
Conventional plain line, complete Trax	km	211	194	188	204	205	1,001
High output, ABC	km	235	195	171	137	178	915

Volumes	Units	CP5					CP5
		2014-15	2015-16	2016-17	2017-18	2018-19	Total
High output, heavy refurb (concrete, HO)	km	0	67	56	0	48	171
High output, rail sleeper relay	km	126	83	191	187	171	757
Plain line refurb, heavy (other)	km	41	38	36	39	35	189
Plain line refurb, medium (concrete)	km	191	205	210	214	234	1,054
Plain line refurb, medium (other)	km	169	175	170	194	191	898
S&C, full renewal	S&C	325	289	343	272	282	1,510
S&C, heavy refurb	S&C	263	324	393	427	432	1,841
S&C, medium refurb	S&C	428	431	435	410	424	2,130
<b>Signalling</b>							
Conventional resignalling	SEU	1,742	2,769	2,559	1,715	1,048	9,832
ETCS resignalling	SEU	0	80	115	146	868	1,209
Level crossings	no.	58	95	137	124	85	499
<b>Civils</b>							
Overbridges	sq ms	10,012	10,012	10,012	10,012	10,012	50,062
Underbridges	sq ms	156,530	153,468	154,031	153,463	156,846	774,337
Tunnels	sq ms	24,627	24,627	24,627	24,627	24,627	123,136
<b>Buildings (franchised stations)</b>							
Building - Roof Structure	sq ms	20,493	4,934	2,660	2,879	2,549	33,515
Platform - Surface	sq ms	69,868	62,404	85,518	56,410	29,137	303,337
Canopy - Roof Structure	sq ms	21,195	18,093	20,729	18,305	16,058	94,380
Train Shed - Roof Structure	sq ms	30,314	10,613	22,480	2,765	450	66,622
Footbridge - Surface	sq ms	5,855	3,337	5,049	4,578	2,663	21,482
<b>Electrical power and fixed plant</b>							
Overhead line mid-life refurb	wire runs	59	70	70	65	52	316
Overhead line structure renewal	no.	116	158	186	63	99	621
DC distribution HV switchgear renewals	no.	17	36	3	9	3	68
DC distribution HV cable	km	47	25	28	21	21	142

Volumes	Units	CP5					CP5
		2014-15	2015-16	2016-17	2017-18	2018-19	Total
LV DC switchgear renewal	no.	82	78	70	69	34	332
Conductor rail renewal	km	40	32	40	23	15	149
Signalling power distribution	km	299	267	248	189	152	1,155
Telecoms							
SISS CIS	no.	251	565	735	531	483	2,565
SISS PA	no.	2,662	2,265	2,242	2,113	1,714	10,996
SISS CCTV	no.	1,007	1,466	1,377	394	351	4,596

**Table 8.12: Network Rail's planned renewal volumes (subset of main categories), England & Wales**

Volumes	Units	CP5					CP5
		2014-15	2015-16	2016-17	2017-18	2018-19	Total
Track							
Conventional plain line, heavy refurb (concrete, MO)	km	95	149	182	191	175	793
Conventional plain line, rail renewal	km	241	213	246	241	224	1,164
Conventional plain line, single rail	km	24	21	24	27	24	120
Conventional plain line, steel relay	km	3	3	8	14	2	30
Conventional plain line, complete Trax	km	176	160	154	170	171	831
High output, ABC	km	235	195	171	137	178	915
High output, heavy refurb (concrete, HO)	km	0	67	56	0	48	171
High output, rail sleeper relay	km	126	83	169	165	149	692
Plain line refurb, heavy (other)	km	41	38	36	39	35	189
Plain line refurb, medium (concrete)	km	112	127	132	136	156	662
Plain line refurb, medium (other)	km	127	133	128	152	149	689
S&C, full renewal	S&C	298	262	316	245	255	1,376
S&C, heavy refurb	S&C	238	299	368	402	407	1,714
S&C, medium refurb	S&C	385	388	392	367	381	1,913

Volumes	Units	CP5					CP5
		2014-15	2015-16	2016-17	2017-18	2018-19	Total
Signalling							
Conventional resignalling	SEU	1,725	2,514	1,867	1,594	966	8,666
ETCS resignalling	SEU	0	80	115	146	868	1,209
Level crossings	no.	53	95	126	123	81	478
Civils							
Overbridges	sq ms	8,941	8,941	8,941	8,941	8,941	44,706
Underbridges	sq ms	133,845	132,073	132,391	130,723	133,470	662,504
Tunnels	sq ms	20,400	20,400	20,400	20,400	20,400	102,000
Buildings (franchised stations)							
Building - Roof Structure	sq ms	20,173	4,669	2,638	2,879	2,549	32,908
Platform - Surface	sq ms	69,868	62,404	85,408	56,410	29,137	303,227
Canopy - Roof Structure	sq ms	21,195	18,093	20,729	18,281	16,058	94,356
Train Shed - Roof Structure	sq ms	30,314	10,613	22,400	2,395	0	65,722
Footbridge - Surface	sq ms	5,855	3,337	5,049	4,578	2,663	21,482
Electrical power and fixed plant							
Overhead line mid-life refurb	wire runs	56	67	67	62	49	301
Overhead line structure renewal	no.	113	155	183	60	96	606
DC distribution HV switchgear renewals	no.	17	36	3	9	3	68
DC distribution HV cable	km	47	25	28	21	21	142
LV DC switchgear renewal	no.	82	78	70	69	34	332
Conductor rail renewal	km	40	32	40	23	15	149
Signalling power distribution	km	272	240	220	149	121	1,001
Telecoms							
SISS CIS	no.	228	565	727	502	449	2,470
SISS PA	no.	2,662	1,471	2,242	2,113	1,714	10,202
SISS CCTV	no.	1,007	1,466	1,377	394	351	4,596



**Table 8.13: Network Rail's planned renewal volumes (subset of main categories), Scotland**

Volumes	Units	CP5					CP5
		2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>Track</b>							
Conventional plain line, heavy refurb (concrete, MO)	km	13	13	36	36	36	134
Conventional plain line, rail renewal	km	26	26	26	26	26	130
Conventional plain line, single rail	km	12	12	12	12	12	61
Conventional plain line, steel relay	km	8	8	8	8	8	40
Conventional plain line, complete Trax	km	34	34	34	34	34	171
High output, ABC	km	0	0	0	0	0	0
High output, heavy refurb (concrete, HO)	km	0	0	0	0	0	0
High output, rail sleeper relay	km	0	0	22	22	22	65
Plain line refurb, heavy (other)	km	0	0	0	0	0	0
Plain line refurb, medium (concrete)	km	78	78	78	78	78	392
Plain line refurb, medium (other)	km	42	42	42	42	42	209
S&C, full renewal	S&C	27	27	27	27	27	134
S&C, heavy refurb	S&C	25	25	25	25	25	127
S&C, medium refurb	S&C	43	43	43	43	43	217
<b>Signalling</b>							
Conventional resignalling	SEU	17	255	692	121	82	1,167
ETCS resignalling	SEU	0	0	0	0	0	0
Level crossings	no.	5	0	11	1	4	21
<b>Civils</b>							
Overbridges	sq ms	1,071	1,071	1,071	1,071	1,071	5,356
Underbridges	sq ms	22,685	21,395	21,639	22,740	23,375	111,834
Tunnels	sq ms	4,227	4,227	4,227	4,227	4,227	21,137
<b>Buildings (franchised stations)</b>							
Building - Roof Structure	sq ms	320	265	22	0	0	607

Volumes	Units	CP5					CP5
		2014-15	2015-16	2016-17	2017-18	2018-19	Total
Platform - Surface	sq ms	0	0	110	0	0	110
Canopy - Roof Structure	sq ms	0	0	0	24	0	24
Train Shed - Roof Structure	sq ms	0	0	80	370	450	900
Footbridge - Surface	sq ms	0	0	0	0	0	0
Electrical power and fixed plant							
Overhead line mid-life refurb	wire runs	3	3	3	3	3	15
Overhead line structure renewal	no.	3	3	3	3	3	15
DC distribution HV switchgear renewals	no.	0	0	0	0	0	0
DC distribution HV cable	km	0	0	0	0	0	0
LV DC switchgear renewal	no.	0	0	0	0	0	0
Conductor rail renewal	km	0	0	0	0	0	0
Signalling power distribution	km	27	27	28	40	31	154
Telecoms							
SISS CIS	no.	23	0	9	29	34	94
SISS PA	no.	0	794	0	0	0	794
SISS CCTV	no.	0	0	0	0	0	0

## Efficiency

8.186 Network Rail has proposed CP5 exit renewals efficiencies of 15.8% for the network, 15.5% for Scotland and 15.9% for England & Wales<sup>170</sup>.

8.187 The company has set out plans for its renewals efficiencies in a series of business cases. Key areas for delivering efficiencies are:

- (a) development of policies which Network Rail considers to be better optimised for minimum whole life cost;
- (b) asset information efficiencies to be delivered by ORBIS;
- (c) better scheduling of work;

<sup>170</sup> In Network Rail's SBP it presented renewals efficiency for 'core' asset renewals only, which it defined as track, signalling, civils, buildings, telecoms, and electrification and plant. It presented figures excluding the efficiencies which are built into its CP5 asset policies. Figures presented here are for all renewals expenditure and include the efficiencies which are built into its CP5 policies.

- (d) more effective contractual relationships;
- (e) standardisation of processes; and
- (f) multi-skilling of staff.

8.188 Efficiencies are discussed by main asset category later in the chapter.

## **Expenditure**

8.189 Network Rail forecasts renewals expenditure of £13.6bn across the network, £1.48bn in Scotland and £12.1bn in England & Wales. This level of expenditure is considerably higher than in CP4 despite efficiencies achieved in CP4 and forecast to the end of CP5, and despite an accounting change moving costs from renewals to maintenance. Network Rail's key proposals which drive this increase in expenditure are:

- (a) the rationalisation and centralisation of signalling control through implementation of NOS;
- (b) a large increase in proposed expenditure on civil structures and earthworks renewals resulting from the application of the updated policy and a better understanding of asset condition, degradation and risk, the net effect of which is forecast to deliver a step-change improvement in the level of civil assets risk on the network;
- (c) renewals brought forward from future control periods to deliver work more effectively, for example as the result of enhancement schemes, or to make use of access before it is limited by traffic growth;
- (d) proposed expenditure on improving asset information systems and management, ORBIS; and
- (e) a proposal for additional investment schemes where Network Rail believes there is a business case. For example it has proposed additional investment in improved information technology, Research & Development (R&D), safer and faster isolations and a new system to provide alerts to track workers.

**Table 8.14: Network Rail's plans, renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	2,989	3,149	3,196	3,119	3,060	-	15,513
Efficiency	-	8.3%	2.8%	2.8%	1.5%	1.4%	-	15.8%
Post-efficient expenditure	2,784	2,741	2,808	2,771	2,663	2,576	12,833	13,559

**Table 8.15: Network Rail's plans, renewals, England & Wales**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	2,672	2,756	2,839	2,795	2,743	-	13,805
Efficiency	-	8.1%	2.9%	2.6%	1.6%	1.5%	-	15.9%
Post-efficient expenditure	2,510	2,455	2,458	2,465	2,388	2,308	11,446	12,074

**Table 8.16: Network Rail's plans, renewals, Scotland**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	316	393	357	325	316	-	1,708
Efficiency	-	9.6%	1.4%	4.1%	0.8%	0.3%	-	15.5%
Post-efficient expenditure	273	286	350	305	275	267	1,387	1,484

## Outputs

8.190 Network Rail has forecast the asset condition and performance metrics which its policies will deliver as described in chapter 3. For both condition and performance its approach is, in the main, to keep asset specific metrics constant at the level forecast for the end of CP4. However, for civil structures, earthworks and off-track it is planning an improvement in overall condition. For track, number of failures per year causing delays of greater than 10 minutes is forecast to increase marginally. For electrification and plant the same metric is forecast to increase by approximately 10%. For structures, the number of open risk items with a risk score of greater than 20 is expected to reduce significantly by the end of CP5.

## Renewals by asset

### Track

8.191 Network Rail's plans for track renewals are shown in Table 8.17.

**Table 8.17: Network Rail's plans, track renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	780	769	833	794	779	-	3,954
Efficiency	-	7.6%	3.6%	2.3%	3.2%	3.5%	-	18.8%
Post-efficient expenditure	816	720	684	725	669	633	3,762	3,431

- 8.192 Network Rail's proposed track policy is intended to maintain track performance throughout CP5 at the level targeted for the end of CP4. It proposes an increased focus on refurbishment and maintenance options as alternatives to full renewal, and increased focus on S&C to target work at more critical assets and reduce risk. This approach leads to a reduced volume of rail and sleeper renewal but an increased volume of ballast and S&C renewal.
- 8.193 Track renewal expenditure (excluding off-track assets) is forecast to be £3.08bn (£3.55bn before efficiencies) in CP5, compared with £3.52bn expenditure expected in CP4.
- 8.194 The off-track policy moves from a reactive approach to failed assets to a proactive one using clear risk-based intervention criteria and this is forecast to result in expenditure of £0.35bn (£0.41bn before efficiencies) in CP5, much greater than the £0.24bn planned in CP4.
- 8.195 The track renewals expenditure plans include £325m of accelerated renewals. £169m of this relates to renewals brought forward on the Western route in anticipation of engineering access constraints following electrification and completion of Crossrail. £64m of the accelerated renewals are in LNE where carrying out track renewals prior to electrification enhancements will reduce unit costs. Anglia is planning £30m of accelerated track renewals to benefit from synergies with the Crossrail programme. Wessex, Sussex, Kent and East Midlands routes have included accelerated renewals driven by increased tonnage as a result of enhancements.
- 8.196 Network Rail is planning track renewals efficiency of 18.8% by the end of CP5. This is projected to come from improved supply chain management, revision of standards and rules, reduction in site overheads, and a transition to design and build contracts. Contractor resource utilisation will be improved through better workbank visibility and

better profiling of work through weeknights to facilitate a full-time, more highly skilled workforce.

8.197 Off-track renewals efficiencies of 19.2% are planned by the end of CP5.

## Signalling

8.198 Network Rail's plans for signalling renewals are shown in Table 8.18.

**Table 8.18: Network Rail's plans, signalling renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	827	888	845	731	636	-	3,927
Efficiency	-	8.5%	4.5%	5.1%	4.2%	4.7%	-	24.2%
Post-efficient expenditure	533	757	776	701	581	482	2,421	3,296

8.199 Its signalling renewals plans are influenced by three main drivers: condition driven renewals, the implementation of NOS and the industry move to ETCS. It has built its plans by overlaying programmes of work on to the base level of renewals work required by adoption of CP5 policy.

8.200 NOS drives a large increase in signalling renewals spend in CP5 but its benefits are realised in operating expenditure. The move to ETCS should generate other benefits in the long-term including reducing the lineside assets and related work, improving capacity and improving safety.

8.201 Proposed signalling renewal expenditure for CP5 is £3.30bn (£3.93bn before efficiencies), compared to £2.42bn planned in CP4.

8.202 Signalling renewals efficiencies of 24.2% are forecast to be delivered by the final year of CP5. Some of these are forecast to be delivered through scope efficiencies from its CP5 policies and enabled by the ORBIS asset information programme. The remainder are built into its framework contracts and include efficiencies from collaborative / partnership working, efficiency initiatives identified by Network Rail and efficiencies agreed to be delivered by the contractor.

## Civils

8.203 Network Rail's plans for civils renewals are shown in Table 8.19.

**Table 8.19: Network Rail's plans, civils renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	592	576	575	572	590	-	2,904
Efficiency	-	4.6%	2.1%	2.2%	3.0%	2.7%	-	13.8%
Post-efficient expenditure	397	565	539	525	506	509	1,944	2,644

8.204 Network Rail has forecast civils expenditure of £2.64bn (£2.90bn before efficiencies) in CP5. This compares to planned expenditure of £1.94bn in CP4. The increase in proposed expenditure is driven by projected costs from implementation of CP5 policy and improved understanding of the civils asset base. The new policy is intended to deliver a lower level of risk on the network.

8.205 Network Rail's plans include civils renewals efficiency of 13.8% by the final year of CP5. Its identified efficiency initiatives are largely common to structures and earthworks. A key enabler of efficiency is planned to be improved asset information which is expected to be more readily available, to enhance decision making and to be delivered through improved asset monitoring regimes. Better business planning and better collaboration between asset teams will improve work packaging to maximise possession productivity. Innovative ways of delivering high volumes of work and unit cost reductions from improved supply chain management also contribute to projected efficiencies.

## Buildings

8.206 Network Rail has forecast buildings expenditure of £1.19bn in CP5 (£1.39bn before efficiencies) as shown in Table 8.20. This compares to a forecast expenditure of £1.28bn in CP4.

**Table 8.20: Network Rail's plans, buildings renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	334	311	285	250	214	-	1,394
Efficiency	-	9.6%	4.2%	2.0%	3.4%	4.3%	-	21.4%
Post-efficient expenditure	216	302	270	242	205	168	1,279	1,187

8.207 Network Rail's plans include buildings renewals efficiencies of 21.4% by the final year of CP5. These efficiencies are expected to come from scope efficiencies from its CP5



policies, improved asset management systems, improved planning of work and improved tendering of work.

8.208 Franchised stations account for over half of the total funding requested for buildings and plans have been developed from a modelled approach. Lineside buildings, light maintenance depots and depot plant have also been modelled. Expenditure requirements for the other asset types have been planned using historic levels of expenditure.

## Electrical power and fixed plant

8.209 Network Rail has forecast electrical power and fixed plant expenditure of £0.92bn in CP5 (£1.18bn before efficiencies), as shown in Table 8.21. This compares to a forecast expenditure of £0.80bn in CP4.

**Table 8.21: Network Rail's plans, electrical power and fixed plant renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	284	271	248	199	176	-	1,178
Efficiency	-	14.6%	6.1%	4.1%	5.4%	1.2%	-	28.2%
Post-efficient expenditure	280	243	217	191	144	127	797	922

8.210 The volumes of renewal work proposed for CP5 are markedly different to those forecast to be delivered during CP4. This is a result of significant changes to the asset policy, an increased focus on electrical safety, higher volume forecasts to maintain outputs in CP5 and the impact of enhancement schemes. For example, the CP5 asset policy changes the mix of overhead line renewals compared to CP4. The policy results in a lower volume of re-wiring and campaign changes but a new requirement for mid-life refurbishments as supported by whole life cost analysis.

8.211 Efficiency for electrical power and fixed plant is projected to be 28.2% by the final year of CP5. This efficiency is proposed to be delivered through four key initiatives:

- (a) programme optimisation: providing an accurate forward view of planned work to suppliers enabling improved efficiency in the supply chain;
- (b) standard scheme design: development of standard designs, where applicable, to reduce design effort;
- (c) procurement: using standard specifications and market stimulation to expand the potential supplier base and increase competition; and
- (d) delivery model: optimising the mix of work between internal resources and contractors.

## Telecommunications

8.212 Network Rail plans expenditure of £0.41bn on telecoms renewals in CP5 (£0.47bn before efficiencies), as shown in Table 8.22.

**Table 8.22: Network Rail's plans, telecoms renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	132	103	100	74	55	-	465
Efficiency	-	8.1%	3.0%	3.3%	2.0%	3.1%	-	18.2%
Post-efficient expenditure	236	122	92	86	63	45	1,150	408

8.213 The plans for telecoms show a significant reduction from CP4 levels of expenditure. This is due to large programmes of work related to GSM-R and FTN undertaken during CP4 coming to an end.

8.214 Efficiencies of 18.2% are projected by the final year of CP5 for telecoms renewals. These are forecast to be delivered through scope efficiencies from its updated CP5 policies, improvements to workbank planning, efficiencies from adoption of different technologies and an improved approach to design.

## Wheeled plant and machinery

8.215 Network Rail plans renewals expenditure of £0.60bn on wheeled plant and machinery in CP5 (£0.64bn before efficiencies) as shown in Table 8.23.

**Table 8.23: Network Rail's plans, wheeled plant and machinery renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	168	122	123	131	94	-	637
Efficiency	-	8.3%	-1.9%	-1.6%	0.0%	0.2%	-	5.3%
Post-efficient expenditure	86	154	114	117	124	89	346	598

8.216 The plans for wheeled plant and machinery show an increase in expenditure compared to CP4. This is largely driven by increased expenditure on road-rail vehicles and provision of additional high output fleets.

## Other renewals

8.217 Network Rail has put forward proposals for renewal expenditure in other areas. The majority of this is for investment in schemes which the company believes will deliver value for money and/or safety benefits in the long-term.

## IM renewals

8.218 Network Rail plans expenditure of £613m on IM renewals in CP5, an increase of £146m compared to CP4. This excludes expenditure on ORBIS. The proposal is based on benchmarking work that the company has carried out, which indicates higher levels of investment by other organisations.

## Property

8.219 Property renewals include expenditure on maintenance delivery units, offices and commercial property. The SBP includes expenditure of £124m on property renewals, a reduction of £130m on expenditure in CP4.

## Asset information strategy - ORBIS

8.220 The SBP includes plans for the asset information improvement programme ORBIS as discussed previously.

## Intelligent Infrastructure

8.221 Network Rail has included expenditure of £95m in its plans for the further roll-out of remote condition monitoring as discussed previously.

## Systems for safer working

8.222 The SBP includes a proposal for £100m in CP5 to deliver new technology to provide protection to staff working trackside.

## Faster and safer isolations

8.223 Network Rail's plans include £230m proposed expenditure to deliver infrastructure which will allow electrical isolations to be carried out more efficiently and more safely on both the DC and AC networks.

## Research and Development

8.224 Network Rail has included £300m proposed expenditure to increase its R&D activity. This level of expenditure has been developed on the basis of the company's benchmarking of expenditure across all sectors.

## Renewals – route specific issues

8.225 Route specific renewals plans are set out below, highlighting any deviation from asset policy and central plans.

**Table 8.24: Network Rail's plans, post-efficient renewals by route**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Anglia	245	202	231	277	240	203	1,153
East Midlands	144	162	145	125	119	107	659
Kent	221	228	222	199	195	207	1,052
LNE	449	413	453	429	473	502	2,270
LNW	566	536	557	571	534	525	2,722
Scotland	273	286	350	305	275	267	1,484
Sussex	191	168	184	159	172	154	838
Wales	173	193	155	163	120	112	742
Wessex	209	216	214	261	250	210	1,149
Western	312	337	298	280	285	288	1,488

## Anglia

- 8.226 Anglia route's most significant challenges during CP5 are the delivery of works relating to Crossrail, the delivery of level crossings safety improvements and the migration of signalling operations to the new route operating centre at Romford. The route sees potential opportunities for deep alliances arising from the re-franchising of Greater Anglia and Essex Thameside. Maintenance and renewals for buildings is already part of the Greater Anglia franchise.
- 8.227 The route's track plan addresses ageing S&C and poor track quality, with the primary aim being to deliver reliability on the high criticality routes and remove the risk of Temporary Speed Restrictions (TSRs) due to geometry faults and rough rides. An increased percentage of S&C units will be treated either by renewal or refurbishment. Re-railing volumes are slightly higher than modelled to address the high levels of rail defects on the route.
- 8.228 Proposed signalling work is driven primarily by NOS.
- 8.229 The route delivery plan contains significant civils renewals including works on major structures (for example swing bridges). The plan notes that full compliance with the new policy will not be achieved until CP6. Buildings work includes major roofing activity at Liverpool Street Station which will continue into CP6. Overall the route's station activity is lower than in CP4 because of the full maintenance and renewal leases awarded to the Greater Anglia franchise which has been assumed to continue when the current franchise is renewed in 2014.
- 8.230 The reliability of the overhead line equipment in Anglia is considered low and some substation components are being renewed due to obsolescence. A significant volume of lineside 650v signalling power supply equipment will be replaced. The route is

continuing the re-wiring of 1940s overhead line equipment between Liverpool Street and Shenfield / Southend.

- 8.231 There are few major variations to the national asset policies. Track re-railing volumes in the first two years have been increased to address rolling contact fatigue on Essex Thameside and rail defects between Ely and Peterborough.

## East Midlands

- 8.232 The East Midlands asset management plan is heavily influenced by two key issues: the development of a signalling workbank to deliver NOS and HLOS requirements, and the electrification of the route between Bedford, Corby, Nottingham and Sheffield. Implementation of NOS results in a significant acceleration of signalling renewals to facilitate major capacity schemes. The electrification of the route results in the requirement to carry out track lowering schemes, bridge reconstruction for gauge clearance and some advancement of renewals works in signalling and structures.
- 8.233 The route has deviated from policy in certain areas. All bridges will be included in the bridge painting and vegetation clearance programmes.
- 8.234 Rail renewal volumes are higher than required by policy, driven by the decision to remove all pre-1976 rail. (The rail manufacturing process used before 1976 resulted in rail which is far more prone to developing defects.)

## Kent

- 8.235 Kent's route plan centres on the major challenges around delivery of the Thameslink programme and gaining sufficient access in order to carry out routine maintenance and renewals activities. This is an issue for the London Bridge area and for a number of works requiring high levels of access, such as Charing Cross and Cannon St bridges, Sevenoaks and Bo-Peep tunnels, the S&C renewals programme, the East Kent re-signalling project and power supply upgrade projects.
- 8.236 Track geometry in the Kent route has been below target recently due to a combination of drought conditions and insufficient track maintenance (such as tamping and stoneblowing activities). The route's track plans propose an increase in renewal, refurbishment and reballasting of S&C, particularly on the high criticality routes. No high output ballast cleaning is proposed. Plain line refurbishment will be in line with policy and will include removal of obsolete components. Rail renewal plans concentrate on the removal of old and defective rail on the New Cross Gate to Norwood route which sees an increase in tonnage.
- 8.237 Kent's structures proposals are driven by bridge expenditure including schemes at the major river crossings at Charing Cross and Cannon Street. Where there is a business case, Kent is seeking to replace bridge decks which use longitudinal timbers to provide rail support as this system requires increased maintenance. Earthworks are an issue for the Kent route: the plan reports that 6% of its 478 miles of earthworks are

classified as 'poor'. The route also has to deal with the problem of summer shrinkage on clay embankments, which can cause track quality problems.

8.238 Signalling renewals are being heavily driven by the Thameslink programme, NOS and migration of control to the new ROCs.

8.239 The route plan does not include any significant variations from the national asset policies.

## **LNE**

8.240 The LNE route asset management plan is dominated by renewal requirements in track, signalling and civils. The track plan incorporates a degree of asset rationalisation and supports the central policy with a shift from renewal to refurbishment depending upon criticality. A significant increase in S&C renewal interventions is planned, including in the Doncaster and Colton areas. The route plan includes replacement of all pre-1976 rail on high criticality (criticality band 1) lines.

8.241 For signalling, the plan sees the introduction of ETCS on the south end of the East Coast Main Line (ECML) together with a number of renewals and re-controls that will be delivered in line with the NOS strategy.

8.242 The route's plan for civil assets includes an increase in expenditure over previous control periods to address a backlog of work associated with earthworks and to address deficiencies in capability within the structures portfolio. The route plan identifies a significant issue with historic mineworkings which require continuing investigation and remediation to mitigate the risk.

8.243 The route has proposed additional investment in earthworks beyond the level required by CP5 policy. This is to improve the overall condition of the asset base to a sustainable level before fully implementing the new policy.

8.244 For electrification and plant, the route is planning to install additional signalling power supply back-up at key locations on the ECML and to replace signalling power cables to improve overall reliability. Additional drainage works over and above asset policy requirements are proposed to reduce operational risk. In addition, the route anticipates accelerating re-wiring of overhead line equipment where delivery efficiencies can be achieved alongside power supply enhancement works.

## **LNW**

8.245 The LNW route plan includes extensive re-signalling work, including at Birmingham New Street, Watford and Wolverhampton. It proposes insourcing of repetitive civil structures inspections.

8.246 The plan proposes variances from the asset policies in a number of areas. This includes acceleration of renewals in several asset categories to align with proposed enhancements. For track assets the route will not remove all pre-1976 rail before the end of CP5. For civil assets it proposes: waterproofing of underbridges where track

and formation renewals are being undertaken; improved drainage maintenance access; accelerated replacement of long timber bridges to deliver a modern structure supporting conventional ballasted track; and enhanced bridge strike mitigation measures. For buildings assets the route proposes enhanced measures to reduce energy consumption at stations, a programme of platform reconstructions to address variance to stepping distance standards and rationalisation of route accommodation. For electrification and plant it proposes some rationalisation and removal of obsolescent assets.

## Scotland

8.247 The Scotland route asset management plan is dominated by renewal requirements in track, signalling and civils. Its plans for track include the introduction of high and medium output plant on the ECML and WCML, renewal of slab track in Queen Street Tunnel and increased volumes of off-track work. Its plans for signalling include the migration of Motherwell Signalling Centre to the West of Scotland Signalling Centre and development work associated with deployment of ETCS in CP6. Its plans for civils renewals are based on the remediation of high risk assets for which condition is poor and has been deteriorating in CP4. The civils plan for Scotland includes approximately £40m on major structures, which is approximately 40% of the network total expenditure on major structures. In the Scottish route this work is dominated by the ongoing painting and refurbishment of the Tay Bridge, new work to the Clyde Bridge and routine maintenance to the Forth Bridge which will be necessary despite the completion in CP4 of the major refurbishment work.

8.248 The plan includes some variances to asset policy and, in some cases, reflects changes to route criticality classifications based on their importance to the Scottish network. For track the route proposes higher volumes of sleeper renewal to address non-standard sleepers on high speed routes. The route's signalling plans include renewal of the signal box at Carnoustie driven by the need to renew the adjacent level crossing. For civils the route has included plans to provide slope protection netting on all tunnel approaches and to address legacy issues associated with mining. For electrification and plant the plan includes some advancement of signalling power feeder cable renewals.

## Sussex

8.249 The Thameslink enhancement is a key focus of activity on the Sussex route. The condition of the track, signalling and electrification assets on the route has progressively worsened over time to the point where performance is below the PPM targets and reliability is not sufficient to meet the existing timetable. The route is proposing to increase refurbishment of track assets, in particular carrying out more ballast cleaning. It proposes to increase remote condition monitoring to enable maintenance work to be carried out on a more predictive basis. Some signalling work is being accelerated from CP6 to CP5 as a result of the NOS programme.



- 8.250 For track the volumes of work are in line with central policy, except where life extension of the asset is not deemed to be whole life cost effective. Sussex has proposed to increase the use of high performance rail in preparation for the Thameslink services from 2018. There are no other significant variances from the central asset policies.
- 8.251 The Sussex plan includes a significant increase in replacement of metallic structures driven by the high proportion of this type of structure on the route, many of which are over a hundred years old and in need of modern replacement. Proposed earthworks volumes are above network average reflecting the unsatisfactory state of clay embankments on the route, which has a direct link to track quality.
- 8.252 The Sussex route plan has been built around improving reliability for Thameslink services, with increased traffic levels, an ageing asset and reduced access time. There is a focus on re-railing to reduce the pre-1976 rail and manage increased levels of rail defects on the route.

## Wales

- 8.253 The Wales route asset management plan is dominated by renewal requirements in track, signalling and civils as part of a 15 year vision for overhauling its asset base. The route plan is significantly affected by new electrification which is driving bridge reconstructions at various locations and significant signalling renewals in the Welsh Valleys and Port Talbot area, aligning with NOS.
- 8.254 The signalling plan includes the completion of the Cardiff area signalling renewals and the renewal of the Shrewsbury-Newport and Chester-Llandudno sections which will be delivered in line with the NOS business case for centralising control. The route is coordinating track renewals with re-signalling work to maximise efficiencies in terms of design, capability and access.
- 8.255 No variances to asset policy have been highlighted within the Wales plans other than the acceleration of activities to coordinate renewal interventions with enhancements.

## Wessex

- 8.256 The Wessex route asset management plan is largely focused on condition based renewals. The route's track condition remains the key area of work for CP5 with rolling contact fatigue and the general condition of S&C presenting key challenges. Waterloo, the major terminal on this route, will be the focus of various activities with around a quarter of S&C refurbishment taking place in the Waterloo area. Re-signalling of Feltham is the only condition based signalling scheme with the remainder of the signalling work being integrated with NOS. Some enhancements to power supply will be needed to accommodate 10-car operations, but on the whole electrical power and fixed plant assets will follow the national condition based renewals approach. Resilience of assets remains an area of concern and Wessex aims to address this by, for example, introducing dual end fed signalling power systems in critical areas.

Wessex is susceptible to risk from heavy rainfall and has focused on drainage as a key risk with respect to both track and earthworks assets. Its structures plans include the removal of higher risk asset types (cast iron and long timbered bridges) over and above the requirements of the policy.

8.257 Although there is no variation to the national track asset policy noted, re-railing is expected to be higher than that modelled centrally due to a number of factors including: volume of pre-1976 rail, excessive side wear on tight curves and the impact of historical tonnage assumptions. For stations, there are two variations to policy noted: maintaining building elements instead of renewal (e.g. lattice girder footbridges and trestle platforms); and life extension of lineside buildings instead of renewal.

## Western

8.258 Renewals investment on the Western route is dominated by track, signalling and civil assets. The plan is significantly affected by major enhancements schemes. Crossrail generates the need for accelerated track renewals between Paddington and Maidenhead to cope with significant increased tonnage. New electrification drives bridge reconstructions and significant signalling renewals in alignment with NOS. In addition significant work is proposed for the Bristol area to coordinate renewal activities and to deliver the capacity requirements outlined in the HLOS.

8.259 Track volumes are in line with policy, targeting pre-1976 rail replacement and ageing S&C on critical routes. Heavier weight rail (CEN 60) will be installed on high criticality routes with increased traffic.

8.260 Structure volumes are being driven by the need to address assets in very poor condition as part of a risk prioritised recovery plan over two control periods. The Western route continues to have difficulties with earthworks reliability and has the highest proportion in the 'poor' category (9% compared with the network figure of 5%). This is reflected in the planned expenditure on earthworks.

8.261 The plan includes some variance to asset policy where renewal activities have been accelerated to coordinate with enhancements. The structures plan includes works to address known issues with a specific bridge type (box girder bridges) and to develop a longer-term strategy for coastal defences in Devon, particularly the high profile Dawlish sea wall. Western has a high proportion of issues with historic mining activities, principally Cornish tin mining, and the plan includes continuation of a rolling programme to deal with this legacy.

## Our assessment methodology – maintenance and renewals

8.262 In July 2011 we consulted on our proposed methodology for the assessment of Network Rail's plans. After consideration of the responses we refined our methodology, developing workstreams to focus on:

- (a) asset management capability;
- (b) asset policies;
- (c) asset data;
- (d) unit costs (pre-efficient);
- (e) planning - modelling and workbank development; and
- (f) efficiency.

Each of these areas is discussed in the subsequent sections of this chapter.

8.263 Prior to the submission of the SBP we, and the independent reporters, engaged with Network Rail to understand the process it was adopting in developing its plans by route and to allow early review of them where practical. We called this engagement 'progressive assurance'. Progressive assurance provided some early sight of the process being adopted but did not provide the opportunities for early review which were originally envisaged as Network Rail did not submit the expected level of evidence in advance of the SBP and provided limited engagement with the routes prior to its submission.

8.264 In our assessment of the SBP we have separately considered:

- (a) the volumes and level of expenditure required to deliver the required outputs, before further efficiencies in CP5; and
- (b) the efficiency available in CP5 and therefore the efficient level of expenditure in CP5.

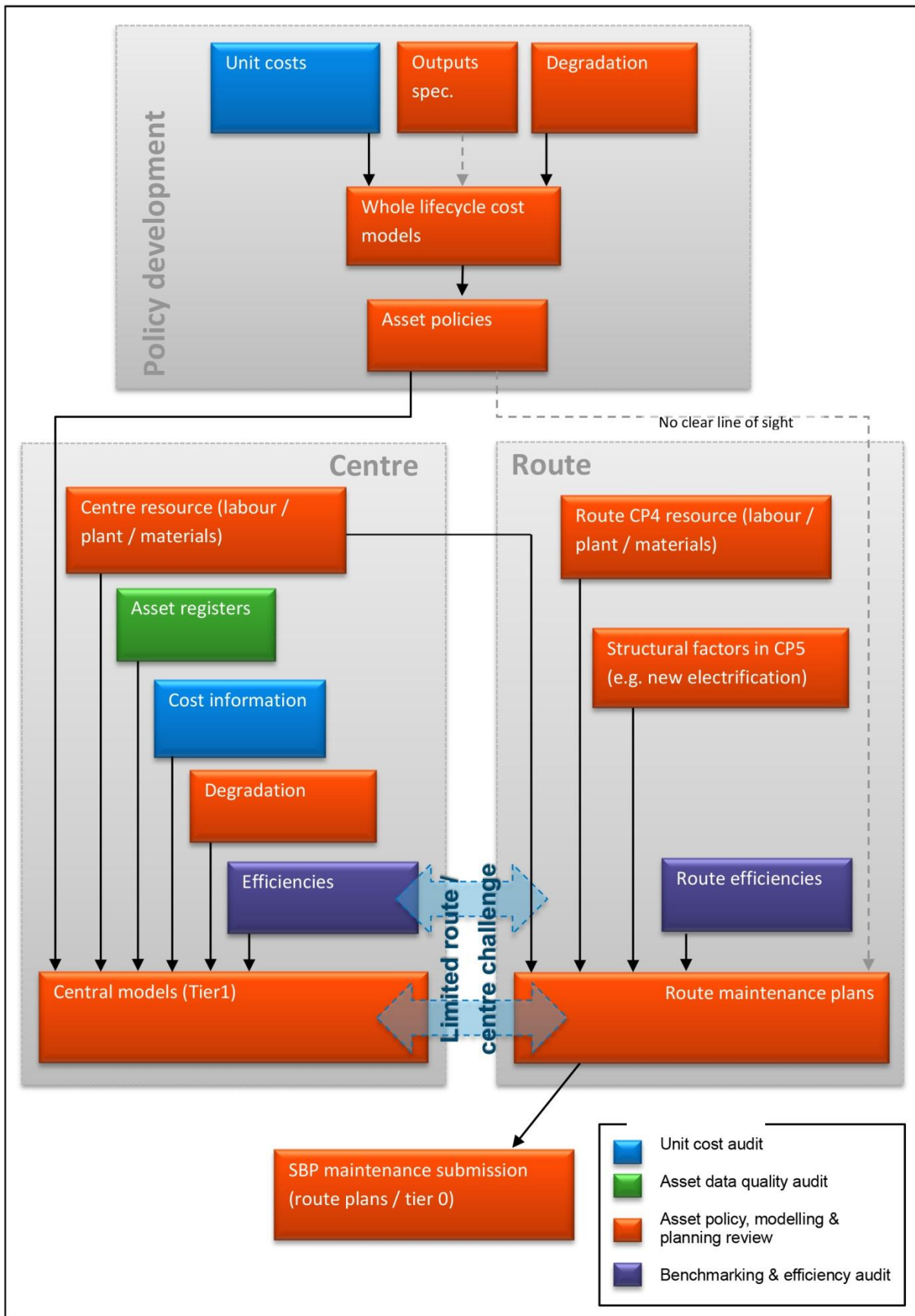
8.265 We have assessed all stages of the development of Network Rail's plans through the detailed review by our engineering experts and through independent reporter work. Figures 8.5 and 8.6 show our interpretation of the high level processes Network Rail has used in developing its maintenance and renewals plans, with colour coding applied to show our assessment process. The colour of each box in the diagrams indicates the reporter study which reviews it. The diagrams are intended to give an overview and do not show the full complexity of the processes adopted or review and feedback loops.

8.266 Both Figure 8.5 and 8.6 show our assessment of Network Rail's plans in four areas:

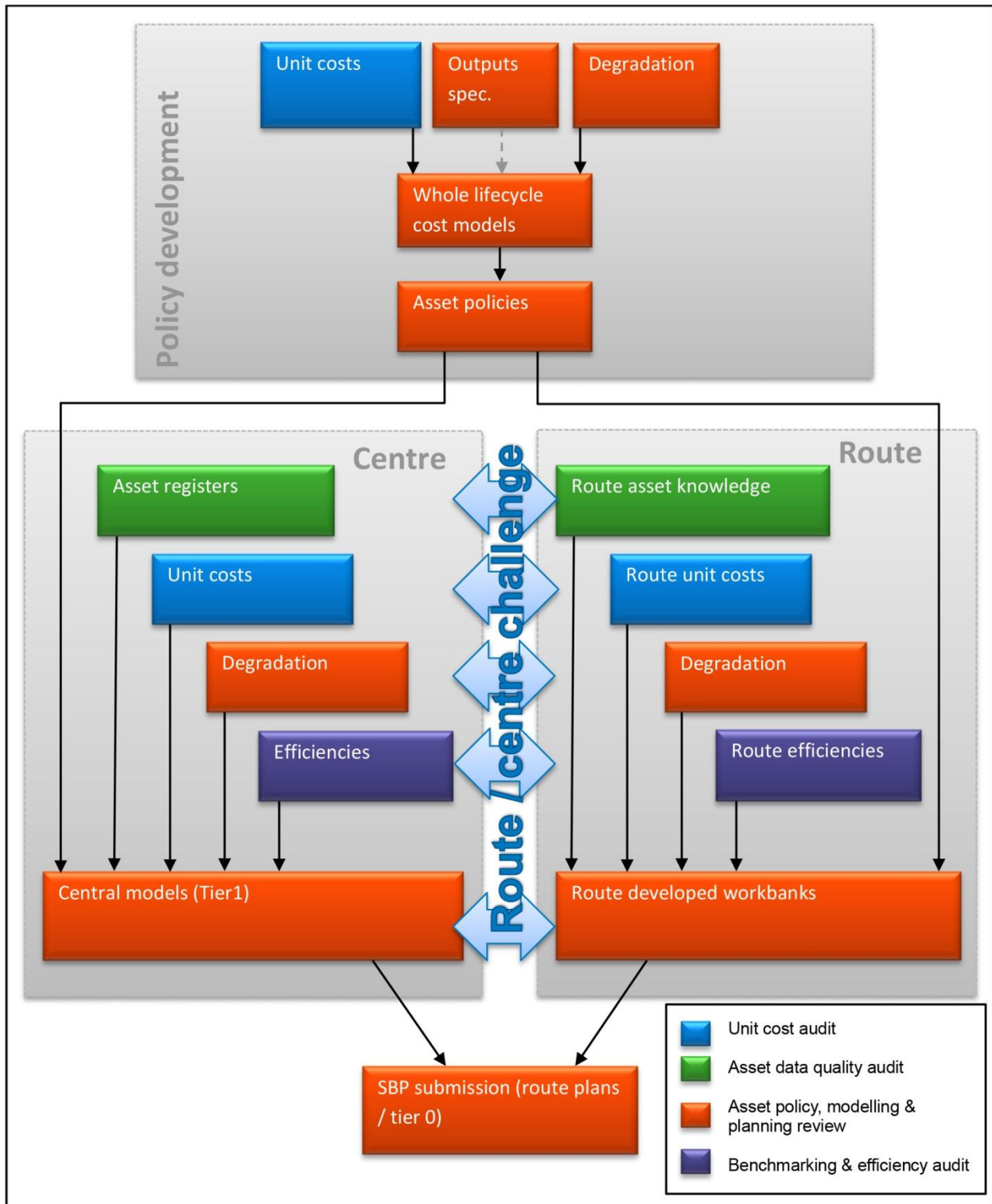
- (a) the development of its CP5 asset policies;
- (b) the central modelling of volumes and costs (including efficiencies) associated with implementing those policies;
- (c) the route based development of volumes and costs (including efficiencies) associated with implementing those policies; and
- (d) the development of Network Rail's submitted SBP.

- 8.267 Figure 8.5 shows that, for maintenance, policy development and central modelling has been carried out. The outputs of the central modelling were provided to the routes, but our assessment has found insufficient evidence of how these areas of work have fed into the final SBP submission. In particular, the line of sight between asset policies and maintenance plans presented in the SBP is not clear. The maintenance plans are largely based on projections of resource requirements with a high level consideration of proposed activity levels, but have not been demonstrated to be aligned with policy requirements. We have seen some evidence of the challenge process between the routes and the centre but we have concerns about how robust this has been. For example, route plans have generally adopted centrally derived efficiency initiatives but have not demonstrated further consideration of how they will be implemented.
- 8.268 Figure 8.6 shows that renewals plans are developed based on the requirements of asset policies. Asset policies are based on whole life cost modelling and rely on understanding of unit costs, degradation and the impact of interventions. They also rely on specification of the outputs which they are intended to deliver. We have some concerns over the specification of outputs, discussed later.
- 8.269 For renewals, asset policies have generally been demonstrated to feed into both central modelling and route based plans. In both cases the volumes and costs associated with implementation of the policies are developed using understanding of the asset base (for example, the number of assets and their condition), cost information (including unit costs of work activities), understanding of degradation and efficiency initiatives. We have seen evidence of a challenge process between central and route based plans in all aspects of the planning process. The final SBP submission is a result of that challenge process.

Figures 8.5: Our assessment of Network Rail's maintenance plans



**Figure 8.6: Our assessment of Network Rail's renewals plans**



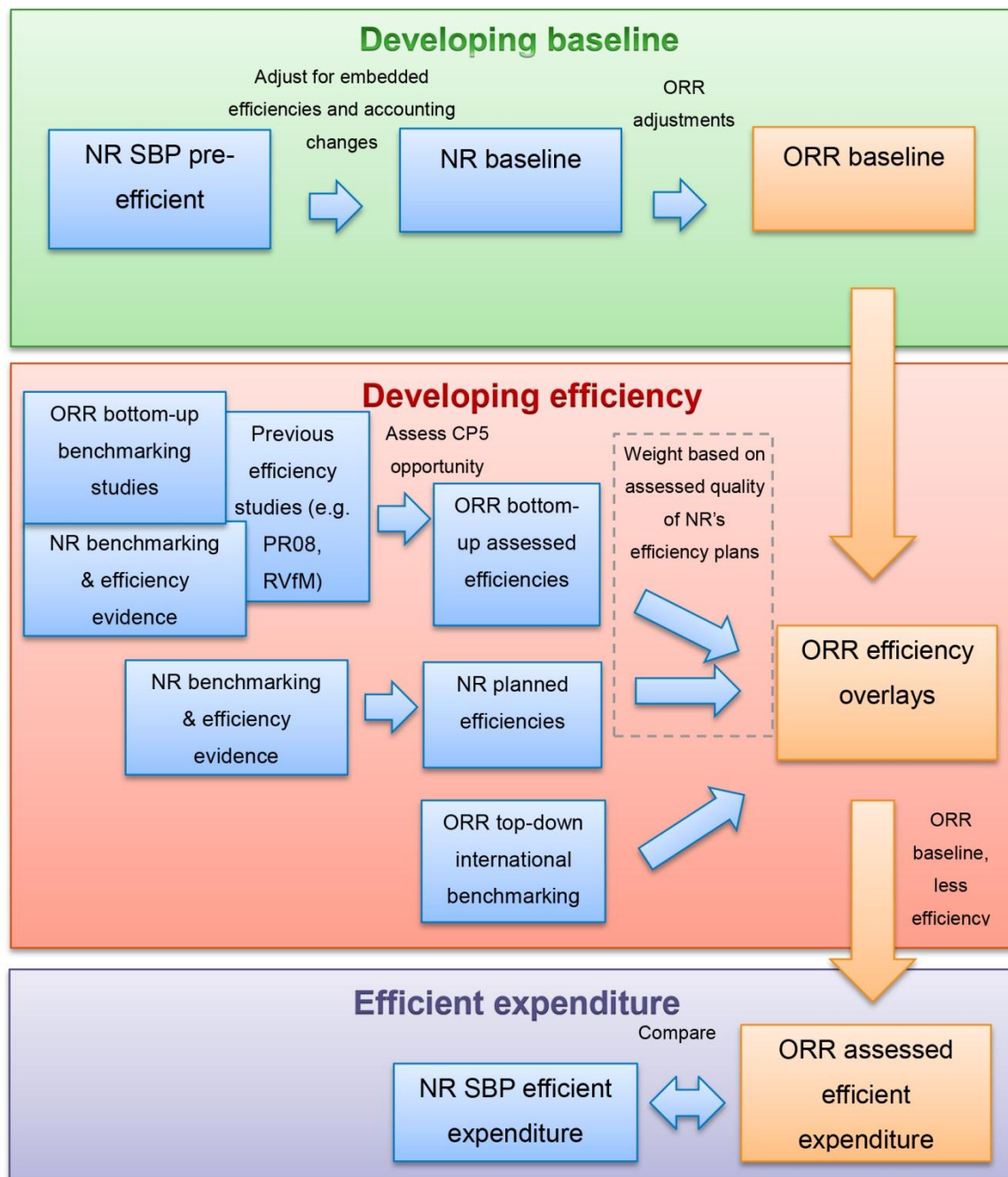
8.270 As well as auditing Network Rail's development of its plans we have carried out our own assessment of the efficiencies that are available through improved asset management. This is discussed in detail later in the chapter.



8.271 Where our review has found material issues with Network Rail’s planning process that are likely to lead to a bias in its forecast costs and volumes we have made adjustments to reflect this.

8.272 Figure 8.7, below, gives an overview of the approach adopted.

**Figure 8.7: Our approach to developing our assessed efficient maintenance and renewal expenditure**



### Developing the ORR baseline

8.273 Network Rail’s pre-efficient plans are presented on the basis of applying its new asset policies and unit costs as at the end of CP4. In some cases its new policies are



considered to be more efficient than current practice, requiring less work to be done to give the same outputs. These efficiencies are embedded in the new policies and are referred to as 'embedded efficiencies'. Since these are efficiencies that Network Rail proposes will be delivered in CP5 we have adjusted the pre-efficient plans to recognise them and generate a 'Network Rail baseline'.

8.274 We have made adjustments to the Network Rail baseline where we do not consider that it accurately reflects the costs associated with continued application of CP4 policies and the end-of-CP4 level of efficiencies. For example we have made adjustments where we believe that its end-of-CP4 unit costs are inaccurate. These adjustments generate an 'ORR baseline'.

### **Developing the ORR efficiency overlay**

8.275 Our efficiency overlay is influenced by the studies that we have commissioned in PR13, our review of all previous efficiency studies, our top-down benchmarking and our view of the robustness of Network Rail's benchmarking and efficiency evidence, informed by the independent reporter's audit.

8.276 In developing our final view of the efficiency overlay we have weighted the results of our bottom-up efficiency analysis and Network Rail's efficiency analysis based on our assessment of the quality of the company's benchmarking and efficiency work. This draws on the outputs of the independent reporter's audit. Where we have more confidence in Network Rail's efficiency projections (for example where we think its benchmarking has been comprehensive, robust and there is transparency in how this has informed its SBP efficiencies) we have applied more weight to its view of efficiency. Where Network Rail's efficiency plans are considered weaker (for example where we think that benchmarking is less comprehensive or where there is a less transparent link between benchmarking and SBP efficiencies) we have applied more weight to our analysis.

8.277 Finally, we have reviewed the efficiency overlay against the range of efficiencies produced by our top-down international benchmarking.

### **Developing ORR assessed efficient expenditure**

8.278 We have applied our view of the efficiency available during CP5 to the ORR baseline to produce our ORR assessed efficient expenditure. This can be directly compared with Network Rail's efficient expenditure (or 'post-efficient' expenditure) as set out in its SBP.

### **Our assessment of route plans**

8.279 We and the independent reporters, Arup and AMCL, have carried out a detailed assessment of plans by operating route. The assessment has included:

- (a) review of the route specific SBP submissions, including route plans and disaggregated costs and volumes data;

- (b) review of the SBP development process adopted, including the development of central modelled plans and route-based plans, and their influence on the submitted SBP;
- (c) ten overarching route based challenge meetings: one with each of the ten operating route management teams; and
- (d) 34 meetings to assess the development of asset management plans in the routes.

## Interoperability

8.280 Interoperability is a European Commission initiative to promote a single market in the rail sector, which includes making it easier for trains to travel across different rail networks. This is partly achieved through common specifications called Technical Specifications for Interoperability (TSIs). Statutory requirements for interoperability are set out in The Railways (Interoperability) Regulations 2011.

8.281 The SBP included the assumption that planning for an interoperable railway would not require specific additional costs in CP5 beyond existing levels of capital expenditure. Network Rail's planned expenditure for maintenance, renewal and enhancements is assumed sufficient to meet the requirements of the interoperability regulations and the TSIs, and therefore our determination is also on this basis.

## Our assessment by workstream

8.282 The rest of this chapter sets out the findings of our review and our conclusions. First it sets out our overarching findings against the workstreams listed in paragraph 8.262 and then it provides detail by asset category and route.

## Asset management capability

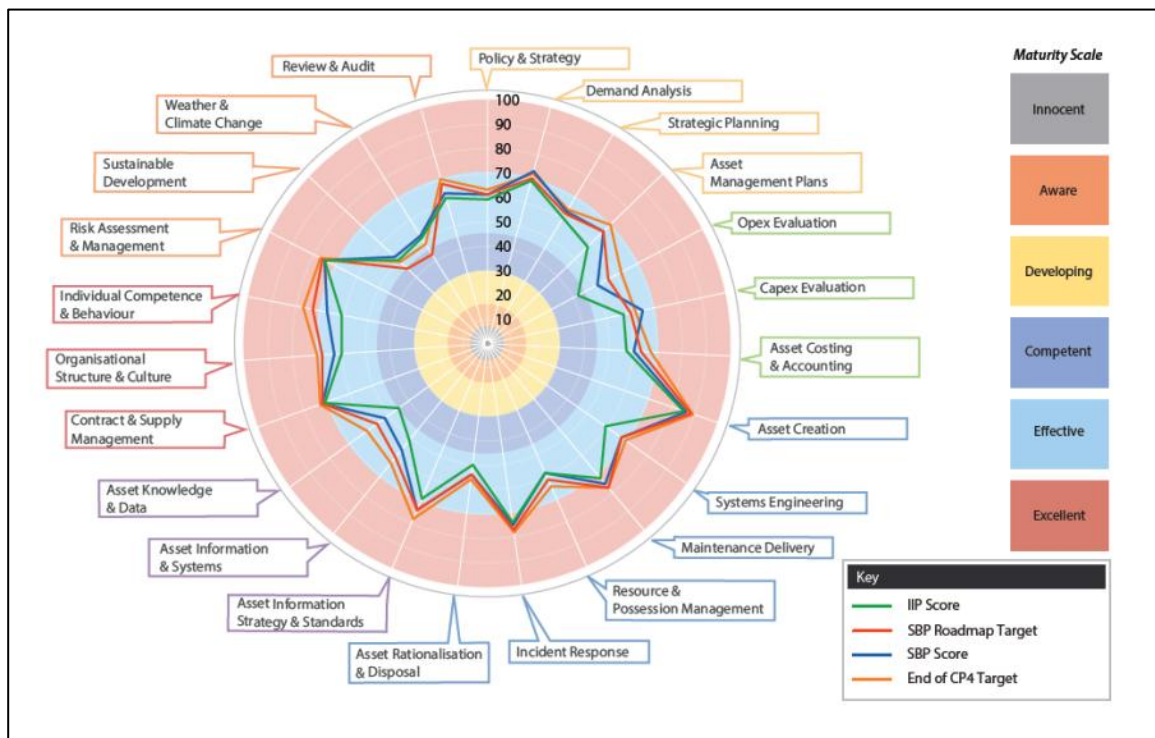
8.283 During CP4 we set targets for Network Rail to improve its asset management capability by the end of CP4, including milestones at publication of the IIP and at publication of the SBP. Network Rail has not fully delivered against these milestones, but has nonetheless made significant improvement in its capability and has achieved PAS55 certification (the standard that denotes it has reached a level of good practice).

8.284 Figure 8.8 shows Network Rail's assessed asset management capability at the time of the SBP submission as measured by AMEM<sup>171</sup>. Asset management capability is measured for each of 23 key activities, with lower scores (closer to the centre of the circle) representing lower asset management capability maturity and higher scores (closer to the perimeter of the circle) representing higher asset management capability maturity.

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<sup>171</sup> 2013 SBP AMEM Assessment, AMCL, May 2013, available at: <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>

**Figure 8.8: Network Rail’s asset management capability at SBP submission as measured by AMEM**



8.285 The AMEM findings show that Network Rail has further improvements to make in some key areas of asset management to reach its end-of-CP4 target. At the time of the SBP submission it was significantly behind its targets in opex evaluation (i.e. the justification of maintenance interventions based on analysis of cost and risk), asset costing and accounting, resource and possession management, asset information and systems, asset knowledge and data, organisational structure and culture, individual competence and behaviour, and review and audit.

8.286 The AMEM findings provide strong support to our assessment of Network Rail’s plans and the areas in which further efficiencies might be available. Further improvements in its asset management capability will be key to enabling efficiency improvements in CP5. We have set asset management capability targets as regulated outputs as discussed in chapter 3.

8.287 We discuss Network Rail’s approach to asset management in more detail below, including by asset type and route.

### Asset policies

8.288 We have carried out a detailed review of Network Rail’s asset policies and their justification. We have set out our framework for reviewing asset policy, including tests of robustness, sustainability, efficiency (of policy, in terms of minimum whole life, whole industry cost (abbreviated to ‘whole life cost’ in this chapter)) and further tests of alignment with good practice, consistent with PAS 55.

- 8.289 In assessing robustness we consider whether it is reasonable to believe that the asset policy can deliver the required outputs, for England & Wales and Scotland in CP5.
- 8.290 Our assessment of sustainability considers whether, if demand on the network were to remain steady, the application of the asset policy would continue to deliver the outputs specified indefinitely. A sustainable asset policy is one which delivers (at least) the agreed outputs for the final year of the control period in the long-term (to at least end of CP11) if demand on the system remains within the capacity limits of the current network and any enhancement schemes already committed to by industry. In assessing sustainability we have carried out a detailed review of Network Rail's long-term modelling of policy and outputs, either through long-term workbanks or strategic planning models. This test is important to ensure that, in managing its assets, Network Rail is making genuine efficiencies and is not deferring essential work at the cost of inefficiently higher expenditure in later control periods.
- 8.291 Our assessment of the efficiency of asset policies considers whether they have been demonstrated to deliver the required outputs both in the short- and long-term at lowest possible whole system cost over the lifetime of the assets. In assessing minimum whole life cost we have considered whether both scope and unit cost efficiencies have been fully considered.
- 8.292 Network Rail has made significant progress in developing and justifying its policies. In particular it has, for the first time, produced a suite of tools to support its development of minimum whole life cost asset policy. The tools are considered to be comparable to or at the frontier of best practice.
- 8.293 Network Rail has significantly reworked its policies, presenting them in a ten stage process, in line with best practice as recommended by the asset management independent reporter, AMCL. They show a step-change in quality and coverage. New policies have been developed in key areas and existing policies have been refined where previously mature (for example, track) or rewritten where known to be poor (as is the case for civil structures policy).
- 8.294 The CP5 policies reflect a further move towards the differentiation of asset interventions depending on the asset's criticality, and therefore better target expenditure on the basis of risk. They also move towards a more targeted approach to asset management, renewing only those components that require renewal where this is believed to be the most cost effective whole life approach.
- 8.295 Although Network Rail has made significant progress in the development and justification of its asset policies we consider that some areas of weakness remain. Deficiencies in Network Rail's asset knowledge limit its ability to demonstrate that its policies are fully optimised. Network Rail still does not have asset data knowledge of sufficient quality, in particular relating to asset degradation. Its knowledge of asset unit costs and application for the purposes of planning is currently not of sufficient quality

to provide certainty in its proposed asset policies and in its planned expenditure in CP5.

- 8.296 Network Rail has not optimised management of its assets across asset types. It has not considered whether network performance might be delivered better through a different mix of performance at the asset category level. The company has not demonstrated that it understands the relationship between its asset management plans and high level outputs such as PPM.
- 8.297 Network Rail's application of its CP5 asset policies in its planning is varied. For maintenance there is limited evidence of its policies feeding into its SBP submissions. For renewals the application of policy is generally stronger for track, signalling and electrical power and fixed plant. It is weaker for civils and buildings. We discuss this in more detail in our assessment by asset type.

## Asset data

- 8.298 The quality of asset management planning is entirely dependent on the quality of information held about the assets, and the asset system more widely. We have expressed serious concern about aspects of Network Rail's asset information systems and data quality management and have pressed for improvement. Network Rail has recognised the need for improvement. It has undertaken a programme of work, the Asset Data Improvement Programme (ADIP), to enhance the accuracy and currency of its asset information. Improvements have been prioritised to support development of the SBP and to support effective and safe maintenance of the railway. Network Rail has also set out its longer-term strategy for developing asset information management capability in its ORBIS plans. This programme of works is intended to change the way in which asset information is collected, stored and used, with the aim of improving railway safety, efficiency and capability.
- 8.299 We mandated the independent reporter, Arup, to conduct an extensive audit of Network Rail's asset data processes and resulting data quality, in part to understand the implications for the quality of the company's plans for CP5<sup>172</sup>. This audit has given us and Network Rail a more comprehensive understanding of the company's asset information systems, the quality of the processes through which asset information is maintained and the completeness and accuracy of the data held. The reporter separately audited:
- (a) Network Rail's data governance and capture processes; and
  - (b) the actual data held, assessing its completeness and accuracy.
- 8.300 The audit found some areas of good practice in Network Rail's data management. Data governance was generally found to be good, but it was noted that processes

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<sup>172</sup> *Audit of asset data quality*, Arup, May 2013, available at <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>

have been implemented recently and may not yet have impacted on currently held data. Data capture and entry processes were found to be sound for centrally managed data systems and consistency was found in the datasets used centrally and by routes in developing the SBP. The delivery unit teams were able to demonstrate good local data management through the System Support Manager role and the use of Ellipse as the primary asset management system. The completeness and accuracy of data held was found to be more robust for plain line track, operational property, signalling interlockings, level crossings and overhead line equipment.

- 8.301 The audit also found aspects of data management that were poor and which represent key areas of concern. The completeness and accuracy of data held was found to be poor for civil structures and conductor rail. (Subsequently Network Rail has been working to improve civils data.) Local data governance was found to lack formal process. Some local databases were not integrated to ensure consistency and efficiency. Route teams were found to be adopting inconsistent approaches to reviewing and verifying data quality.
- 8.302 Going forwards it is essential that Network Rail is able to demonstrate that it understands its asset information requirements, has the systems and processes in place to deliver those requirements and is auditing the quality of asset information held. Through the ADIP and ORBIS programmes it is developing these areas and we will monitor its progress closely. We have set out how we plan to monitor asset information quality in chapter 3.
- 8.303 The quality of asset information affects our view of the robustness of Network Rail's plans. For example, poor quality information may lead to inefficient targeting of work, inappropriate prioritisation of workbanks and uncertainty over the scope of work required. Our efficiency analysis has considered the efficiencies which might be available from improved asset information.

## **Unit costs**

- 8.304 It is essential that Network Rail has a robust unit cost framework in place for both maintenance and renewals. A complete, up-to-date and accurate set of unit costs enables accurate business planning, more reliable benchmarking of costs, identification of efficiency opportunities, demonstration of achieved efficiencies and development of asset policies that minimise the whole life cost of managing Network Rail's assets.
- 8.305 We have assessed Network Rail's unit cost frameworks for maintenance and renewal looking at both the quality of reported data, and the processes by which these data are used to develop a forecast of unit costs for the purposes of planning.



- 8.306 In May 2011, we wrote to Network Rail<sup>173</sup> to set out our expectations for its unit cost framework at SBP in terms of system reliability, accuracy and coverage. We stated a requirement for both maintenance and renewal related unit costs to achieve a confidence grading of A2 at the time of submission of the SBP. The company has put a substantial amount of work into improving its capture and reporting of unit costs. We have, through the independent reporter Arup, audited Network Rail's unit cost framework at SBP<sup>174</sup>. The company has not yet achieved the level of system reliability that was expected. Arup gave Network Rail's unit costs relating to renewals a confidence grading of B2. It found that the cost analysis framework (CAF), through which the majority of unit costs relating to renewals are captured, does not appear to capture all project costs for certain asset categories through the GRIP stages. In addition the company's maintenance unit costs are not at confidence A2. This has implications for the robustness of Network Rail's policy development, planning, benchmarking and its ability to demonstrate realisation of efficiencies.
- 8.307 Further to the above audit of actual (delivered) unit costs we have also audited, through the independent reporter Arup, the quality of the unit cost information which has been used in developing the SBP. This may be different to actual unit costs for reasons including: further efficiencies to the end of CP4; new work types projected for CP5; and better information about future unit costs (for example information from new contract placements).
- 8.308 For all asset types Network Rail's plans are based on a mixture of unitised costs, non-unitised costs and project cost estimates. Unitised costs are used to develop plans covering 47% of maintenance and renewal expenditure. For maintenance, none of the plans is based on unitised costs. Of the renewals expenditure plans roughly 64% is based on unitised costs, 23% is based on non-unitised costs and 12% is based on project cost estimates. Generally, more certainty can be attributed to those areas of expenditure where Network Rail has forecast expenditure on the basis of required volumes and costs, or on the basis of well-developed project cost estimates. There is generally less certainty where forecast expenditure is based on historic costs rolled forward.
- 8.309 Network Rail has not directly used its collected maintenance unit costs in its planning for CP5. Its maintenance plans have been developed on the basis of historical levels of resource expenditure, high level consideration of future activity levels, structural changes and efficiencies. There is limited read-through to the quantification of types of work and their cost of delivery. Network Rail carried out some central modelling of volumes and associated costs for the IIP, but we have seen limited evidence that this has been used to develop or evaluate the costs presented in the SBP. We are

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<sup>173</sup> [http://www.rail-reg.gov.uk/upload/pdf/unit\\_costs\\_letter-090511.pdf](http://www.rail-reg.gov.uk/upload/pdf/unit_costs_letter-090511.pdf)

<sup>174</sup> PR13 review of Network Rail's maintenance and renewal unit costs used in planning, Arup, May 2013, available at <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>



concerned by the limited use of historical maintenance unit costs in the development and validation of Network Rail's plans and, because plans do not directly take volumes and types of work activity as inputs, the line of sight from optimised policy to planned expenditure is not clear.

- 8.310 Network Rail has used its historical unit costs relating to renewal to varying degrees in developing its renewals plans. For some assets its plans are largely based on historical unit costs (for example track, earthworks and drainage). For other asset categories it has priced elements of its work activities based on labour, plant and materials costs using estimating techniques (for example, electrification and power, and buildings). For signalling the unit costs used are based on average framework signalling unit rates with a number of Network Rail overlays. In all cases factors have been applied to generate the all-in unit cost at the end of CP4. We are concerned that the systems currently being used for the capture of unit costs are not currently capturing them at an appropriate level, using a cost breakdown structure that reflects the requirements of the business planning process.
- 8.311 Arup has identified some key concerns with the unit costs and non-unitised projections used. Where expenditure is based on rolling forward non-unitised costs there is high potential for over-forecasting of expenditure. The process used for challenge of plans has focused effort on justifying expenditure which is greater than run-rate, and has not placed enough emphasis on justifying a continuation of historical levels of expenditure. For unitised costs based on historical spend there is potential for costs to vary due to the underlying mix of work types, for example where historical volumes of a work type are considerably different to those projected. Network Rail has not provided comprehensive analysis to assess the effect of these issues (but has provided an example for track). For all unit costs there is concern that the estimation of risk, contingency and management overhead costs has not been given adequate oversight at the programme or portfolio level. This has high potential to lead to an overestimate of risk and contingency. Findings by asset category are presented below.
- 8.312 We consider that further efficiencies can be achieved through a more robust understanding of unit costs, optimising the performance and cost trade-off, optimising asset policies, using the information to inform better supply chain management and understanding better where efficiencies might be achieved through comparative analysis.

## **Modelling and workbank development**

- 8.313 Network Rail's plans are built up either by forecasting the volumes of work required or resource requirements, and projecting associated costs. This forecasting is carried out both centrally, using strategic planning models, and locally through the development of route workbanks.

- 8.314 Strategic planning models forecast expenditure in two ways: based on volumes of work multiplied by unit costs (unitised); and based on extrapolation of historical costs (non-unitised).
- 8.315 Volume based modelling uses current information held about the assets, forecasts the assets' degradation and applies interventions, as set out in its asset policies, to forecast the volume of work required. It then applies unit costs to forecast expenditure requirements. Modelling based on extrapolation of historical costs is a more basic approach but is appropriate where there are no clearly defined repeated work types or where the run-rate of expenditure gives a more accurate forecast of future expenditure.
- 8.316 The independent reporters, Arup and AMCL, have audited Network Rail's strategic planning models for all asset categories, assessing:
- (a) input data (are the input data consistent with asset data registers, degradation modelling and unit cost modelling?);
  - (b) computational accuracy (do they function as intended?);
  - (c) modelling principles (are they modelling policy accurately?);
  - (d) model uncertainty (what is the range of uncertainty in modelled outputs?); and
  - (e) model outputs (are the outputs accurate and are they fed through to the SBP submission?)
- 8.317 The audits found that modelling varied by asset category, including the extent to which the modelling represented application of asset policy. There was wide variation in certainty of inputs and outputs. Computational accuracy was, in general, found to be good. Our key concerns are:
- (a) the quality of maintenance modelling and the extent to which it has been used in development of the SBP submission;
  - (b) civils structures modelling of asset policy, its inputs and therefore outputs;
  - (c) franchised station modelling of asset policy, its unit cost and degradation inputs; and
  - (d) fencing modelling of asset policy and inventory input data.
- 8.318 We present our modelling findings in more detail in our review by asset type.

## **Our assessment of route plan development**

- 8.319 We have seen evidence of a challenge process between centrally modelled renewals plans and route based plans, but the strength of this varies between asset groups. For example, challenge of track plans has been relatively good, whereas for buildings we have seen limited evidence of routes challenging centrally modelled numbers. Despite this variability, the process implemented has worked to improve the quality of plans by operating route.

- 8.320 Both modelling and route based plans are built on route specific asset information and unit costs which, to some extent, reflect the structural factors in routes.
- 8.321 In some instances routes have used route-specific unit costs and efficiencies where they believe they have better local information. Routes have considered local constraints in their plans.
- 8.322 Overall we consider that Network Rail has applied a suitable process for the development of route plans. However the late running of the process has led to some inconsistencies in plans. Robustness of plans by route is still dependent on accurate route based unit costs. These vary significantly in quality and they are not yet tested.

## **Climate change and resilience**

- 8.323 An overarching consideration in our assessment of Network Rail's maintenance and renewal plans has been the extent to which they have addressed climate change and resilience of the network both in the short- and long-term.
- 8.324 Network Rail, in conjunction with RSSB, has undertaken extensive research to understand likely future climate change scenarios and has led the industry's initial response to the Climate Change Act 2008.
- 8.325 Whilst it is clear that Network Rail has developed its understanding of the impact of climate change on some elements of its infrastructure it is imperative that this understanding is developed further for all assets and, in particular, for earthworks and drainage.
- 8.326 The CP5 asset policies generally contain improved consideration of climate change. However we have not seen evidence that these elements have been embedded in Network Rail's standards and specifications. Specific consideration needs to be given to:
- (a) specification of new components / equipment / systems to provide robust performance for anticipated climate scenarios over the design life. For example, Network Rail might consider including projected climatic ranges in the specification of new systems such as overhead line, track and structures.
  - (b) evaluation of existing systems to identify and justify interventions to improve resilience to projected climate change. For example, Network Rail might consider increasing tension in overhead line systems to reduce the likelihood of dewirement due to high wind speeds, or improvements to sea defences to mitigate changes in tidal reach.
  - (c) review and amendment of existing operating and maintenance practices to improve mitigation of the impact of climate change. For example, Network Rail might review its maintenance practices to improve management of climate driven failure modes or alter its stressing ranges for running rails.

8.327 In our draft determination we stated a requirement for Network Rail to update its Climate and Weather Resilience document to include a strategic review of the key nodes in its network. We required the updated document to demonstrate how Network Rail has assessed the risk associated with climate change at those key nodes and how it has assessed the need for measures to improve their resilience. In its response to our draft determination Network Rail provided an update to its Climate Change and Weather Resilience document which set out its approach to the strategic review of key nodes. It clarified what was embedded in the SBP through its asset policies and practices and provided examples of relevant projects. It also provided an example of a climate change and weather resilience plan at route level (for Western) and committed to developing plans for all other routes by end of September 2014. We will review these plans and monitor progress against the milestones in each route.

## **Our assessment of maintenance and renewal efficiency**

8.328 In developing our view of the overall potential for Network Rail to realise efficiencies in CP5 we have considered a wide range of evidence, including:

- (a) Network Rail's benchmarking for PR13, which we have reviewed;
- (b) benchmarking studies which we have commissioned for PR13;
- (c) previous studies carried out, from which we have identified efficiency opportunities remaining at CP4 exit (including all PR08 work, RVfM study, reporter work and external studies);
- (d) evidence from our engineering experts and safety audits;
- (e) our overarching efficiency opportunities, relevant to all areas of expenditure (for example improved management of inflation); and
- (f) our top-down econometric modelling, which uses mathematical techniques to benchmark Network Rail against comparators and assess how much more efficient it would need to be to match the best performers.

8.329 We summarise some of the key evidence considered below.

### **Maintenance and renewal efficiency – our studies**

8.330 We have conducted a suite of benchmarking studies for PR13, including benchmarking against international comparators (both within and outside Europe) and comparators from other industries. Our studies have benchmarked asset management, possession management, supply chain management, project and programme management, innovation and maintenance strategy. All of these studies have identified opportunities to realise further efficiencies during CP5. The reports are available on our website<sup>175</sup>. Some of their key findings are summarised below.

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<sup>175</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>

## Asset management

- 8.331 The independent reporter, AMCL, has conducted an assessment of Network Rail's asset management capability as described earlier in the chapter. It has considered emerging evidence in comparable sectors to identify the efficiencies which might be realised in CP5 through improved asset management. The reporter estimates that Network Rail could identify 15 to 20% maintenance savings and 10 to 15% renewals savings from more risk-based renewal and maintenance interventions alone. It has also identified many opportunities to improve the planning and delivery of work which all have the potential to reduce the costs of engineering works over the lifetime of the assets.
- 8.332 We have separately commissioned a study by Civity to consider the scope of savings which might be available from better asset management. Civity's report draws on a range of evidence concerning Network Rail's asset management and supports many of the findings from the AMEM review. The report concludes that the range of potential savings is wide but is in line with the findings of the RVfM study.

## Possession management, Lloyds Register Rail

- 8.333 We commissioned a study to benchmark the efficiencies which might be available during CP5 from the improved management of possessions. The study carried out benchmarking using six international comparators, including ones from North American, Asia and Australasia.
- 8.334 Six key themes were identified:
- (a) delivery of engineering work: Network Rail's unit costs appear high. The gap to comparators has been measured across a wide range of studies as being between 10 and 40%, partly due to differences in engineering access;
  - (b) timing of engineering access: Network Rail relies largely on longer weekend possessions, whereas comparators were found to use overnight possessions in which dedicated, multi-skilled teams deliver repeatable maintenance and renewal activities. Some comparators extend track time through adjacent line open operation. Productivity, quality and unit costs are improved through use of a full time workforce. This approach has the potential to lead to substantially increased revenues;
  - (c) invest in maintainability: the study considers that Network Rail's approach to asset management has been characterised by lowest first cost and benefits could be realised from greater consideration of costs over the lifetime of assets. Comparators invest more heavily in infrastructure to provide improved train routing, faster isolation and low maintenance track. It highlights the opportunities presented by the ETCS programme;
  - (d) planning processes: Network Rail books engineering possessions early, which results in more reworking of plans. Contractors are involved later, and pathing of

engineering trains can also occur later. There are inconsistent links to the timetabling process. Devolution presents a big opportunity for improvements;

- (e) contracting policy: Network Rail involves contractors late in the process resulting in late re-working of plans. It tenders work in smaller packages. Its contracting strategy has resulted in use of a casual workforce, resulting in lower quality, loss of learning and the requirement for more prescriptive safety processes; and
- (f) possession management: Network Rail's productivity is comparatively low. It is slower at carrying out isolations and has more prescriptive safety rules which result in slower uptake and hand back of possessions. It plans for greater contingency, both in terms of the equipment required and time to hand back possessions and yet its possessions result in more disruption to services. Benchmarking suggests that Network Rail typically achieves 3.5 hours of productive time out of an 8 hour possession, whereas comparators typically achieve 6.5 hours.

8.335 The study suggests that the benefits potentially available from improved possession management are between £50m and £150m per year. It considers that benefits to the wider industry might be greater, resulting from increased revenues and reduced operational costs.

### **Supply chain management**

8.336 Civity reviewed Network Rail's supply chain management against 'world class' practice and identified some significant gaps in capability. It found key areas for improved efficiency including:

- (a) better workbank planning with improved smoothing and longer-term visibility to give its supply chain greater opportunity to optimise its resource management;
- (b) application of a more collaborative approach to supplier engagement;
- (c) further standardisation and modularisation of assets;
- (d) adoption of industrial processes to deliver work more efficiently;
- (e) improved access arrangements and higher productivity;
- (f) a leaner but higher skilled procurement function;
- (g) further development of the cost database and unit cost modelling; and
- (h) further benchmarking against international peers to identify efficiency opportunities.

8.337 Civity concluded that efficiencies of £300m to £400m per year might be achievable in CP5 from improved supply chain management.



## **Project and programme management, Halcrow**

8.338 We commissioned Halcrow to review Network Rail's project and programme management capability and the efficiencies which might be available from improvement.

8.339 The following key opportunities were identified:

- (a) a greater focus on programmes of work to understand system-wide issues and benefits – rather than a more narrow focus on projects;
- (b) a greater focus on the development phase, reducing the time to develop schemes;
- (c) a more collaborative approach in use of the supply chain, reducing the need for duplicated resource;
- (d) a move to more output based procurement, allowing greater innovation in the supply chain;
- (e) improved whole life cost analysis, particularly for new infrastructure, to optimise option selection for investment decisions;
- (f) improved early estimating and improved analysis of changes in scheme costs through their lifecycle;
- (g) reduced inefficiencies in managing projects and improved automation of reporting systems to reduce opex costs;
- (h) improved project and programme management capability and therefore improved efficiency;
- (i) improved transparency in project reporting; and
- (j) application of best practice project and programme management across the business – including in maintenance and renewals.

8.340 The study identified that efficiencies were available in maintenance and renewals but did not quantify those savings. Many of the themes identified above are relevant to maintenance and / or renewals. We have taken this into account in our analysis.

## **Innovation**

8.341 We commissioned Balfour Beatty RailKonsult (RailKonsult) to conduct a study into the efficiencies available to Network Rail from best practice innovation and the introduction of technologies which are new to the railway in Great Britain. The study separately considered: innovation process best practice; a scan of innovations applicable to rail; and an assessment of the potential value of innovation during CP5. It recognised that much work has been undertaken in the last two years to improve the innovation process. Through its benchmarking RailKonsult identified significant opportunities for the rail industry to improve its innovation practice, including:

- (a) setting clearer objectives;



- (b) developing a long-term technology plan;
- (c) simplifying industry interfaces;
- (d) improving understanding of the link between R&D and return on investment;
- (e) developing dedicated specialisms and centres of excellence; and
- (f) reducing 'fear of failure' culture.

8.342 The study noted that the rail industry spends less on R&D than other industries.

8.343 The study identified a range of innovations which were either not included in Network Rail's business plans or for which it considered greater efficiencies could be realised. These included: mobile maintenance units, under-sleeper pads, staff protection systems, improved recycling of components, chemical treatment of timber bearers, improved system monitoring, non-intrusive crossovers, modular level crossings, improved use of ground penetrating radar technology, repadding machines, specialist gantries, plastic sleepers, improved modelling of bridge behaviour and new overhead line component technologies. An assessment of the potential benefits that might be available from implementation of these innovations in CP5 was carried out, concluding that the range was £57m to £113m.

### **Maintenance strategy**

8.344 Potential to gain efficiencies by optimising maintenance strategy on the basis of risk has been identified by several previous studies. We commissioned RailKonsult and AMCL to carry out a benchmarking study to identify best practice maintenance strategy and the efficiencies which might be available through its adoption. This was informed by AMCL's extensive asset management best practice analysis and benchmarking, including international and cross-industry benchmarking.

8.345 The study identifies core themes for comparison of identified best practice with practice as currently seen in Network Rail: strategy and planning, decision making, asset knowledge, delivery planning, organisation and people, review and improvement. Key findings are: a formalised approach to Maintenance Requirements Analysis (MRA) is required; industry records need improving, particularly failure and reliability data, to facilitate adoption of Failure Modes Effects and Criticality Analysis (FMECA) processes; there is opportunity for more automated condition monitoring equipment; resource planning could be improved; competencies need to be maintained to address industry change; and there remains scope to improve efficiency and quality in delivery of works, for example through adopting Lean and Six-Sigma approaches.

8.346 The study identifies that adoption of a risk based approach to inspection and maintenance has led to efficiencies of between 15 and 30% in comparator organisations. It assesses the scale of opportunities remaining for CP5 by asset category, given the plans that Network Rail has in place. Further efficiencies are thought to be available in CP5 as follows: 10% for signalling assets, 7% for electrical

power and plant assets, 10% for telecoms assets. No further efficiencies are identified for track beyond those plans already in place. No further efficiencies are identified for civil structures given the extensive work already underway to improve inspections (and civils asset management more widely) in CP4 and assumed to form part of Network Rail's SBP.

## **Maintenance and renewal efficiency – previous studies**

8.347 In addition to studies which have been conducted as part of the PR13 process there is an extensive body of work which has been carried out previously. This includes consultant reports produced for the RVfM study, for PR08 and for other efficiency analyses. Many of the opportunities identified by these studies remain relevant, some are still to be addressed, some have been partially addressed and some have been fully implemented. We have carried out a systematic review of all PR08 and RVfM study documents to identify and catalogue all efficiency opportunities. We have used engineering consultants, RailKonsult, to assess the extent to which the opportunities identified will remain valid at the end of CP4, to quantify the remaining efficiency and to opine whether the full remaining efficiency could be achieved in CP5.

## **Maintenance and renewal efficiency – Network Rail's evidence**

- 8.348 Network Rail has carried out benchmarking in support of its efficiency projections for CP5. We, supported by the independent reporter Arup, have audited this benchmarking. Our findings are set out by main asset category in the section that follows. The key overarching findings are set out here.
- 8.349 Network Rail's programme of benchmarking work has been more extensive than it has ever carried out before. It includes internal and external benchmarking, international (including outside Europe) benchmarking, and, in some cases, benchmarking against other industries. The company has devoted a large resource to the programme and it has produced useful results. We consider that the benchmarking carried out represents a good start, and the efficiency opportunities identified are useful benchmarks. In some cases the data produced are less comprehensive than would be ideal. Network Rail has had difficulty in finding a suitable number of comparators that are willing to fully engage and provide quantified data within the timeframes of its PR13 programme. It has focused on understanding 'better practice' rather than understanding the quantum of efficiency that could be realised in CP5.
- 8.350 Network Rail has recognised that international benchmarking requires a long-term engagement plan and that it should become a 'business-as-usual' activity. We support the continued development of this work. As the benchmarking programme continues into CP5 we expect it to identify further better practices and efficiency opportunities that can be realised during the control period and beyond.
- 8.351 The reporter's review highlights that a significant increase in pre-efficient baseline expenditure can lead to efficiency savings being cancelled out over the long-term. We

recognise this and have challenged Network Rail's pre-efficient costs rigorously. Where the company has not provided sufficient evidence to support its pre-efficient expenditure forecasts we have made adjustments.

## **Maintenance and renewal efficiency – overall view**

### **Our bottom-up efficiency analysis**

- 8.352 Our overall view of the efficiency available in CP5 is informed by the expert views given in the full range of studies described. We have carried out a comprehensive review of all efficiency evidence highlighted by these studies and taken a view on the likely efficiency opportunity which will remain at the end of CP4. In doing this we have considered the extent to which Network Rail has already addressed the issue identified, or has plans in place to address it by the end of CP4.
- 8.353 In evaluating the efficiencies available to Network Rail in CP5 we have considered the full efficiency over and above that achieved in CP4. This includes the efficiencies which we believe will be gained through the implementation of the proposed CP5 policies, referred to as “embedded efficiencies” since they are embedded in the CP5 policies. In its SBP Network Rail set out its pre-efficient plans on the basis of CP4 exit unit costs and application of CP5 policies.
- 8.354 The full body of evidence that we have catalogued has been mapped to associated costs in Network Rail's SBP. This results in our view of efficiency by route for maintenance and renewal. In developing our quantified view of efficiencies from the underlying evidence we have used the judgement of the ORR's expert asset engineers and safety professionals. This judgement is informed by Network Rail's plans, the views of the independent reporters, and the views of numerous industry experts as expressed in the studies reviewed. Our judgement is intended to be taken ‘in-the-round’.
- 8.355 All efficiencies identified have been reviewed to identify possible safety implications. We do not consider that any of the efficiencies identified need result in any detrimental impact on safety; many of them have the potential to deliver a substantially safer railway.
- 8.356 Many source documents suggest a range of plausible efficiencies from the initiatives identified. We have taken a conservative view, recognising that there may be overlaps in evidence and efficiencies. We have given consideration to the deliverability of identified efficiencies within CP5.

### **Our efficiency overlays**

- 8.357 The efficiency overlays that we have applied are the result of weighting our bottom-up developed efficiencies and Network Rail's efficiencies. The weighting we have applied is based on our view of the robustness of Network Rail's benchmarking and efficiency work, and for renewals it varies by asset category. This is informed by the

independent reporter's review of the company's benchmarking and efficiency evidence.

**Table 8.25: Our assessment of Network Rail's renewals benchmarking and efficiency and our applied weightings**

Asset	Assessment of Network Rail's benchmarking and efficiency	Weighting applied to Network Rail's efficiency analysis	Weighting applied to ORR's efficiency analysis
Renewals			
Track	Good	75%	25%
Signalling	Good	75%	25%
Civils <sup>176</sup>	Some significant limitations	25%	75%
Buildings	Fair	50%	50%
E&P	Good	75%	25%
Telecoms	Some significant limitations	25%	75%

8.358 For maintenance the reporter's review of benchmarking and efficiency found a range of issues and we have reflected this in developing our view. Further details of efficiency are given by asset category later in the chapter.

8.359 Finally, we have reviewed cross-cutting areas of potential efficiency which have not been covered by our bottom-up analysis or in the efficiency evidence which Network Rail has set out. These include inflation management and occupational health management as discussed in chapter 4. Our review of these concludes that a further 1.12% efficiency can be gained by the final year of CP5.

8.360 We conclude that maintenance efficiencies of 16.4% and renewals efficiencies of 20.0% are available by the final year of CP5.

### International top-down benchmarking

8.361 We have carried out international top-down benchmarking as described in detail at the end of the chapter. The results of the top-down benchmarking, whilst not fully directly comparable, give us higher confidence that the efficiency overlays which we have developed using bottom-up techniques, and which we have applied to develop our view of efficient costs, apply an appropriate level of challenge.

<sup>176</sup> For years 1 and 2 of CP5 we have accepted Network Rail's civils renewals efficiency

## Maintenance and renewals assessment

8.362 We set out our assessment of maintenance and renewals below. Because Network Rail took different approaches in producing its maintenance and renewals plans we have set out our assessment separately.

### Maintenance assessment

#### Pre-efficient

- 8.363 Network Rail's maintenance policy and strategy is discussed in various parts of the SBP submission, including in the asset policies, the 'Infrastructure maintenance strategy' document, the 'Optimising maintenance regimes' document and in its maintenance efficiency business cases. The documents set out, at a high level, Network Rail's proposed approach to maintaining its assets.
- 8.364 Network Rail has carried out central modelling of maintenance activities required based on its asset portfolio and interpretation of the high level requirements set out in the asset policies. Maintenance expenditure has then been calculated for direct activities (i.e. maintenance work carried out on infrastructure assets) by multiplying volumes of activity by maintenance unit costs. Indirect costs (such as route based maintenance management teams) have been modelled separately. Network Rail provided the outputs of its central modelling to the routes.
- 8.365 Routes separately produced maintenance expenditure plans on the basis of their projected headcount requirements. These plans were variable in the extent to which they took account of route specific factors. There was evidence of routes taking account of major infrastructure changes such as enhancement related new electrification assets, but little evidence of changes in response to new asset policies, except in their assumed efficiency overlays.
- 8.366 Network Rail did not submit maintenance volumes with its SBP. Subsequently we asked for a breakdown of maintenance volumes to be provided and these have been submitted for CP5 for some maintenance work types relating to track, signalling, and electrification and power.
- 8.367 We consider that the links between Network Rail's proposed approach to maintenance, its submitted volumes and its planned maintenance expenditure are weak. Network Rail's submitted plans are resource based. The templates used in the financial modelling system to collate the routes' costs did not support a volumes based approach. As a result Network Rail has been unable to provide assurance that its maintenance costs represent the costs of the actual volume of maintenance work required in CP5.
- 8.368 These limitations in Network Rail's maintenance planning lead to uncertainty in the maintenance plans put forward. However, we have not identified an overall bias in the approach taken in building the pre-efficient plans and have therefore not made

adjustments for this uncertainty (with the exception of an adjustment for reactive maintenance costs).

## **Maintenance efficiency**

- 8.369 Network Rail has developed a set of maintenance efficiency documents which describe the efficiency initiatives identified, as informed by its programme of benchmarking. Examples of the key areas identified are: risk-based maintenance, improved working practices, savings in the indirect maintenance costs, better asset information (and therefore improved targeting of work and improved response to infrastructure faults), more mechanisation, further roll-out of intelligent infrastructure, multi-skilling, standardisation, improved contracting strategy and further recycling of materials. Network Rail's identified central efficiencies were estimated to deliver £194m of efficiency savings in CP5.
- 8.370 Some local efficiencies have been developed by the routes which are estimated to deliver £140m of efficiency savings in CP5. These largely relate to improved planning processes and to consolidation of route delivery units to generate efficiencies in indirect costs.
- 8.371 In addition to central and route initiatives Network Rail has assumed that further, as yet unidentified, route initiatives will generate £140m further savings in CP5.
- 8.372 The independent reporter, Arup, has audited the benchmarking and efficiency analysis carried out for maintenance activities. In summary, it considers that the approach taken to external benchmarking and the evidence presented has some limitations, and that the approach to internal benchmarking has not informed efficiency initiatives. Arup found that central efficiency initiatives were not disaggregated by route and there was limited evidence of routes challenging central efficiency proposals. Due to the issues identified by Arup we have used our view of available maintenance efficiencies in developing our assessed efficient expenditure.
- 8.373 We have conducted our own analysis of the maintenance efficiencies that might be available during CP5. The key difference between our assessed maintenance efficiency and Network Rail's submission is that we assume a different profile, with lower efficiencies to be delivered in the earlier years of CP5 and higher efficiencies to be delivered in the later years. This assumption reflects our concerns over the delivery of efficiencies in CP4 when Network Rail reduced staffing levels before fully embedding more efficient ways of working. Our findings are given by asset below.

## **Track**

- 8.374 We consider that the most significant track maintenance efficiencies are available from improved asset management systems, further automation of inspection, improved possession management, alliances and improved ballast distribution systems. Our assessed total efficiency in CP5 is comparable to Network Rail's but we have assumed a different profile, resulting in higher efficiency in the final year of CP5.



**Table 8.26: ORR assessed costs, track maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	434	439	439	438	435	2,185
Efficiency	-	3.6%	3.6%	3.6%	3.7%	3.7%	17.0%
Post-efficient expenditure	420	418	408	393	377	361	1,958

### Signalling

8.375 We consider that the key areas of efficiency for signalling maintenance are remote condition monitoring, recycling of materials, risk based maintenance, procurement policy and improved asset management systems. Our assessed total efficiency for CP5 is comparable to Network Rail's but, as with track, we have assumed a different profile.

**Table 8.27: ORR assessed costs, signalling maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	158	158	158	159	160	793
Efficiency	-	2.8%	2.8%	2.9%	3.0%	3.1%	13.7%
Post-efficient expenditure	158	153	149	145	141	138	728

### Civils and buildings

8.376 A significant proportion of submitted costs for civils and buildings maintenance work appears to arise from Network Rail's own review and administrative activities, including possessions management. Our assessment of civils maintenance efficiency assumes a small amount of efficiency from these activities and from improved supply chain management.

**Table 8.28: ORR assessed costs, civils and buildings maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	82	82	82	81	82	408
Efficiency	-	0.6%	0.6%	0.6%	0.7%	0.7%	3.1%
Post-efficient expenditure	35	81	81	80	79	79	400



## Electrification and power

8.377 We have identified significant electrical power and fixed plant maintenance efficiencies from improved processes for inspection of overhead lines, improved procurement policy and improved asset management systems. We have assumed a profile delivering higher efficiencies in the final year of CP5 than that assumed by Network Rail.

**Table 8.29: ORR assessed costs, electrical power and fixed plant maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	94	101	104	105	108	512
Efficiency	-	4.4%	4.5%	4.6%	4.7%	4.8%	20.9%
Post-efficient expenditure	73	90	92	90	87	86	445

## Telecoms

8.378 The key areas of efficiency identified by our analysis are improved procurement policy, and improved asset management systems, with greater efficiency than forecast by Network Rail being delivered by the final year of CP5.

**Table 8.30: ORR assessed costs, telecoms maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Pre-efficient expenditure	-	22	22	21	21	21	107
Efficiency	-	4.4%	3.6%	3.7%	3.8%	4.0%	18.1%
Post-efficient expenditure	21	21	20	19	18	18	95

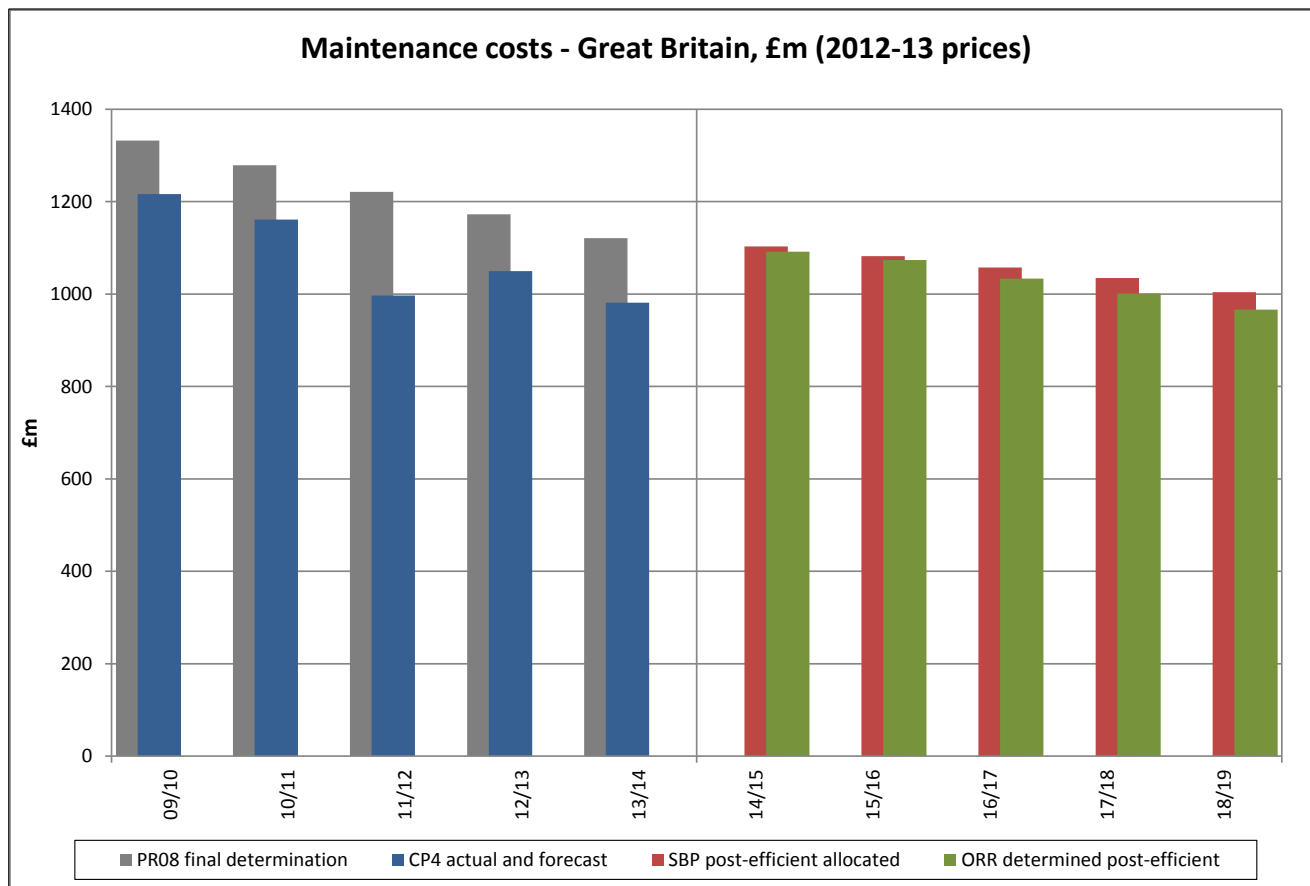
## Other maintenance costs

8.379 For other maintenance costs we have found a higher efficiency potential compared to Network Rail's assumptions. These are primarily based on improved procurement policy, improved asset management systems which will enable better planning, and other maintenance overhead efficiencies.

## Maintenance findings overview

8.380 Our assessed efficient maintenance expenditure is illustrated below. We have reduced Network Rail's proposed expenditure by £116m.<sup>177</sup>

**Figure 8.9: Our assessment of efficient expenditure for maintenance**



## Renewals assessment

8.381 We set out our renewals assessment by asset below, including our review of underlying asset data, unit costs, policy and modelling, efficiency and a summary of our findings.

### Track assessment

#### Asset data

8.382 Track asset data quality is reasonable but requires some improvement: the independent reporter, Arup, graded plain line data and S&C data B3. (Plain line data used in development of the SBP were graded B2.) Network Rail has a good understanding of track service lives.

<sup>177</sup> The increase in expenditure from CP4 to CP5 is due to an accounting change which reclassifies some small scale works, referred to as 'reactive maintenance', as maintenance instead of renewal.

## Unit costs

- 8.383 Track unit costs are of relatively good quality. Network Rail's plans are substantially based on the application of unit costs which are well-understood and developed using largely appropriate methodologies.
- 8.384 Network Rail's pre-efficient unit costs for track work are based on 2012-13 volumes and costs as projected at the time of the SBP. They reflect the projected mix of underlying work types for that year. The independent reporter asked Network Rail to explain the impact of the work mix assumptions for CP5 and, in response, Network Rail provided data showing its impact on conventional complete track renewals. The reporter found that the work mix assumptions were broadly in line with the basis of unit cost estimation but led to an overstatement of 1% for this type of track renewals in CP5. The reporter noted that Network Rail had not demonstrated the appropriateness of work mix assumptions for other work categories. We have made an adjustment to reflect the overstatement for conventional complete track renewals.
- 8.385 Network Rail's development of unit costs includes an uplift for risk, contingency and Network Rail management. Our draft determination highlighted concerns with these uplifts which required further justification. Network Rail has now provided this justification in most areas. It has also presented to us the detailed work it has done to forecast unit costs and efficiencies over CP5. We consider this modelling to be best practice. Some concern remains that estimation of risk and contingency requires improved oversight to ensure that the total provision is appropriate. In our final determination we have reduced pre-efficient unit costs by 0.25% (whereas our draft determination applied a reduction of 2%) to reflect our concerns over risk estimation and potential overstatement of conventional complete track renewals expenditure.

## Policy and modelling

- 8.386 The CP5 track policy is one of the more mature asset policies. We consider the assessment of asset criticality based on five bandings relating to average delay costs to be an improvement on the similar four quadrant methodology used previously. It results in a more targeted and risk-based policy for maintenance and renewals. The policy differentiates interventions based on criticality, for example requiring more refurbishment to be carried out on lower criticality routes. The move towards a more targeted renewal approach is well-supported by the whole life cost modelling that has been carried out.
- 8.387 Network Rail has made good progress in demonstrating that the track policy is both robust and sustainable. It has forecast measures of condition (used life) and asset performance (track geometry and serious rail defects) to CP11 which indicate that the policy is not allowing the asset base to deteriorate in the long-term. Performance is forecast to increase to the end of CP6 and then to be maintained until the end of CP11.

- 8.388 The plain line track whole life cost modelling is considered good. It is based on the best understanding of asset degradation of all the asset categories, and on robust failure modes, effects and criticality analysis. S&C degradation has not been fully validated and currently relies on engineering judgement. Network Rail is carrying out further work to improve its modelling through developing a better understanding of S&C deterioration.
- 8.389 We consider that the track asset policy has, in the round, met our criteria for robustness and sustainability. Network Rail has demonstrated some significant minimum whole life cost optimisation but there are opportunities for further optimisation. For example, there is uncertainty over the assumed service life increase for refurbished S&C.
- 8.390 Renewal of track plain line and S&C has been modelled by applying service life assumptions to the current and forecast asset base. The engineering rules applied in the model were found to be consistent with the track policy. Model inputs were found to be accurate with the exception of a minor inconsistency in traffic data and a variation in refurbishment costs of up to 7%. No computational errors were identified and outputs were accurately included in the SBP data tables and showed reasonable alignment with route based plans.
- 8.391 Network Rail has included expenditure within its plans associated with the acceleration of track renewals from future control periods. This is expenditure which will, in the long-term, deliver work more efficiently. Accelerated track renewals are proposed where future access will be more constrained (for example due to the completion of Crossrail) or where enhancements are leading to increased tonnage. We have reviewed Network Rail's proposals for accelerated track renewals and consider that they are well-evidenced. The proposed volume of maintenance and renewal work is in line with our expectations when considering the accelerated renewals.

## Efficiency

- 8.392 We consider Network Rail's external benchmarking for track to be good. It has conducted a programme of site visits to external comparators to observe working practices and identify better practices which might be adopted on its network. Its track benchmarking has included visits to Sweden, Switzerland, Italy, France and Spain. Information gathered is both qualitative, for example noted differences in work activities, and quantitative, including a high level comparison of unit costs between Network Rail and four European peers. Network Rail's internal benchmarking informed its assessment of structural factors but was not used to compare internal efficiencies. In addition to its benchmarking work, the company has presented its models for future delivery of plain line and S&C renewals. These models are well-developed with clear alignment between the benchmarking work and efficiency measures within the models. Efficiency measures include reducing the size of gangs,

increased multi-skilling of staff, greater use of mid-week possessions and a new contracting strategy. There is moderately good alignment between the proposed efficiencies presented in the track efficiency business cases and the efficiencies which appear in the SBP.

8.393 Our review of efficiency finds similar best practice opportunities to those identified by Network Rail but quantifies them to find greater overall cost efficiencies. Key areas of potential efficiency are further automation of track inspection, improved asset management systems, improved supply chain management and improved management of possessions. In our draft determination we assessed Network Rail's benchmarking and efficiency work as 'Fair' and applied a 50% weighting to our analysis and 50% to Network Rail's. In its response to the draft determination Network Rail stated that it believed that its work should be graded 'Good'. Since our draft determination we have reviewed extensive further evidence relating to Network Rail's unit cost and efficiency modelling for track. The new information provided has significantly improved our confidence in the derivation of Network Rail's plans. We consider the modelling carried out to be comprehensive, robust and in line with best practice. In our final determination we have therefore decided to grade Network Rail's track benchmarking and efficiency as 'Good' and we have applied 25% weighting to our analysis and 75% to Network Rail's.

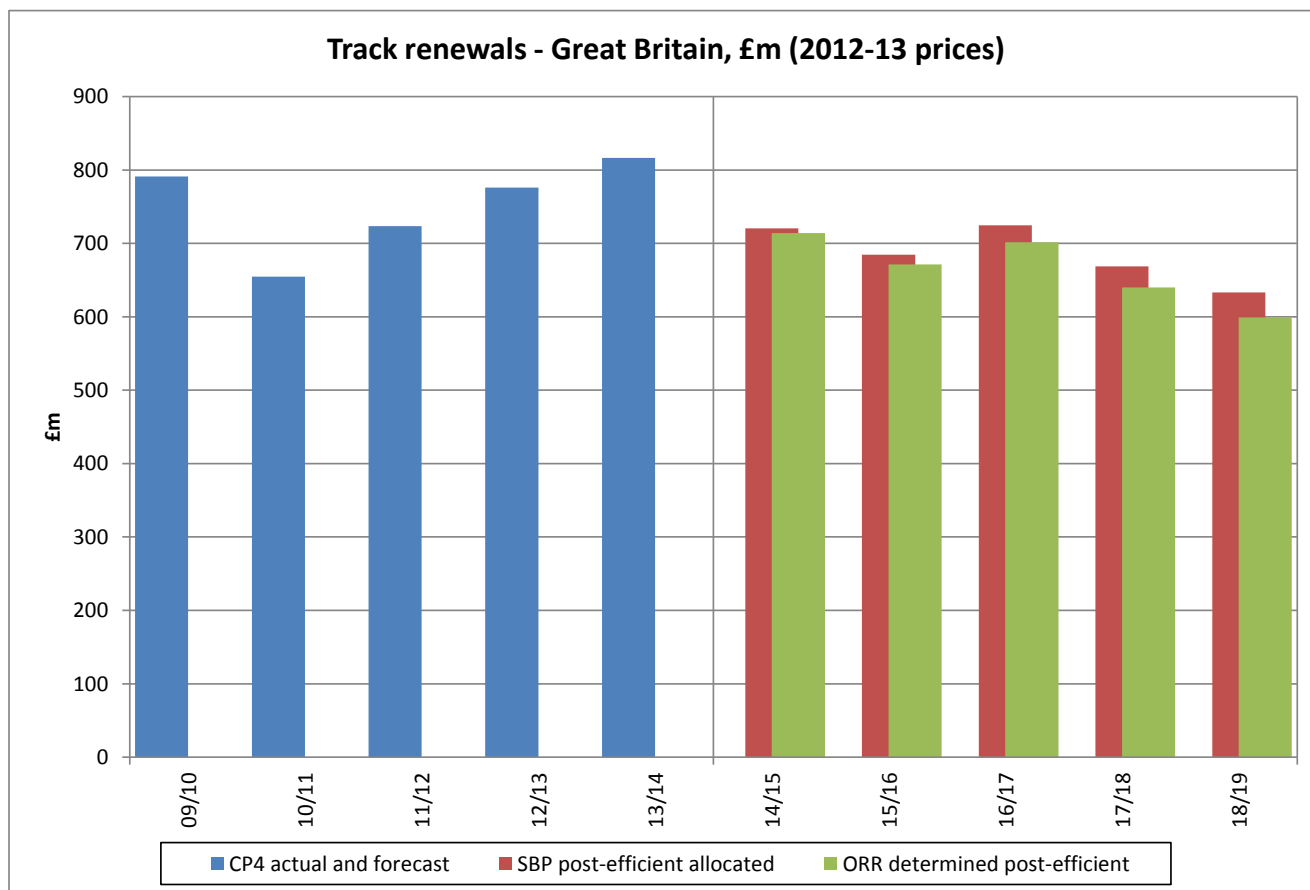
## Findings

8.394 Our assessment of the level of track (including off-track) expenditure required during CP5 is shown in Table 8.31 and illustrated in Figure 8.10 below.

**Table 8.31: ORR assessed costs, track renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	770	758	822	783	769	-	3,903
Efficiency	-	7.2%	4.6%	3.7%	4.2%	4.6%	-	22.1%
Post-efficient expenditure	816	714	671	701	640	599	3,762	3,326

**Figure 8.10: Our assessment of efficient expenditure for track renewals**



8.395 In total we have reduced Network Rail’s planned renewals expenditure on track and off-track by £106m.

8.396 Our final determination assumes £104m more of efficient track renewals expenditure than assumed in our draft determination.

### Off-track assessment

8.397 We welcome the development of an asset policy for off-track assets and the recognition of the importance of off-track assets in contributing to the efficient delivery of network safety and performance.

### Asset data

8.398 Network Rail has recently taken steps to increase significantly its knowledge of its off-track assets. Its information relating to boundaries has been improved by routine data collection during boundary inspections. Vegetation knowledge has been improved through the National Lineside Tree Survey, completed in March 2011. Improved asset knowledge has enabled better planning of the volume of maintenance and renewal works required.

### Policy and modelling

8.399 The off-track policy is relatively immature since it is new and untested. It promotes the move from a reactive approach to a more proactive management of boundaries and

vegetation as the most cost effective way of managing the assets. The policy results in a planned large increase in expenditure relative to CP4. This expenditure is forecast to improve asset condition to a level which will be sustained from the end of CP5 for England & Wales and from the end of CP6 for Scotland.

- 8.400 Network Rail has more work to do to demonstrate the efficiency of the policy and to understand the optimum interventions and strategy. It has not yet developed a model for optimising long-term asset management costs. We welcome the move towards a more proactive approach to the management of off-track assets and the safety and performance benefits that this will bring. We believe more can be done to investigate the most appropriate and cost effective ways of managing boundaries and consider that the proposed volumes of work require more substantiation. For example, we consider that there may be benefits in carrying out the work to bring the boundary asset up to a steady state over more than one control period.
- 8.401 We consider that the proposed policy is likely to be robust and sustainable but the effect of the new policy will have to be monitored closely. The policy is not demonstrated to be minimum whole life cost.
- 8.402 Network Rail's plans do not specify the volumes of vegetation clearance that will be delivered. The policy states that all fences in 'very poor' condition are to be renewed and all 'poor' condition fences are to be repaired. The plans do not include present and forecast condition measures to show the scale of improvement which will be delivered.
- 8.403 Modelling is not as refined as for the track asset but it uses reasonably accurate actual data from fencing and vegetation surveys. The off-track model for fencing was found to contain unsubstantiated assumptions which led to uncertainty over its outputs. Unit rates used were found to be rudimentary but consistent with the off-track policy. No computational errors were identified.
- 8.404 The independent reporter found some uncertainty as to whether the overall costs included in the SBP may be above the levels necessary to deliver policy requirements. We also consider that proposed levels of activity can be delivered over more than one control period, and for these reasons we have reduced Network Rail's pre-efficient plans for management of boundaries in CP5 by 25%.

## Efficiency

- 8.405 Our analysis of off-track efficiency has found significant opportunities from increased mechanisation of vegetation clearance, improved asset management and information systems and improved supply chain management. In total our assessed expenditure for off-track renewals is £318m, which gives Network Rail £75m more than is forecast to be spent in CP4. This is lower than assumed in our draft determination because we have improved the way in which we weigh Network Rail's and our efficiency analysis to make it more accurate for disaggregated costs.



## Signalling assessment

### Asset data

8.406 Network Rail uses a Signalling Infrastructure Condition Assessment (SICA) tool to prioritise signalling maintenance and renewal works. SICA and its use were audited by the asset management independent reporter in 2011. The reporter found SICA to be fit for the purpose which it was designed for: to prioritise logically the short- to mid-term renewals workbank. Useful remaining lives generated by SICA are underestimated and are not accurate for use in strategic planning. SICA is not a suitable tool for ensuring that signalling assets are managed sustainably to achieve minimum whole life cost. The independent reporter, Arup, graded signalling asset data quality A3, reflecting good practice data governance, but some deficiencies in terms of data accuracy and completeness. (Data used in development of the SBP were graded A2.)

### Unit costs

8.407 The independent reporter's audit of signalling unit costs has found some limitations in the approach adopted including the adjustment of new framework rates to reflect historical levels of cost performance. As with other asset types Network Rail has not provided sufficient evidence to demonstrate strategic oversight in the estimation of risk allowances. It has estimated risk at a unit cost level rather than a programme level which has high potential to overestimate risk allowances. In its response to our draft determination Network Rail challenged the adjustment applied to its signalling unit costs. It said that its ability to reduce signalling unit costs beyond the level proposed in the SBP is limited, especially in the earlier years of CP5 as contracts have already been let and workbanks have been locked down. It stated that its new signalling contracts result in higher risk to Network Rail but lower cost. We have reviewed the new evidence provided and accept that the signalling renewals workbank is substantially locked down in the first year of CP5 (approximately 70% by value) and that some of the workbank for the second year is also locked down (approximately 30% by value). We have reviewed new evidence on the risk and contingency uplifts to unit costs. Network Rail has assumed a small reduction in risk being delivered by the new signalling contracts, partially offset by the risk associated with the rollout of new technology. However, we have not seen a fully quantified justification for the figure used. From our assessment of the new evidence presented we consider that Network Rail has less scope to reduce its costs in the first and second years of the control period and have therefore reduced the unit cost adjustments applied in these years. We have applied a 1% reduction in the first year of the control period, 2% in the second year and 3% for the remainder of CP5.

### Policy and modelling

8.408 The CP5 policy for signalling sets out a well-justified approach to managing the maintenance and renewal of signalling assets, taking account of the major

programme of works required for both NOS and the staged further introduction of ETCS. Due to the national and long-term nature of these programmes the forecasts of signalling maintenance and renewal works are more dependent on centrally developed long-term workbanks than is the case for other assets. The asset policy includes appropriate statements on the prioritisation, advancement and deferral of work to ensure that the programmes are aligned.

- 8.409 The policy requires the use of partial and targeted renewals instead of full renewal where possible and this is considered an appropriate, efficient approach where no changes are needed in preparation for ETCS.
- 8.410 The policy of moving from conventional signalling to ETCS is considered sound. The business case for the national application of ETCS was established and reviewed approximately four years ago. This demonstrated that there was a long-term whole life, whole industry benefit to implementing ETCS, through the reduction of lineside assets, safety benefits and capacity improvements. The plans for CP5 show significant costs, including development costs, to support that long-term benefit.
- 8.411 The policy to move to more centralised signalling control has been assessed through review of the business case as discussed in chapter 7 and is considered to be appropriate. This programme of work results in a large volume of signalling renewal in CP5 but this is justified by the future benefits in operational costs.
- 8.412 The volume of signalling renewals in CP5 has been assessed. The development of signalling renewals plans is a well-managed process resulting in volumes of renewal which have a high degree of credibility. The signalling asset policy is considered robust to deliver outputs in CP5.
- 8.413 We have reviewed the sustainability of the signalling asset policy by challenging the modelling of long-term outputs in Network Rail's signalling strategic planning model. The renewal of signalling assets would normally be managed to maintain a steady level of asset condition measured nationally. In CP5 the plan to accelerate some renewals for the benefit of NOS should result in a small improvement in overall asset condition. We consider that the CP5 signalling asset policy is likely to deliver an asset base of stable condition in the long-term, while delivering the major programmes of work needed by the industry.
- 8.414 The whole life cost modelling that supports the signalling asset policy has considered an appropriate mix of asset interventions. We have some concern that the degradation modelling may be conservative. The use of SICA in the strategic planning model may result in a slight bias towards over-forecasting in the long-term. However, the development of long-term workbanks, and the alignment of key national programmes of work is excellent and gives confidence that the plan is optimised on a whole life cost basis.
- 8.415 The signalling model takes the bottom-up developed signalling workbanks as an input. The model was found to be consistent with policy. Some inconsistencies in unit

costs for specific signalling work types were identified. No specific, consistent and material issues were found with computational accuracy in modelling costs and volumes for CP5.

## Efficiency

- 8.416 In its SBP Network Rail claimed that there were £380m of embedded efficiencies being delivered by its CP5 signalling policy. The actual efficiencies being generated by a change of asset policy are difficult to determine (since a change in policy is likely to lead to changes in expenditure in all future control periods). However, our review finds that the level of embedded efficiencies for signalling is likely to be overstated due to flaws in the calculation methodology. We have assumed that signalling embedded efficiencies are £190m.
- 8.417 Our assessment of efficiency has found that some significant opportunities remain from further adoption of modular signalling, plug-and-play technology, improved asset management systems and from adopting best practice supply chain management. The analysis results in a higher level of efficiency than proposed by Network Rail.
- 8.418 The independent reporter's audit of Network Rail's benchmarking and efficiency for signalling renewals has found the approach adopted to be reasonably good. In particular it has found the internal and external benchmarking that has been carried out to be sound. Network Rail has engaged with its suppliers in developing signalling framework contracts which reflect commitment to delivering the efficiencies. Given the relative certainty in signalling efficiencies from the supply chain we have applied 75% weighting to Network Rail's efficiency plans and 25% to our analysis.

## Routes

- 8.419 Signalling plans are based on long-term workbanks which have been developed centrally to ensure that they are aligned with the ETCS and NOS programmes. Routes are bought in to the central plans and have reflected them in their route plans.

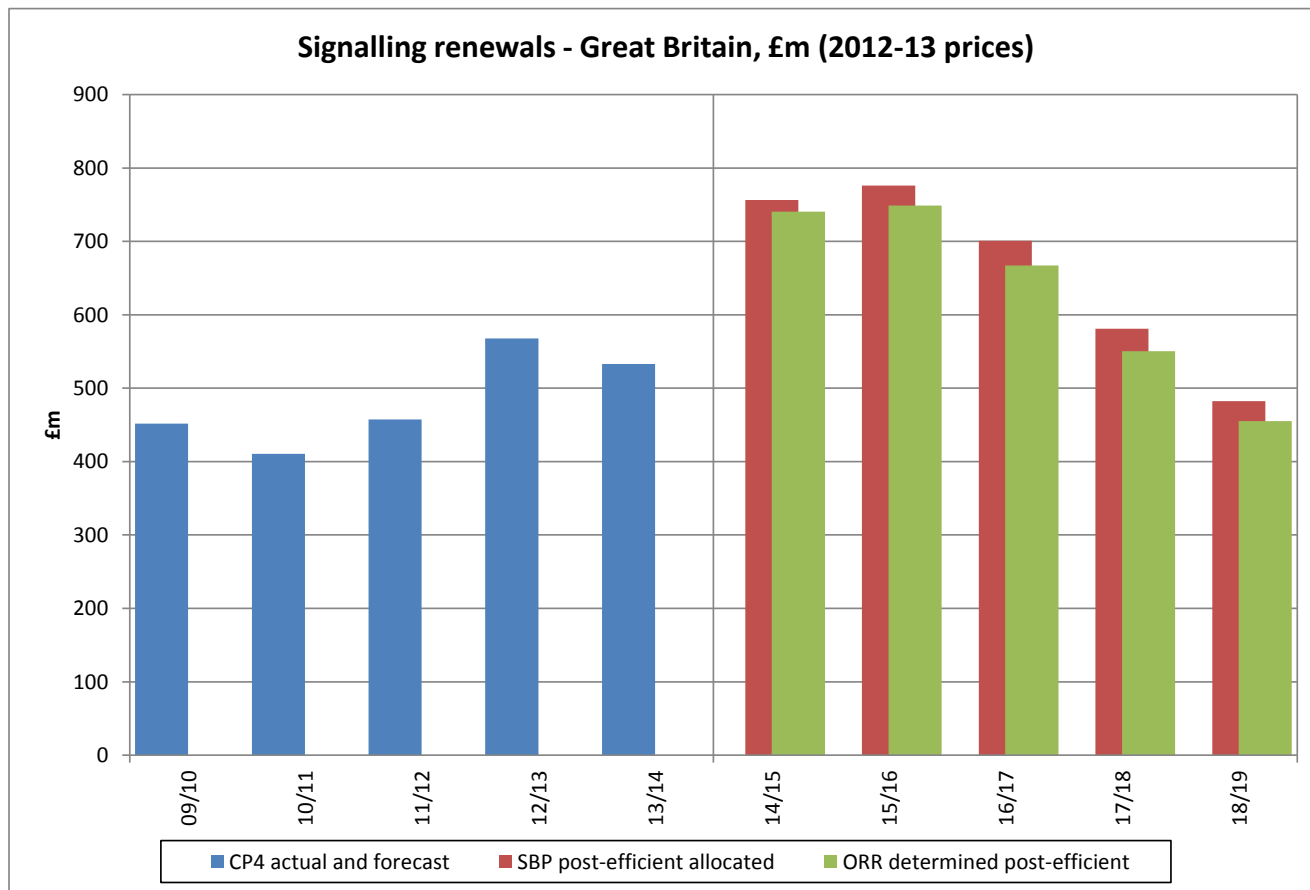
## Findings

- 8.420 Our assessed efficient expenditure for signalling renewals is illustrated below.

**Table 8.32: ORR assessed costs, signalling renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	814	864	813	704	613	-	3,807
Efficiency	-	9.0%	4.7%	5.3%	4.7%	5.0%	-	25.7%
Post-efficient expenditure	533	741	749	667	550	455	2,421	3,162

**Figure 8.11: Our assessment of efficient expenditure for signalling renewals**



8.421 Our assessment of Network Rail’s plans supports the large increase in expenditure from CP4 to CP5, which is driven by the asset policy and its consideration of well-justified national programmes of work: NOS and ETCS.

8.422 In total we have reduced Network Rail’s planned renewals expenditure on signalling by £134m, but our assessed expenditure is £741m greater than planned expenditure in CP4.

8.423 Our final determination assumes £21m more of efficient signalling renewals expenditure than assumed in our draft determination.

### Treatment of ETCS train fitment costs

8.424 In its SBP, Network Rail submitted costs of £194m associated with fitting ETCS equipment on trains. The funding is for industry to undertake first of class design and for wider fleet fitment for non-franchised fleets such as freight and open access operators. (First of class design means that Network Rail is funded to design, develop and install the in-cab solution for the first of each individual class of vehicle. This will then establish the template design solution for the rest of the fleet which will be funded through other means such as through franchises.) Due to different vehicle cab layouts the design will need to be bespoke for each different class of rolling stock and there are risks involved with procuring and implementing this on operational fleets which lead to uncertainty in forecast costs.

8.425 Our final determination includes a provisional sum for ETCS train fitment costs of £194m in our assessment of efficient enhancements expenditure and we have removed these costs from our assessment of efficient renewals expenditure. Details are set out in chapter 9.

## **Level crossings assessment**

### **Asset data**

8.426 The independent reporter graded level crossings asset data quality A2, reflecting good practice data governance, but with some shortcomings in the accuracy or completeness of data.

### **Unit costs**

8.427 Unit costs for level crossings are produced in a similar manner to conventional signalling equipment. However, our review suggests that they include high levels of additional overlays which have not been fully justified and that unit costs are high compared to other control periods. In our draft determination we applied a reduction of 7.5% to level crossings pre-efficient costs. In its response to our draft determination Network Rail stated that this reduction was incorrect and that the level of overlay applied reflected actual costs seen for projects in CP3 and CP4. Network Rail has presented its further analysis of historical projects, which include an uplift of 30% for abnormal and minor works. However, it has not demonstrated clearly that the overlays applied are representative of end-of-CP4 levels or reconciled them with the allowances made for minor works elsewhere in the SBP. We also consider that Network Rail has not provided sufficient evidence to demonstrate strategic oversight in the estimation of risk allowances. In our final determination we have therefore applied a 7.5% reduction to level crossings pre-efficient costs.

### **Policy and modelling**

8.428 For CP5 the volume of level crossing activity is a combination of standalone crossing renewals, crossing renewals associated with signalling renewals and safety improvement upgrades.

8.429 Level crossing renewals and maintenance are managed through the track and signalling asset policies. Network Rail plans to introduce greater coordination of level crossing activities. Key to this is the introduction of level crossing managers who will oversee activities at their designated crossings.

8.430 A criticism in the past has been that signalling renewals have ignored level crossings in the area affected, hence missing opportunities to modernise or upgrade crossings efficiently as part of a larger scheme. Network Rail now indicates a clear intent to improve on this issue in CP5.

8.431 Discussions with Network Rail also indicate a greater understanding of the need to assess risk at level crossings before determining what action is appropriate. We

welcome this and it should result in well-chosen solutions for level crossing renewal and/or upgrade.

- 8.432 Many manual level crossings will receive attention in CP5 as they will need to be modified to obstacle detection operation. This is likely to result in a small improvement in overall asset condition.

### **Efficiency**

- 8.433 Technology developments that offer the potential for efficiencies and safety improvements are dependent on a small group of engineers for their success. Some of these projects seem to be very slow in development which may be a result of an imbalance of demand and resources.

### **Civils assessment**

#### **Asset data**

- 8.434 Civils structures asset data quality is below average. Whilst Network Rail now has reasonable data governance processes in place and improvements are being made, there remains very significant inaccuracy in the records held. This leads to high uncertainty in the planned works for CP5. The independent reporter graded the quality of civils asset data required for licence compliance B5, reflecting the incomplete records for datasets which Network Rail has recently started collecting. It assessed the quality of civils asset data for SBP planning purposes to be B4.
- 8.435 Asset data relating to earthworks are kept in an online earthworks condition database. Network Rail has recently improved its asset knowledge and is undertaking a number of improvements and corrections to this database. The majority of earthworks assets have had at least one examination. Condition data for earthworks are captured using 'hazard' indices which categorise assets as serviceable, marginal, poor or top poor. Coverage of the asset base is good and data are considered to have low uncertainty.

#### **Unit costs**

- 8.436 Civils unit costs are based on a statistical analysis of historical project cost data, drawn from the Cost Analysis Framework (CAF).
- 8.437 Unit costs are used to develop just over half of the CP5 planned expenditure for overbridges and underbridges, 87% of earthworks expenditure and less than half of the remaining expenditure. The proportion of civils planned expenditure based on non-unitised costs is relatively high and these have a greater level of uncertainty.
- 8.438 The independent reporter has audited Network Rail's development of its civils unit costs and found a range of issues which introduce uncertainty or bias:
- (a) there is significant uncertainty in the method of cost estimation for overbridges and underbridges and the level of preliminary costs within these items is disproportionately high for civil engineering works of this nature;

- (b) there is an error in the application of further overlays for preliminary works and management costs which is likely to lead to an overestimation of costs of approximately 10 to 20%;
- (c) there is potential for the overestimation of risk and contingency in the unit costs due to overlays being applied at a disaggregated level;
- (d) there is inconsistency in the inflation indices used to uplift historical costs for different civils asset categories;
- (e) further evidence is required that the historical mix of work is representative of the mix of work in CP5 as this affects unit costs; and
- (f) there is very high uncertainty in relation to minor works cost projections.

8.439 For these reasons we have reduced Network Rail's pre-efficient cost forecasts. We have applied a 5% reduction in the first two years on the basis that a greater proportion of expenditure is supported by project estimates, and a 10% reduction for the remaining years where forecasts are more reliant on unit costs.

### **Policy and modelling**

8.440 Network Rail has completely rewritten its civil structures and earthworks asset policies in response to the recommendations resulting from the reporter's review of civils asset management (as discussed previously). We, and the independent reporter Arup, have assessed the new policies and found them to be a very significant improvement on past practice. Previous policies were ambiguous, did not set clear intervention triggers and requirements, and were open to significant interpretation, leaving considerable uncertainty over the required level of work to maintain a safe and sustainable asset base.

8.441 The structures policy sets out the triggers for intervention and clear rules for the nature of the work required. The policy has been supported by simpler and clearer 'policy on a page' documents. Network Rail has produced a whole life cost model for some of the structures assets. The model is a sophisticated tool which has been used to inform the optimisation of interventions. The model has been audited and found to be computationally sound. However, the whole life cost modelling is limited by the quality of its unit cost and asset degradation inputs, leading to outputs which are considered to have moderately high uncertainty.

8.442 The earthworks policy aims to reduce the earthworks related delay minutes (largely driven by embankments) and to reduce the number of asset failures (mainly driven by cuttings). It has been developed using a decision support tool called SCAnNeR. The model has been used to assess intervention options which range from maintenance to full renewal. We have reviewed the model and its application and consider it to be sound. However, the company has further work to do in developing its understanding of degradation and risk prioritisation which may result in further optimisation of the policy. The policy proposes a logical approach to asset interventions on the basis of



route criticality and asset condition, for example recognising that cuttings generally represent a higher safety risk than embankments. However the policy focuses primarily on maintaining and refurbishing earthworks assets rather than carrying out full renewal and this raises issues as discussed in chapter 11. Network Rail has recognized the importance of drainage and its contribution to addressing the root cause of earthworks failures. The prioritisation of drainage work for CP5 is considered appropriate to manage the asset.

- 8.443 Network Rail has completed an initial causal analysis of the large number (approximately 180) of earthworks failures which occurred in 2012-13 to see if amendments are required to its earthworks standards or policies. This may have an implication for the CP5 workbank.
- 8.444 As with other asset categories Network Rail has carried out both central modelling and route based development of civils workbanks to forecast the effect of implementing the new policies. The central model for civils structures is called CECOST. It uses similar principles to the CECASE model submitted in support of the company's PR08 SBP. The CECOST modelling and outputs were being developed in short timescales in the run-up to the submission of the SBP. The model was not available for detailed scrutiny as part of our progressive assurance work prior to the SBP submission. Presentation of the model and its outputs has been insufficient to provide assurance that it is producing a robust forecast of work required by the asset policy. Earthworks modelling has been carried out using SCAnNeR. The model has been reviewed based on an engineering assessment of its inputs and outputs and no material issues were found.
- 8.445 Effectiveness of the new structures and earthworks policies is critically dependent on how well new practice is embedded in the devolved routes and this will be the subject of further review in 2013. The embedment process is in its early stages and is expected to continue throughout CP5. The plans for CP5 include the expenditure associated with these programmes during the period.

## Efficiency

- 8.446 Network Rail has forecast civil renewals efficiency of 13.8% during CP5. Our analysis finds potential for greater efficiency of 19% from adopting best practice asset management for these assets. For example, there is potential for efficiency from better packaging of civils renewals works, improved supply chain management and improved data management, availability and analysis. There will also be efficiencies available due to the high volumes of work required over the next two control periods. Our audit of Network Rail's benchmarking and efficiency work has found that there are some significant limitations to the approach adopted and evidence base presented. Whilst the company's external benchmarking was considered relatively good, the audit found significant limitations in plans at operating route level and a lack of internal challenge applied. For the first two years of the control period our efficiency analysis

finds very similar levels of efficiency to Network Rail's plans. We have accepted Network Rail's efficiencies for these two years. For the remaining three years, due to the weaknesses identified in Network Rail's approach we have applied 25% weighting to its analysis and 75% to ours.

## Routes

8.447 Network Rail's routes have, independently, produced workbanks to align with the structures and earthworks asset policies. The route plans developed have been of varying quality. The most complete workbanks are based on a full survey of civil assets and assessment of the most appropriate work required based on on-site condition. Some routes appear to have built workbanks based on relatively poor information and a less complete understanding of the application of the new policy.

8.448 Network Rail has not fully understood the drivers of differences between its route plans and central modelling. This has resulted in a plan which uses the outputs of central modelling for forecasting of some of its detailed costs and route-based plans for others, and leads to potential for inconsistencies.

## Findings

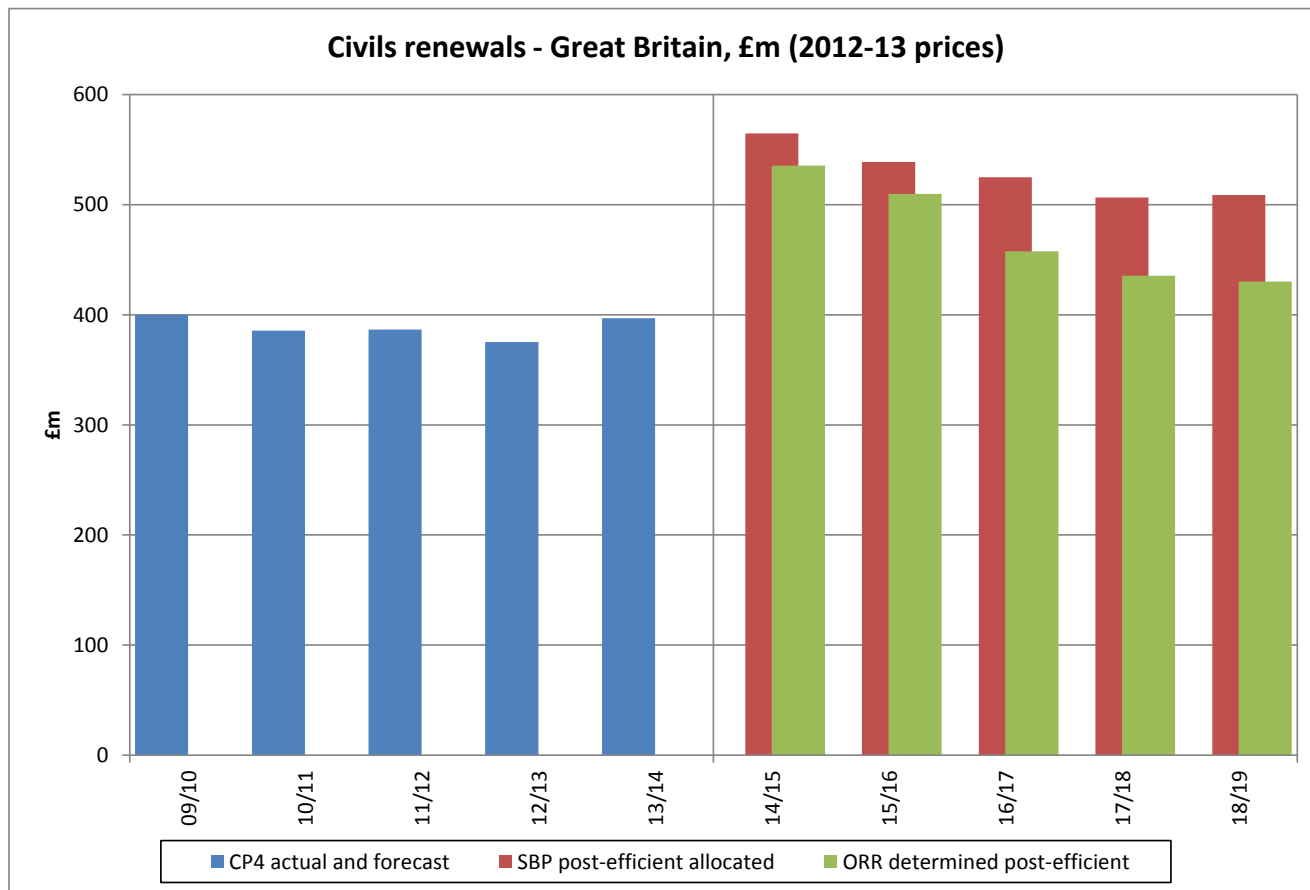
8.449 Network Rail's derivation of its civils plans is not clear. We have held a series of meetings with the company to gain more clarity. These have led to submission of corrections to the original SBP data, submissions of new data and production of further clarification documents. We have concerns about the process for development of the civils plans and have not been assured that the costs and volumes presented are robust, sustainable and efficient. We consider that the proposed costs and volumes for delivery of structures and earthworks asset policies in CP5 and beyond are highly uncertain. Network Rail has further work to do to fully understand the required levels of activity in CP5, CP6 and beyond.

8.450 Our assessment of the level of civils expenditure required during CP5 is shown in Table 8.33 and illustrated in Figure 8.12 below.

**Table 8.33: ORR assessed costs, civil engineering renewals, Great Britain**

£m (2012-13 prices)	CP4		CP5				CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	562	548	517	514	531	-	2,672
Efficiency	-	4.8%	2.3%	4.9%	4.3%	4.3%	-	19.0%
Post-efficient expenditure	397	536	510	458	435	430	1,944	2,368

**Figure 8.12: Our assessment of efficient expenditure for civil engineering renewals**



8.451 For the first two years of CP5 we have adjusted Network Rail’s pre-efficient unit costs, accepted unit cost efficiencies, and accepted proposed volumes because its plans are largely based on workbanks (i.e. volumes of work at specific locations).

8.452 For years three, four and five of CP5 Network Rail’s plans are increasingly reliant on high level modelled outputs. We have less confidence in its volumes, costs and efficiencies. We have adjusted its pre-efficient unit costs and made adjustments to unit cost efficiencies. We have accepted proposed volumes subject to an adjustment mechanism, described below, to deal with the high uncertainty in the plans. Network Rail is to be funded on this basis and these numbers are built into the access charges.

8.453 In total we have reduced Network Rail’s planned renewals expenditure on civil engineering works by £275m but we are funding a considerable increase in civils renewals expenditure (£424m more than is planned for CP4, or £571m more after adjusting for CEFA). Recognising that there is high uncertainty around the exact requirement, we propose that civils expenditure is treated differently in the determination, through a ‘civils adjustment mechanism’.

**Civils adjustment mechanism**

8.454 The civils adjustment mechanism will work as follows. In the first two years of the control period Network Rail is expected to deliver the civils renewal volumes proposed

in the SBP. Any under-delivery of volumes will have to be caught up. Volumes should not go above the agreed levels, but if they do the normal RAB roll forward policy will apply. Any underspend or overspend for unit costs reasons will be subject to the RAB roll forward policy. (In simple terms, the RAB roll forward policy allows Network Rail to keep 25% of efficient underspend but requires it to bear 25% of overspend.)

- 8.455 Network Rail must submit and publish a plan in March 2015 for the work it proposes on renewal of civils assets (i.e. excluding reactive maintenance and other civils maintenance costs) during years three, four and five of CP5. It is important that this plan is of a high quality such that we can form a judgement on the volumes and efficient costs of the work for which Network Rail will be funded<sup>178</sup>. We will issue a notice by 31 March 2014 requiring Network Rail to submit a plan no later than 31 March 2015. We will expect the plan to demonstrate that Network Rail has in place a bottom-up workbank, created by applying its asset policies to the civils asset portfolio, in accordance with condition 1.19 of its Network Licence. The workbank will be specific as to each asset on which work is proposed, its condition (at that time), the scope and cost of the work proposed, and its condition when the work is complete.
- 8.456 We are taking this step because of the unusual position we find ourselves in, that whereas Network Rail believes a significant backlog of work has developed in civils, its SBP submission has not fully demonstrated this and has also prevented us from concluding on civils expenditure in the determination.
- 8.457 We will review the plan and form a judgement on the volumes and efficient costs of the work for which Network Rail will be funded in our '2015 civils determination', which we will publish. The volumes and efficient costs could be under or over those assumed in our final determination but, once determined, these will be used to assess Network Rail's efficient delivery during the period. The difference between our 2015 civils determination for the three years and the costs assumed in the PR13 final determination will be settled by a RAB adjustment at the start of CP6.
- 8.458 Any underspend or overspend on unit costs against the 2015 civils determination will be subject to the normal RAB roll forward policy. If Network Rail under-delivers on volumes it will have to catch up. Over-delivery of volumes will be subject to RAB roll forward.

## Drainage assessment

### Asset data

- 8.459 Network Rail's management of its drainage assets has historically been poor. In our PR08 determination we provided funding to improve the condition of these assets.

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<sup>178</sup> Network Rail's licence provides for us to require the company to send us plans which demonstrate its compliance and proposed compliance with meeting its obligation to maintain and renew the network in line with best practice and in an efficient way. The licence also provides for us to specify the structure, format, standard and level of detail of the plan by way of a notice.

The company was slow to apply this but is now increasing its focus on management of drainage and this is reflected in its production of a new, separate drainage policy. It has also begun to address its poor knowledge of the asset through the IDP. This has delivered a step-change improvement in the drainage asset register and condition information, but gaps remain. Network Rail has not assessed condition for a significant proportion of the surveyed assets (just over 40%) and has not assessed condition for the majority of drainage assets as it cannot be determined from the type of inspection carried out for IDP. Condition information will not be complete for at least a year.

### **Unit costs**

8.460 Our audit of drainage unit costs has found that forecasts are highly dependent on a low number of unit costs. Network Rail has more to do to demonstrate that the drainage unit costs are appropriately representative of work types.

### **Policy**

8.461 We welcome Network Rail's increased focus on management of drainage assets, the production of a separate drainage policy and the steps taken to improve asset knowledge. However, because the policy is new and untested there remains uncertainty as to whether the policy is robust, and high uncertainty as to whether the policy is sustainable in the long-term and whether it is yet optimised for lowest whole life cost.

8.462 Network Rail's costs associated with drainage are included within its earthworks and track forecasts. Effective drainage management should result in savings to required work for both track and earthworks. By including drainage costs with these elements Network Rail is incentivised to deliver it effectively which should result in direct savings to track and earthworks activities. However, because of outstanding data deficiency and high uncertainty in the CP5 targets, combined with lack of route information provided for review, we consider the volumes and costs to be highly uncertain. We expect Network Rail to improve this substantially in its delivery plan and, in its response to our draft determination, it has committed to doing so.

### **Efficiency**

8.463 The efficiency of Network Rail's drainage plans is addressed through our assessment of track and earthworks efficiency.

## **Buildings assessment**

### **Asset data**

8.464 The independent reporter has audited the governance and completeness of asset data relating to franchised stations and managed stations. Some minor issues with data governance were identified but it was, on the whole, found to be in line with good practice. The dataset reviewed was found to be complete but its accuracy was not assessed as part of the review. Buildings data quality was graded B1 but the

limitations of the assessment should be noted. Buildings asset data and its governance have recently improved through implementation of an enhanced asset management system which allows better recording of all works carried out on the assets, improved control of data quality and better access to information.

- 8.465 The quality of asset condition data as measured by SSM has improved over CP4 and the reporter's latest review graded it B2.
- 8.466 We have reviewed data relating to buildings which have been used in the development of the SBP. We have found instances of volume data which are wrong and appear to be using different units or which are entered incorrectly. This reduces our confidence in the outputs of the modelling carried out.
- 8.467 Network Rail has more to do to understand buildings degradation and intervention curves. The independent reporter has found that degradation assumptions are likely to be pessimistic, resulting in modelled results which overestimate volumes.

### **Unit costs**

- 8.468 The audit of buildings unit costs has found their coverage to be relatively low and there is scope for this to be increased to improve the accuracy of plans. A significant proportion (approximately 40%) of Network Rail's buildings plans are based on less robust non-unitised costs. The unitised costs developed only cover building structures and fabric and omit unit costs for mechanical and electrical systems. The audit has found that the quality of evidence to support adjustments which uplift national unit costs is poor. The unit costs used include contingencies of 5% which may be high as Network Rail has not demonstrated oversight of its risk estimation at a programme or portfolio level. We have found many instances of unit costs which do not appear credible and/or for which units are inconsistently applied. For these reasons we find very significant uncertainty in both Network Rail's buildings pre-efficient unit costs and non-unitised costs and reflect this in our overall adjustment to buildings plans discussed below.

### **Policy and modelling**

- 8.469 We and the reporter have separately assessed buildings asset policy for franchised stations, managed stations, lineside buildings, light maintenance depots and maintenance delivery units. The CP5 buildings policy refines the policy applied in CP4 but has improved coverage of the assets. The effect of application of buildings policy is forecast in terms of Percentage of Asset Remaining Life (PARL). Network Rail's modelling of policy projects that, on average, PARL will improve marginally over the control period and in the longer-term (to CP11) it will improve significantly, suggesting that the policy is both robust and sustainable. However, no compelling justification has been provided that the policy represents an optimised approach to the management of risk on the network. It is also noted that the level of expenditure in CP4 has delivered a marginal improvement in the station stewardship measure (SSM) and this is forecast to continue into CP5 and beyond.



- 8.470 The buildings asset policy distinguishes between asset interventions based on criticality, measured using PARL and the Asset Risk Score. Assets are managed using different strategies depending on whether they are above or below certain threshold criteria for PARL and Asset Risk Score. We have reviewed the criteria being applied and find that the policy may lead to an overstatement of volume requirements by inefficiently prioritising renewal of assets which have considerable remaining life.
- 8.471 For stations the CP5 asset policy is considered to have met the robustness and sustainability criteria, but there is high uncertainty around whether it is minimum whole life cost. For light maintenance depots the policy is considered, in the round, to have met all three criteria. For lineside buildings and maintenance delivery units the policy is considered to have either some uncertainty or moderately high uncertainty in all three criteria. Overall this has resulted in moderately high uncertainty in the CP5 volumes and costs included within Network Rail's plans.
- 8.472 The franchised stations model shows some inconsistency with asset policy. Degradation curves used were found to generate higher volumes than the reporter considered necessary. The managed stations model is based on inputs from a workbank, with the exception of lifts and escalators. For modelling of other buildings assets some uncertainty was identified in inventory and unit cost inputs. No significant computational errors were identified in any of the buildings models.

## Efficiency

- 8.473 Our assessment of bottom-up efficiencies finds similar best practice opportunities to those identified by Network Rail's benchmarking work and finds similar levels of efficiency by the end of CP5. For example, there are efficiency opportunities through the improved specification of works including use of innovative materials and through optimisation of policy. The independent reporter's audit of Network Rail's buildings efficiencies has found some uncertainty in the buildings benchmarking and efficiency evidence presented. Internal benchmarking is considered weak but external benchmarking considered reasonably good. We have applied 50% weighting to our analysis and 50% to Network Rail's which reflects our view of the robustness and completeness of the buildings benchmarking and efficiency work conducted by Network Rail.

## Routes

- 8.474 There are some anomalies in the route plans between the average level of expenditure forecast per station. The plans for the Anglia route reflect the transfer of maintenance and renewal responsibilities to the Greater Anglia franchise. We will adjust for further changes in responsibility for management of stations which occur during the period.
- 8.475 Our assessment of buildings route plans included a 'deep-dive' review of a sample of certain costs included in plans. From the sample reviewed route plans were found to contain errors and/or unjustified cost projections.



## Findings

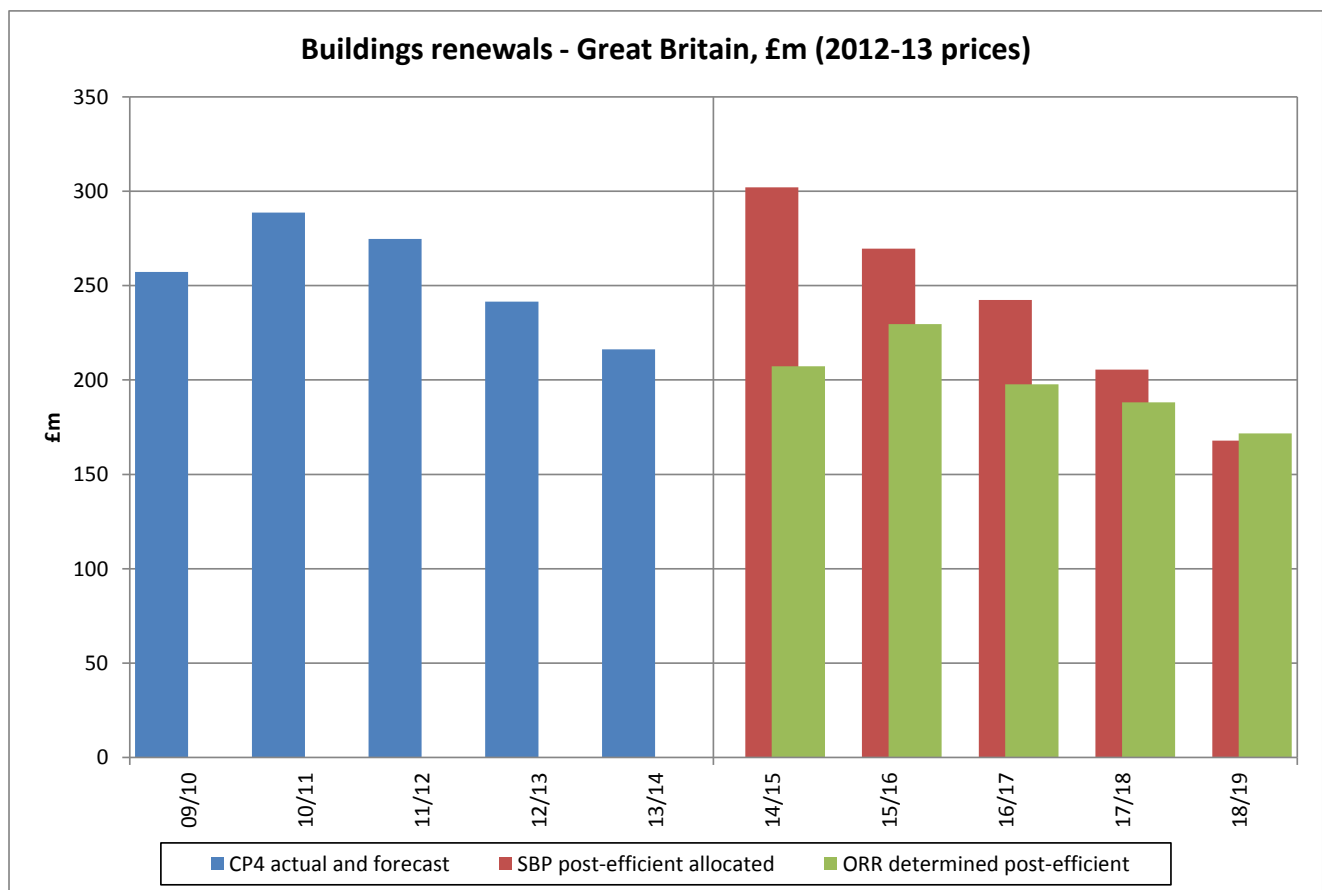
- 8.476 The SBP proposes pre-efficient expenditure on buildings of £1,394m (before embedded efficiencies). This represents a 9% increase on CP4 buildings expenditure, which was itself a significant increase on levels of expenditure in CP3. All categories of buildings renewals are forecast for increases in the level of pre-efficient expenditure with the exception of managed stations.
- 8.477 In our draft determination we applied a reduction to buildings renewals pre-efficient costs to reflect the wide range of issues identified in Network Rail's planning. In its response to our draft determination, Network Rail said it considered the reduction in the scope of buildings renewals implied by the draft determination will have implications for the sustainability of outputs and will lead to sub-optimal whole life costs. We do not consider that Network Rail's buildings renewals planning is sufficiently robust to demonstrate expenditure requirements in line with those in its SBP. Our final determination continues to apply a reduction to buildings renewals pre-efficient costs for franchised stations, lineside buildings and maintenance delivery units. We consider this adjustment to be justified because:
- (a) buildings renewal costs rely on high levels of non-unitised cost projections and are significantly uncertain;
  - (b) Network Rail's cost and volume reporting in CP4 has been poor;
  - (c) buildings asset policy has not been demonstrated to be minimum whole life cost and is potentially overstating renewal requirements due to application of criticality thresholds and pessimistic degradation assumptions;
  - (d) certain aspects of buildings renewals modelling appear flawed, the results of which have been shared with routes and may have influenced route plans upwards; and
  - (e) sampling of route plans has found instances of cost projections which are not justified.
- 8.478 The adjustment applied is necessary due to the quality of Network Rail's plans. We do not consider that this adjustment should result in implications for the sustainability of outputs. It brings pre-efficient expenditure to a level comparable to that seen towards the end of CP4. Expenditure levels in CP4 sustained or improved asset condition. Network Rail must manage its assets sustainably, and we will monitor it closely during CP5, as set out in chapter 3, to make sure that it does.
- 8.479 For managed stations the projected costs are likely to be reasonable given their bespoke plans but Network Rail has not submitted these plans for review. For light maintenance depots we consider that the proposed increase in expenditure on depot plant is justified.
- 8.480 We have reduced Network Rail's pre-efficient buildings renewals plans by £246m to reflect our findings.

8.481 Our assessment of the level of buildings expenditure required during CP5 is shown in Table 8.34 and illustrated in Figure 8.13 below.

**Table 8.34: ORR assessed costs, buildings renewals, Great Britain**

£m (2012-13 prices)	CP4		CP5				CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	222	256	228	226	216	-	1,148
Efficiency	-	6.7%	4.0%	3.1%	3.9%	4.5%	-	20.4%
Post-efficient expenditure	216	207	230	198	188	172	1,279	994

**Figure 8.13: Our assessment of efficient expenditure for buildings renewals**



8.482 In total we have reduced Network Rail’s planned renewals expenditure on buildings by £193m.

## Electrical power assessment

### Asset data

8.483 Network Rail has improved its asset data relating to electrical power assets through the ADIP. It has bettered its understanding of asset degradation and failure modes by collating and analysing historical asset failure data and drawing on the knowledge of

asset specialists. The independent reporter's audit of asset data quality has given overhead line data a grading of B2, showing governance to be largely in line with good practice but with some improvements to documentation required and/or evidence required. For conductor rail the audit's findings were similar for governance, but the accuracy of data was found to be poor, resulting in a grading of B4.

### **Unit costs**

- 8.484 The reporter's audit of unit costs has identified that roughly half of the SBP expenditure submission for electrical power and fixed plant is driven by non-unitised costs. The evidence supporting these costs is low and this leads to greater uncertainty in the plan.
- 8.485 Where unit costs have been used in formulating plans these have been developed using an appropriate methodology and are aligned with good practice. The reporter has traced the rates through to the SBP submission. Network Rail has not provided a full justification of the overlays applied to the unit costs and, as with other assets, has not demonstrated a programme level overview of risk estimation. For these reasons we have applied a 2% reduction to the pre-efficient plans for electrical power and fixed plant.

### **Policy and modelling**

- 8.486 Network Rail has put a lot of work into producing an electrical power asset policy which is a significant improvement on the previous policy. The new policy addresses safety more comprehensively. For the first time it is based on whole life cost modelling. This work has improved the justification and modelling of policy. However, it introduces new ways of working, for example introduction of mid-life refurbishment of overhead lines, which are not yet fully tested and this results in some uncertainty as to whether the policy is robust and sustainable.
- 8.487 Network Rail has assumed that sustaining electrical power delays (those which cause disruption of greater than 10 minutes) at the level forecast for the end of CP4 will support the delivery of the performance outputs required by the HLOSs. This appears to be a reasonable assumption but Network Rail has not demonstrated a clear link from this measure to its delivery of performance. Through development of the asset policy, Network Rail has made progress with linking work activities in its strategic planning models to the electrical power asset performance indicators to provide assurance that the forecast levels can be achieved. However, discussion with the routes has made it clear that the workbanks are sometimes inconsistent with the central modelling. Our discussions with the routes have also highlighted that they have not consistently provided feedback on the assumptions used in strategic planning models. The disconnects between the strategic planning models (which are linked to asset performance indicators) and the workbanks that underpin the SBP expenditure forecasts, lead to some uncertainty around the robustness of the policy.

- 8.488 In considering sustainability we have assessed whether electrical power asset performance and condition measures can be maintained in the long-term without an undeliverable spike in work volume. In its SBP, Network Rail has forecast renewals expenditure and remaining life over control periods CP5 to CP11. It forecasts that the long-term profile of expenditure will be reasonably steady, between £0.8bn and £1bn in most control periods. The average remaining life is forecast to reduce from 61% to 51% by CP11. This forecast reduction appears reasonable given the substantial programme of electrification that is planned for CP5.
- 8.489 The long-term forecasts of electrical power expenditure and condition outputs are based primarily on the central models. The disconnect between central modelling and the bottom-up workbanks that represent the actual work forecast on-site raises similar issues to those raised in our test of robustness.
- 8.490 The electrical power asset base is varied and includes both linear (for example cables and overhead lines) and point assets (for example switchgear and transformers). To select the assets to be analysed Network Rail has completed an asset criticality ranking using parameters including previous expenditure and impacts on performance, safety environment, operating costs and system capability. This asset criticality prioritised the following assets for whole life cost analysis:
- (a) overhead line equipment;
  - (b) signalling power supply systems (PSPs and signalling power distribution cables);
  - (c) HV switchgear for the AC and DC electrification systems;
  - (d) conductor rail; and
  - (e) HV cables on the DC electrification systems.
- 8.491 Network Rail has used a sound approach to the whole life cost modelling. However, the determination of optimum, efficient plans using whole life cost analysis tools is highly dependent on the quality of information used as inputs and assumptions. Network Rail has recognised the quality of asset data for electrical power assets has not been good and has developed programmes to improve this. Due to the time this takes, Network Rail has used expert knowledge supported by sensitivity analysis to determine degradation rates rather than comprehensive asset information.
- 8.492 Network Rail's centrally modelled figures are derived in a strategic planning model. This uses outputs from the whole life cost models and applies the policy to the electrical power asset base. This further emphasises the requirement for reliable asset inventory data to ensure the outputs of this model will provide a robust forecast of expenditure. The whole life cost models have influenced approximately 50% of the expenditure forecast in the SBP for electrical power renewals.
- 8.493 The electrification and power model was found to be consistent with policy. No material issues were found with computational accuracy in modelling costs and volumes for CP5.

## Efficiency

8.494 We have assessed the electrical power efficiency initiatives proposed and agree they should deliver long-term efficiencies. Network Rail has carried out benchmarking against the electricity distribution and transmission industry. Arup's review of Network Rail's work to assess potential electrical power renewal efficiencies concluded the initiatives are well-founded in terms of the range and scope covered. Network Rail's route teams have also included some locally derived efficiencies. The routes have not provided detailed delivery plans for these additional efficiencies. Due to the relatively robust approach Network Rail has taken to developing the majority of its electrical power and fixed plant efficiencies, we have applied 75% weighting to its analysis and 25% to our analysis.

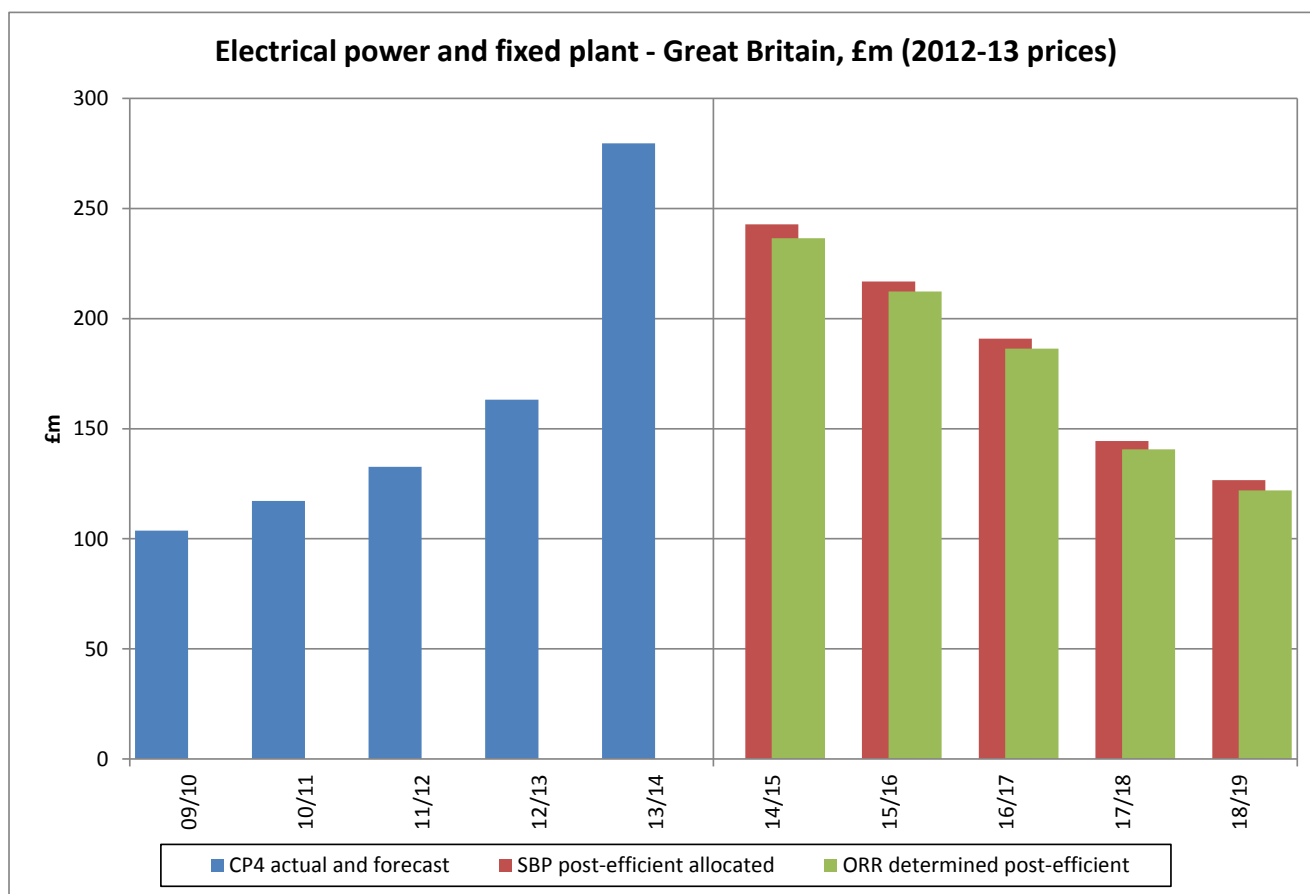
## Findings

8.495 Our assessed efficient expenditure for electrical power and fixed plant renewal is illustrated below. We accept the need for an increased level of expenditure relative to CP4. This is driven by the new asset policy which requires more mid-life refurbishment, by the advanced renewal of electrification assets due to enhancement works and by new information which has revealed the need for high levels of signalling power cable renewals to address a backlog of work. The high expenditure in the final year of CP4 is due to a large increase in expenditure on overhead line renewals, DC distribution renewals, supervisory control and system capacity improvements. The profile in CP5 is largely driven by high levels of efficiency, including efficiency from application of the new asset policy.

**Table 8.35: ORR assessed costs, electrical power and fixed plant renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	279	265	243	195	173	-	1,155
Efficiency	-	15.1%	5.7%	4.4%	5.7%	2.4%	-	29.5%
Post-efficient expenditure	280	237	212	186	141	122	797	898

**Figure 8.14: Our assessment of efficient expenditure for electrical power and fixed plant renewals**



## Telecoms assessment

### Asset data

8.496 Network Rail’s telecoms plans are based on asset knowledge collected through its Telecoms Decision Support Tool (DST). This provides a structured approach to collection of telecoms asset data and renewal planning at half nominal life and two years prior to nominal renewal date. The DST system is currently spreadsheet based and would benefit from being moved to a more robust and controlled platform. Ellipse is used as the telecoms asset register. There is currently no direct link between Ellipse and the fault management system (FMS). Asset information management and data quality is being addressed through ADIP and ORBIS.

### Unit costs

8.497 The independent reporter’s audit of telecoms unit costs found that a high proportion (52%) of telecoms plans was based on non-unitised costs. The projection of these costs and their overlays (e.g. ‘abnormals’) has not been supported by sufficient evidence and this results in a higher uncertainty relating to telecoms pre-efficient expenditure forecasts. Network Rail’s unit costs are built up using an appropriate methodology but treatment of risk and contingency is not clear and, as with other asset categories, no programme level view of risk estimation has been demonstrated.

We have applied a 2% reduction to account for duplication and overestimation of risk overlays.

## Policy and modelling

- 8.498 Network Rail Telecoms (NRT) was set up in August 2011, partly in recognition of the need to manage the telecoms assets on a holistic basis, over the full life of the assets.
- 8.499 Network Rail recognises that its assets, in particular the Fixed Telecoms Network (FTN), have potential benefits both in terms of added services and commercial opportunities. However, the CP5 SBP submissions exclude all commercial activities, costs and revenues.
- 8.500 Network Rail has carried out whole life cost modelling in support of its telecoms asset policy. This is a positive step but we consider that the modelling does not yet provide sufficient coverage of the asset base. In depth modelling has only been carried out for processor controlled concentrators. The modelling has been hampered by data quality with extra work carried out to verify FMS data. There is therefore potential for further optimisation of the policy through wider use of the model and improved input data. The policy proposes a move to a more targeted approach of component renewal to maximise the asset life, integrated with programmes of major interventions relating to NOS. This approach appears sound.
- 8.501 Telecoms maintenance regimes are to be based on the criticality of the asset and based around delivery of Service Level Agreements (SLA) with NRT's clients, the routes. SLAs have not been implemented or fully tested and it will not be clear whether the proposed SLAs are appropriate until the middle of CP5. We therefore do not yet consider that delivery of SLAs has been demonstrated to be a robust or sustainable way of maintaining the assets.
- 8.502 The asset policy document does not capture the portfolio of telecoms assets consistently. This needs to be resolved to ensure robust reporting in CP5. The policy is also unclear on asset ownership.
- 8.503 Network Rail has developed its CP5 plans based on application of the policy. Its plans show a reduction in overall expenditure from CP4 driven by the completion of two major programmes of work: GSM-R and FTN.
- 8.504 In our draft determination we made adjustments to the pre-efficient plans for telecoms renewals where Network Rail had not provided sufficient information to justify them. In its response to the draft determination, Network Rail acknowledged inconsistency between the core SBP documents and the supporting NRT plan. It stated that the inconsistency was explained by migration of systems to FTN, which represents additional scope beyond activity funded in CP4. We have reviewed the further information provided and found that some of the expenditure identified should have been included in its CP4 plans. Where expenditure is driven by migration away from third party networks we believe that Network Rail has had the opportunity to develop



efficient plans over several years. We have not seen sufficiently developed, costed plans for the identified works. Our final determination applies the same approach as our draft determination and reduces pre-efficient telecoms renewals forecasts by £72m.

8.505 The telecoms model was found to be consistent with policy. No material issues were found with computational accuracy in modelling costs and volumes for CP5.

### Efficiency

8.506 Our assessment of the efficiencies available for telecoms renewals has found opportunities in the development and sharing of smoothed workbanks, improved management of the supply chain and through application of innovative solutions. We find a slightly lower overall efficiency available than Network Rail's analysis.

8.507 The reporter's audit of Network Rail's telecoms benchmarking and efficiency found that both internal and external benchmarking was limited in coverage and identified efficiencies were not reflected in CP5 workbanks. We have given greater weight (75%) to our analysis given our view of the quality of Network Rail's benchmarking and efficiency analysis.

### Routes

8.508 There are no specific route plans for telecoms with assets remaining under the direct control of NRT, but route staff are used to provide first level failure response.

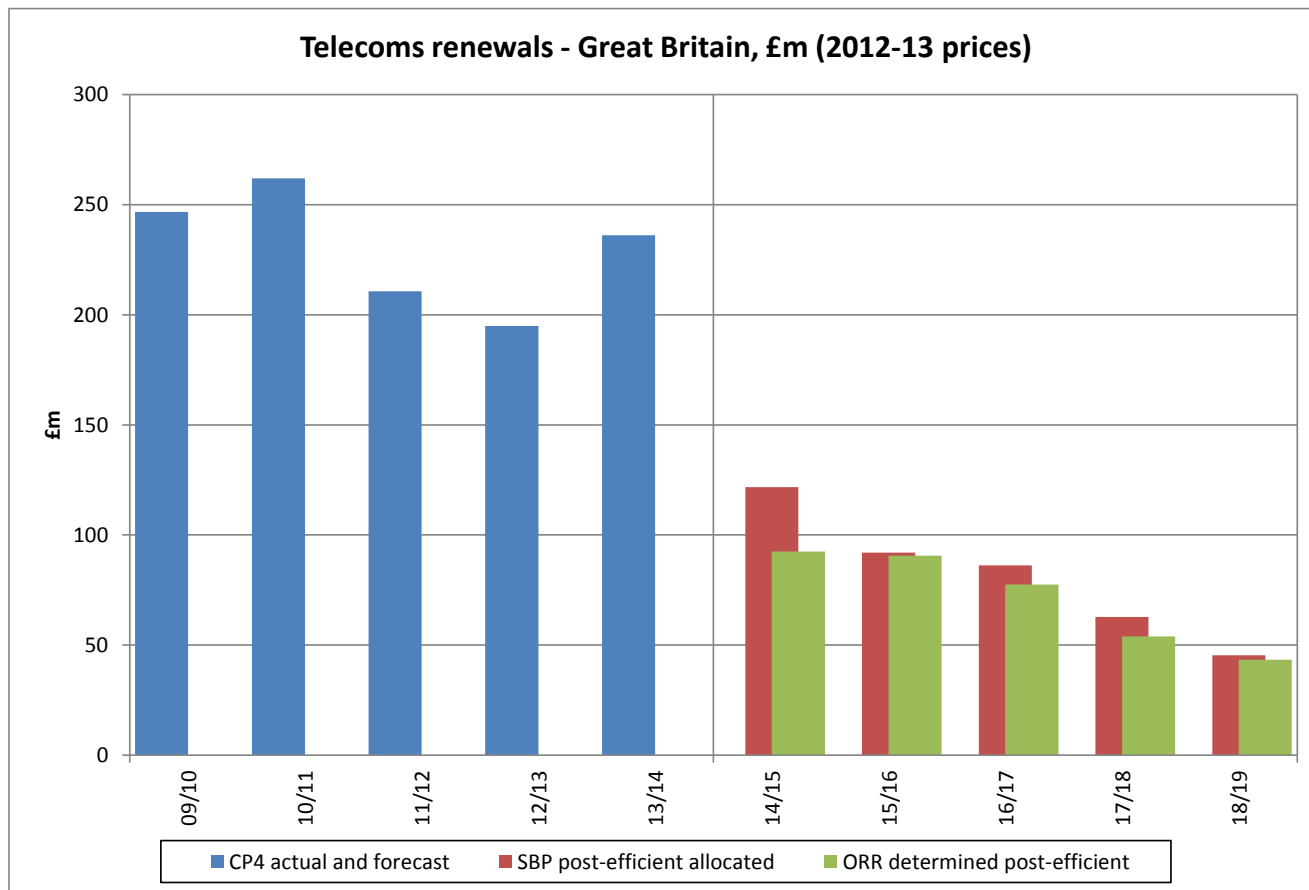
### Findings

8.509 Our assessed efficient expenditure for telecoms renewals is illustrated below.

**Table 8.36: ORR assessed costs, telecoms renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	96	97	86	62	52	-	394
Efficiency	-	3.7%	3.4%	3.5%	3.2%	3.6%	-	16.2%
Post-efficient expenditure	236	92	91	78	54	43	1,150	358

**Figure 8.15: Our assessment of efficient expenditure for telecoms renewals**



8.510 Expenditure in CP5 is markedly lower than in CP4 due to the completion of major programmes of work delivering FTN and GSM-R.

## Wheeled plant assessment

### Asset info

8.511 Network Rail acknowledges that the current level of information available for wheeled plant is inconsistent and limited, which is largely a function of the existing contractual arrangements. Network Rail has taken steps to address this shortcoming through the standardisation of contracts and population of a fleet database, the Fleet Asset Management System (FAMS). Poor asset information hinders Network Rail’s ability to develop an optimised asset policy and this is reflected in our assessment. From the information which is available, fleet condition is shown to be good, with high availability and reliability levels.

### Unit costs

8.512 The independent reporter’s audit of wheeled plant unit costs has found a lack of clear evidence that rates have been built up using a robust methodology. It highlights that, for larger bespoke plant items and systems costs will largely be driven by the market’s response to a procurement exercise and that this leads to real difficulties in projecting costs.

8.513 We have made no adjustment to wheeled plant unit costs for management of risk or contingency as Network Rail has not included any specific allowance.

### **Policy and modelling**

8.514 The wheeled plant policy is a significant improvement on CP4 policy but it is still considered relatively immature. The policy attempts to draw together coherent management plans for an extensive but varied set of assets. The assets vary in terms of age, type and complexity of vehicles, and each has its own set of asset management requirements.

8.515 Following review of the detail that sits beneath the policy, we consider that the focus of extending maintenance and overhaul periodicities forms part of a considered and assessed plan for the on-going stewardship of the assets rather than simply a drive to reduce and extend maintenance. We note that the policy does not cover all Network Rail's fleet plans for CP5. The policy only covers those vehicles to maintain the network to the anticipated work volumes. It does not cover route specific vehicles or certain enhancement works, such as Thameslink which has its own provision for fleet procurement.

8.516 The wheeled plant strategic planning model was found to be generally consistent with asset policy, except for the road fleet which was assumed to be replaced every four years whereas policy stated every five. There were no material unexplained issues with input data and no errors found in computation. In our draft determination we made an adjustment to expenditure on road vehicles of £3m to reflect the discrepancy between policy and modelling and concern that the residual value of vehicles at the time of disposal had not been considered. In its response to our draft determination Network Rail stated that there was an error in its policy document and that its modelling assumption of replacing cars every four years was correct. It stated that it had applied a multiplying factor to allow for residual value at time of disposal. We have reviewed and accept these points but consider that the policy for replacing road vehicles is immature and uncertain compared to other fleet assets. We expect the policy to be further developed to inform CP6. We have applied a smaller reduction of £1m in our final determination.

8.517 Because of the limited information available (as described above), the outputs from the policy are very crudely and loosely defined. Success is proposed to be measured by the delivery of the planned shifts and by having a fleet condition no worse than at exit from CP4. Network Rail has proposed no specific monitoring targets for fleet in CP5.

8.518 We are concerned that there is some disconnect between route plans and central modelling of fleet requirements.

8.519 We have reviewed the costs and volumes included in the SBP which are associated with implementation of the fleet policy. The fleet size required to support the fleet policy is modelled by assessing the projected work provided by the routes with

perturbation factors such as the unavailability of possessions and machine failure incorporated. Given the high availability and reliability demanded of the fleet to support the projected work, we are surprised that there has been little consideration of any benefits which could accrue from the provision of additional fleet resource, for example, to provide resilience to changes in work demand, fleet performance (especially on critical fleets) or to provide additional capacity to perform more work.

- 8.520 Despite our concerns over asset information and demand modelling, we consider that Network Rail has demonstrated that its fleet policy is capable of delivering the planned outputs for CP5. We also consider that it has made the case that the fleet policy is capable of managing the fleet asset sustainably in the long-term. There is further work required to demonstrate how effective the policy would be if faced with a change in the planned outputs, because there appears to be little spare capacity in meeting the planned workload.
- 8.521 Expenditure in CP5 is forecast to be higher than in CP4. Network Rail has proposed an investment of £141m to make improvements to road-rail vehicles, citing improved safety as the main driver for the investment. We engaged the independent reporter to review the proposal. Of £141m proposed, £71m was for a new design of excavator. The reporter found that, whilst the principle was sound, the business case (considering both safety and efficiency) was not sufficiently developed. It recommended further development work. In our final determination we have made an allowance of £10m for further development, as discussed in chapter 11. If there is a financial business case (and expenditure is more than £5m) investment beyond this allowance could be put forward as a 'spend-to-save' scheme. If the case rests on wider benefits, there is a mechanism for logging up costs.

### **Efficiency**

- 8.522 Network Rail has provided information on the proposed fleet efficiencies, supported by reasoned justification. The two principal areas proposed are improved procurement and efficiencies in the vehicle maintenance and overhaul process. Our analysis finds slightly higher available efficiencies driven by improved procurement policy. The assumed level of efficiencies is considered challenging but realistic if suitably managed.

### **Route plans**

- 8.523 There is some discrepancy between fleet policy and fleet requirements as set out in route plans. This has been considered by Network Rail and independently examined with the conclusion that any difference should be manageable.

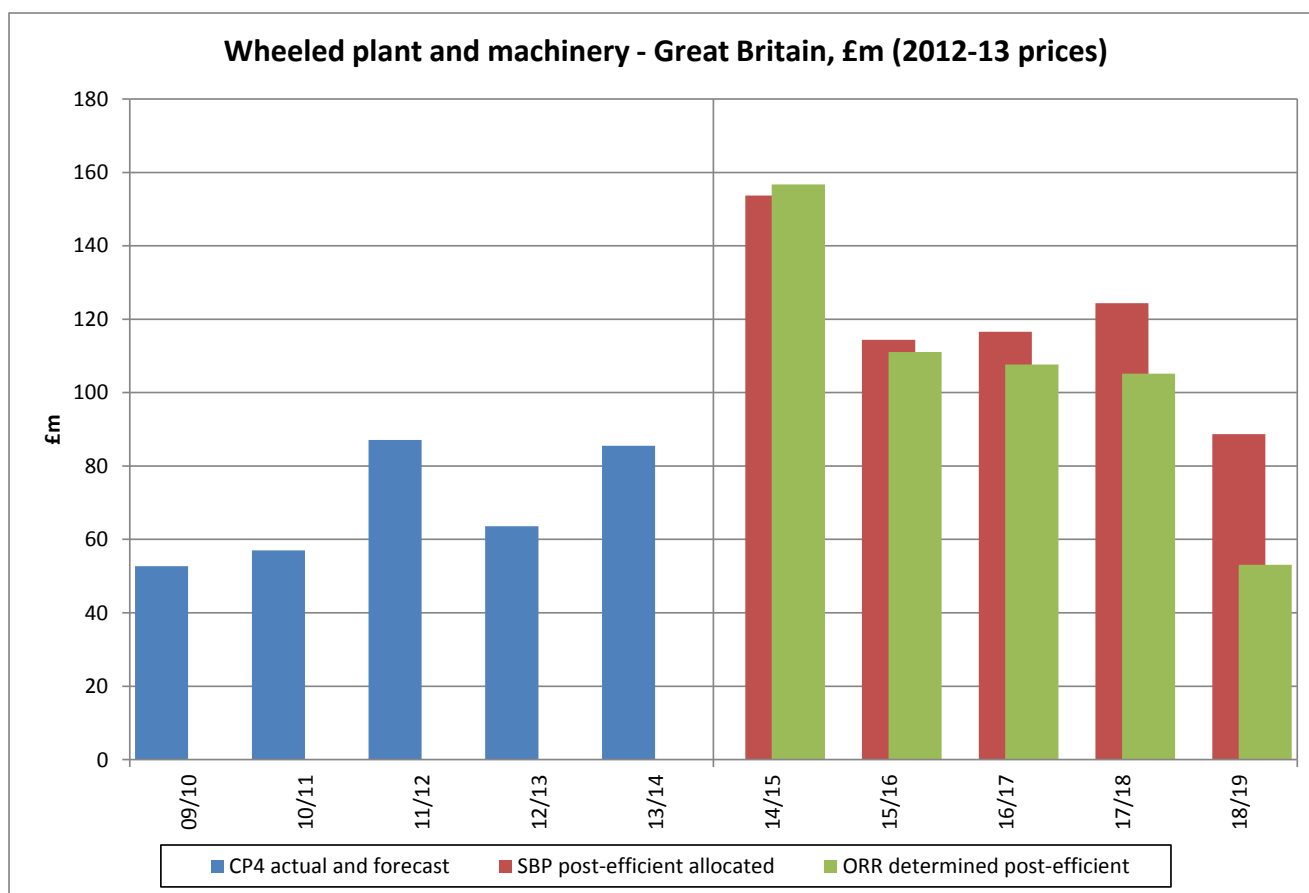
### **Findings**

- 8.524 Our assessment of the level of wheeled plant expenditure required during CP5 is illustrated below.

**Table 8.37: ORR assessed costs, wheeled plant and machinery renewals, Great Britain**

£m (2012-13 prices)	CP4		CP5				CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	167	119	116	113	57	-	572
Efficiency	-	6.4%	0.2%	0.2%	0.2%	0.3%	-	7.3%
Post-efficient expenditure	86	157	111	108	105	53	346	534

**Figure 8.16: Our assessment of efficient expenditure for wheeled plant and machinery renewals**



8.525 The increase in expenditure in CP5 is largely driven by increased expenditure on provision of additional high output fleets. The peak of expenditure in 2014-15 is driven by expenditure on high output and seasonal plant.

## Other renewals expenditure assessment

### IM renewals

8.526 Network Rail’s SBP assumed IM renewals expenditure (including spend on its Traffic Management System) of £613m over CP5. This is approximately £150m above CP4 levels. A significant proportion of Network Rail’s SBP forecast for IM renewals was based on high level expenditure assumptions and drew on Gartner’s global IT spend

benchmarks<sup>179</sup>. We did not think that the SBP provided sufficient justification for the significant increase in IM renewals expenditure above CP4 levels.

- 8.527 Following its SBP submission, Network Rail provided further details of its plans, setting out the types of IM projects that it expected to deliver in CP5. This was too late to be considered in our draft determination but we have considered the new information in developing our final determination.
- 8.528 Our final determination has separately assessed expenditure forecasts associated with ORBIS, discussed below, because less than a third of ORBIS costs relate to IM expenditure (with the rest of the cost relating to business change activity). For IM renewals we have used the same methodology as applied in the draft determination, based on actual CP4 spend and an efficiency trajectory. Our assessment results in an increase of £52m for IM renewals over CP5 compared to our draft determination. This assumes total spend on IM renewals excluding ORBIS of £389m. If Network Rail wants to spend more than this level it has the potential to do so through the spend-to-save framework for information management schemes that improve the business.

### Asset information

- 8.529 In addition to IM renewal expenditure Network Rail has proposed expenditure on ORBIS of £173m during CP5 to deliver improved asset information management. These plans were assessed by the independent reporter, AMCL, in late 2012. The reporter found that the ORBIS vision and roadmap represented a major step forwards in terms of Network Rail's approach to asset information which addresses the existing shortfall between Network Rail's asset information capability and current best practice.
- 8.530 The reporter found certain elements of the programme that needed further development to address gaps to best practice, particularly the asset information specification and detailed system architecture.
- 8.531 The initial business case for ORBIS was found to be strong and based on sound evaluation for a programme in its early definition phase. The base case was strongly positive, delivered a good cost-benefit ratio and would start to deliver a positive net cost-benefit in a short period of time (during CP6).
- 8.532 We support Network Rail's plans to improve its asset information management. In our draft determination we assessed IM renewals and ORBIS expenditure together and assumed a continuation of CP4 levels of expenditure with an efficiency overlay applied. We have now reviewed further evidence supplied by Network Rail and our final determination assesses ORBIS plans separately. We consider that expenditure of £173m is justified for ORBIS to ensure that Network Rail has the appropriate information management systems in place to support wider improved asset

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<sup>179</sup> Gartner is an information technology research and advisory company. The data used for Network Rail's benchmarking was based on a mix of global organisations with data reflecting average enterprise IT spend levels.

management and the efficiencies assumed in our determination. This is an increase of £14m for ORBIS in CP5 compared to our draft determination.

### **Property**

8.533 Our assessment of Network Rail's plans for property renewals finds that expenditure levels before efficiency are reasonable but that a higher level of efficiency is available. We assume an efficient level of expenditure of £113m.

### **Intelligent infrastructure**

8.534 We have assessed Network Rail's proposal for expenditure of £95m on further roll-out of remote condition monitoring. The proposed further implementation appears reasonable but we have not yet seen sufficiently detailed plans. We have asked Network Rail to quantify what this expenditure will deliver and it has presented high level information. We expect Network Rail to set out detailed plans, including milestones, in its delivery plan. We will monitor delivery against this plan.

### **Faster and safer isolations**

8.535 Network Rail has proposed an investment of £230m in CP5 for taking safer and faster isolations, citing safety improvements as the main reason for the investment. £90m was proposed for improvements on the AC network and £100m for the DC network. The remaining £40m of expenditure was for further DC improvements. The investment of £190m for taking safer and faster isolations on the AC and DC network is considered appropriate but we consider that there is insufficient justification for the £40m for further DC improvements. We have applied an efficiency overlay in line with our assessment of efficiency for electrical power and fixed plant renewals. We assess efficient expenditure of £163m.

### **Improved protection and warning for track workers**

8.536 Network Rail's proposal for £100m expenditure on a system for providing improved protection and warning to track workers is reviewed in chapter 11. We have made an allowance of £10m for the trialling of the proposed system in CP5.

### **Small plant**

8.537 Network Rail's plans for renewal of small plant are considered reasonable and we have made no adjustment, giving efficient expenditure of £51m in CP5.

### **Research and development**

8.538 Network Rail has presented plans for expenditure of £300m on R&D. We fully support an increased focus on R&D. The HLOSs included a £50m innovation fund. In addition to that fund we have set out a matched funding financial incentive as described in chapter 19 and have therefore not included funding for R&D in our assessed renewals expenditure.



## Long-run renewals

8.539 Network Rail presented its plans for renewals up to and including CP11. We have conducted a review of these plans including a bottom-up review of plans for CP5 and CP6. We have assumed that the key identified efficiencies will be realised by the end of CP6. Beyond CP6 we have assumed that there will be further, as yet unidentified, efficiency improvements. We have assumed on-going efficiencies of 2% per control period. Our assessment of the long-run renewal expenditure is the average of the efficient renewal expenditure requirements from CP5 to CP11. Our final determination assumes higher long-run renewals figures than our draft determination, resulting from the changes made to our CP5 assessed renewals efficiencies for track being projected forward.

## Our conclusions – maintenance

8.540 Our methodology as described in this chapter has resulted in our judgement on the level of efficient maintenance expenditure Network Rail should need to incur to deliver its required outputs. This is set out in the tables below. In comparison to our advice to ministers documents, our conclusions on maintenance expenditure are within the range we set out for both Scotland and England & Wales.

8.541 We have made no explicit adjustment to maintenance volumes as proposed by Network Rail. The company will set out its proposed volumes consistent with delivery of its asset policies and maintenance strategy in its delivery plan. The company will need to provide an explanation where its delivery plan volumes are different to the volumes submitted following the SBP, a subset of which is shown in Table 8.1. We will monitor maintenance volumes during the period against its delivery plan. Network Rail will need to provide us with justification for any material divergences between the actual volumes delivered in a year and those forecast in the delivery plan. We will also monitor on a forward looking basis, considering whether the volumes are likely to be delivered.

**Table 8.38: ORR assessed costs, maintenance, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Network Rail's SBP								
Pre-efficient expenditure	-	1,165	1,172	1,174	1,172	1,166	-	5,848
Efficiency	-	5.3%	2.6%	2.3%	2.1%	2.4%	-	13.8%
Post-efficient expenditure	982	1,103	1,082	1,058	1,035	1,004	5,406	5,282
ORR assessed costs								

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Pre-efficient expenditure	-	1,134	1,154	1,150	1,155	1,157	-	5,750
Efficiency	-	3.7%	3.3%	3.5%	3.5%	3.6%	-	16.4%
Post-efficient expenditure	982	1,091	1,074	1,033	1,001	966	5,406	5,166

**Table 8.39: ORR assessed costs, maintenance, England & Wales**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Network Rail's SBP								
Pre-efficient expenditure	-	1,052	1,055	1,056	1,054	1,052	-	5,269
Efficiency	-	5.4%	2.1%	2.5%	2.2%	2.9%	-	14.2%
Post-efficient expenditure	893	995	976	953	930	903	4,928	4,757
ORR assessed costs								
Pre-efficient expenditure	-	1,024	1,038	1,036	1,039	1,045	-	5,180
Efficiency	-	3.7%	3.4%	3.5%	3.5%	3.6%	-	16.6%
Post-efficient expenditure	893	986	965	930	899	872	4,928	4,651

**Table 8.40: ORR assessed costs, maintenance, Scotland**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Network Rail's SBP								
Pre-efficient expenditure	-	113	118	117	118	113	-	579
Efficiency	-	3.9%	6.4%	1.0%	1.0%	-2.0%	-	10.0%
Post-efficient expenditure	89	108	106	104	104	102	478	525
ORR assessed costs								
Pre-efficient expenditure		110	116	115	117	112		569
Efficiency		3.5%	3.0%	3.3%	3.3%	3.3%		15.4%
Post-efficient expenditure	89	106	108	104	102	95	478	515

## Maintenance, by asset

**Table 8.41: ORR assessed costs, efficient maintenance by asset, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>Track</b>							
Network Rail SBP	420	414	404	395	384	372	1969
ORR assessed	420	418	408	393	377	361	1958
<b>Signalling</b>							
Network Rail SBP	158	151	148	146	143	141	729
ORR assessed	158	153	149	145	141	138	728
<b>Civils and buildings</b>							
Network Rail SBP	35	82	82	82	81	82	408
ORR assessed	35	81	81	80	79	79	400
<b>Electrification and fixed plant</b>							
Network Rail SBP	73	85	88	87	87	88	435
ORR assessed	73	90	92	90	87	86	445
<b>Telecoms</b>							
Network Rail SBP	21	21	20	19	19	18	97
ORR assessed	21	21	20	19	18	18	95
<b>Other maintenance</b>							
Network Rail SBP	274	216	213	206	202	196	1032
ORR assessed	274	220	212	203	195	187	1017
<b>Reactive maintenance adj.</b>							
Network Rail SBP	0	136	127	123	119	108	613
ORR assessed	0	108	111	102	102	98	522

## Maintenance by route

8.542 Our assessed expenditure on maintenance by route is set out in Table 8.42. These feed into our calculation of the REBS baselines as explained in Annex D.

**Table 8.42: ORR assessed costs, efficient maintenance by route**

£m (2012-13 prices)	CP4			CP5			CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	
<b>Anglia</b>							
Network Rail SBP	99	104	101	100	98	92	494
ORR assessed	99	102	100	98	95	90	484
<b>East Midlands</b>							
Network Rail SBP	50	57	58	56	54	54	280
ORR assessed	50	55	55	53	52	50	264
<b>Kent</b>							
Network Rail SBP	67	75	72	70	70	66	352
ORR assessed	67	73	71	68	66	63	341
<b>LNE</b>							
Network Rail SBP	154	161	161	157	155	155	789
ORR assessed	154	163	160	153	147	143	766
<b>LNW</b>							
Network Rail SBP	252	280	269	267	259	250	1,326
ORR assessed	252	277	266	259	250	244	1,296
<b>Scotland</b>							
Network Rail SBP	89	108	106	104	104	102	525
ORR assessed	89	106	108	104	102	95	515
<b>Sussex</b>							
Network Rail SBP	52	58	60	54	52	49	273
ORR assessed	52	57	59	52	51	47	267
<b>Wales</b>							
Network Rail SBP	52	62	61	61	61	60	306
ORR assessed	52	61	60	59	58	57	294
<b>Wessex</b>							
Network Rail SBP	78	87	84	81	76	73	402
ORR assessed	78	88	87	83	78	74	409
<b>Western</b>							
Network Rail SBP	87	110	109	107	105	103	535
ORR assessed	87	109	109	106	104	103	531

## Our conclusions – renewals

- 8.544 Our methodology as described in this chapter has resulted in our judgement on the level of efficient renewals expenditure Network Rail should need to incur to deliver its required outputs. This is set out in the tables below. In comparison to our advice to ministers documents, our conclusions on renewals expenditure are within the range (towards the high end) that we set out for Scotland but above the range we set out for England & Wales. This is driven by a large increase in Network Rail's pre-efficient plans between the IIP and the SBP, particularly relating to civils renewals, accelerated track renewals, IT and other investment expenditure.
- 8.545 The company will set out its proposed renewals volumes consistent with delivery of its asset policies in its delivery plan. The company will need to provide an explanation where its delivery plan volumes are different to the volumes submitted in the SBP, a subset of which is shown in Tables 8.11 to 8.13. We will monitor renewal volumes during the period against its delivery plan. Network Rail will need to provide us with justification for any material divergences between the actual volumes delivered in a year and those forecast in the delivery plan. We will also monitor on a forward looking basis, considering whether the volumes are likely to be delivered.

**Table 8.43: ORR assessed costs, renewals, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Network Rail's SBP								
Pre-efficient expenditure	-	2,989	3,149	3,196	3,119	3,060	-	15,513
Efficiency	-	8.3%	2.8%	2.8%	1.5%	1.4%	-	15.8%
Post-efficient expenditure	2,784	2,741	2,808	2,771	2,663	2,576	12,833	13,559
ORR assessed costs								
Pre-efficient expenditure	-	2,737	2,914	2,914	2,849	2,735	-	14,148
Efficiency	-	8.4%	3.6%	3.8%	2.7%	3.2%	-	20.0%
Post-efficient expenditure	2,784	2,508	2,575	2,477	2,357	2,190	12,833	12,107

**Table 8.44: ORR assessed costs, renewals, England & Wales**

£m (2012-13 prices)	CP4			CP5			CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Network Rail's SBP								
Pre-efficient expenditure	-	2,672	2,756	2,839	2,795	2,743	-	13,805
Efficiency	-	8.1%	2.9%	2.6%	1.6%	1.5%	-	15.9%
Post-efficient expenditure	2,510	2,455	2,458	2,465	2,388	2,308	11,446	12,074
ORR assessed costs								
Pre-efficient expenditure	-	2,446	2,545	2,586	2,553	2,453	-	12,583
Efficiency	-	8.4%	3.6%	3.7%	2.7%	3.2%	-	19.9%
Post-efficient expenditure	2,510	2,242	2,248	2,199	2,113	1,964	11,446	10,766

**Table 8.45: ORR assessed costs, renewals, Scotland**

£m (2012-13 prices)	CP4			CP5			CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Network Rail's SBP								
Pre-efficient expenditure	-	316	393	357	325	316	-	1,708
Efficiency	-	9.6%	1.4%	4.1%	0.8%	0.3%	-	15.5%
Post-efficient expenditure	273	286	350	305	275	267	1,387	1,484
ORR assessed costs								
Pre-efficient expenditure	-	290	368	328	296	283	-	1,565
Efficiency	-	8.3%	3.0%	4.5%	2.8%	3.3%	-	20.2%
Post-efficient expenditure	273	266	327	278	244	225	1,387	1,341

## Renewals, by asset

**Table 8.46: ORR assessed costs, efficient renewals by asset, Great Britain**

£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
<b>Track</b>								
Network Rail SBP	816	720	684	725	669	633	3,762	3,431
ORR assessed	816	714	671	701	640	599	3,762	3,326
<b>Signalling</b>								
Network Rail SBP	533	757	776	701	581	482	2,421	3,296
ORR assessed	533	741	749	667	550	455	2,421	3,162
<b>Civils</b>								
Network Rail SBP	397	565	539	525	506	509	1,944	2,644
ORR assessed	397	536	510	458	435	430	1,944	2,368
<b>Buildings</b>								
Network Rail SBP	216	302	270	242	205	168	1,279	1,187
ORR assessed	216	207	230	198	188	172	1,279	994
<b>Electrical power &amp; fixed plant</b>								
Network Rail SBP	280	243	217	191	144	127	797	922
ORR assessed	280	237	212	186	141	122	797	898
<b>Telecoms</b>								
Network Rail SBP	236	122	92	86	63	45	1,150	408
ORR assessed	236	92	91	78	54	43	1,150	358
<b>Wheeled plant &amp; machinery</b>								
Network Rail SBP	86	154	114	117	124	89	346	598
ORR assessed	86	157	111	108	105	53	346	534
<b>IT</b>								
Network Rail SBP	80	123	150	123	109	109	467	613
ORR assessed	80	85	81	78	74	71	467	389
<b>Property</b>								
Network Rail SBP	18	23	30	22	28	22	254	124
ORR assessed	18	22	28	20	24	19	254	113
<b>Other renewals</b>								
Network Rail SBP	121	-130	64	164	352	500	148	949
ORR assessed	121	-174	3	87	247	323	148	487



£m (2012-13 prices)	CP4			CP5			CP4	CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total	Total
Reactive maintenance adj.								
Network Rail SBP	0	-136	-127	-123	-119	-108	0	-613
ORR assessed	0	-108	-111	-102	-102	-98	0	-522

## Renewals by route

8.546 Our assessed expenditure on renewals by route is set out in Table 8.47. These feed into our calculation of the REBS baselines as explained in Annex D.

**Table 8.47: ORR assessed costs, efficient renewals by route**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Anglia							
Network Rail SBP	245	202	231	277	240	203	1,153
ORR assessed	245	189	215	257	217	172	1,051
East Midlands							
Network Rail SBP	144	162	145	125	119	107	659
ORR assessed	144	149	133	113	105	89	589
Kent							
Network Rail SBP	221	228	222	199	195	207	1,052
ORR assessed	221	210	202	177	173	179	941
LNE							
Network Rail SBP	449	413	453	429	473	502	2,270
ORR assessed	449	383	420	386	423	436	2,048
LNW							
Network Rail SBP	566	536	557	571	534	525	2,722
ORR assessed	566	478	503	506	468	443	2,397
Scotland							
Network Rail SBP	273	286	350	305	275	267	1,484
ORR assessed	273	266	327	278	244	225	1,341
Sussex							
Network Rail SBP	191	168	184	159	172	154	838
ORR assessed	191	154	170	141	153	130	748
Wales							
Network Rail SBP	173	193	155	163	120	112	742

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
ORR assessed	173	176	140	144	105	95	660
Wessex							
Network Rail SBP	209	216	214	261	250	210	1,149
ORR assessed	209	192	192	230	220	176	1,010
Western							
Network Rail SBP	312	337	298	280	285	288	1,488
ORR assessed	312	311	273	247	248	243	1,322

## International top-down benchmarking

- 8.547 Benchmarking a firm's costs to those of its peers is widely used among regulators to help assess the scope for efficiency improvements or cost reductions. This approach formed an important element of ORR's assessment at PR08, and for this periodic review we have updated the previous models and approaches used, developed these to take advantage of developments in the field, and addressed some of the questions raised following the PR08 analysis. We are grateful to the Institute for Transport Studies at the University of Leeds for the technical advice and support they have provided to this work, in particular their assistance in identifying and making use of developments in the field since our PR08 work.
- 8.548 Given Network Rail's position as a national monopoly without similar domestic comparators, it is natural to look to the managers of rail infrastructure in other countries to inform comparisons. This is where international benchmarking can provide important insights into how overall costs of operating and maintaining railways can vary across countries.
- 8.549 In comparing across countries it is important to choose a set of comparators that have reasonably similar operating conditions so that efficiencies can be separated out from other factors. In selecting the comparators we have focused on other European countries for which data are available and the infrastructure and operating conditions are broadly similar. We also undertook analysis to gauge how sensitive the results are to the selection of comparators.
- 8.550 Even if comparators are similar it is inevitable that differences will remain. For example, the exact size of the network, balance between single and multiple track, and intensity of usage will all vary from country to country. These all impact on the costs of maintaining and renewing the network, and the relationship between these variables and overall cost is not necessarily straightforward. For example it is not necessarily the case that a railway double the size of another will incur double the cost. To estimate how much each of these factors impact on overall costs we use statistical techniques to estimate the relationships.

8.551 After these techniques have been used, the remaining differences in the data between countries (the ‘residuals’) are comprised of random differences between countries (for example due to natural events in a particular year), differences between countries due to factors that cannot be directly taken into account (for example different reliability requirements for which consistent cross country information is not available), and true underlying differences in efficiency. The objective of this work is to identify these true underlying differences in efficiency. The following section sets out a summary of a range of statistical techniques and approaches to do this.

## Approaches

8.552 There is a wide set of statistical techniques available to benchmark costs across countries. These all use the data to estimate an efficiency ‘frontier’, which can be set by the best performing firm in the sample (either overall, so taking all years available into account, or for a particular year), or an adjusted frontier which takes into account some of the unobserved factors mentioned above. The distance from any particular firm to this frontier provides a measure of its inefficiency. All these approaches have a common limitation in that they are derived from the data itself, and so the frontier has to be defined by the set of countries included in the dataset. If there is a more efficient country for which we do not have data, the frontier will not be as challenging as it could be, resulting in inefficiency estimates that are systematically conservative.

8.553 There are two main approaches that have been used in this work. These are models using Corrected Ordinary Least Squares (COLS) and Stochastic Frontier Analysis (SFA).

### Corrected Ordinary Least Squares

8.554 This approach is the starting point for our analysis. It is a relatively simple approach, commonly used by regulators, where the model produces a line of best fit to the data, so that around half the firms are above the modelled estimate of cost and half below. The lowest cost firm is then identified as the efficient frontier, and the line of best fit adjusted so that it crosses through the lowest cost firm, parallel to the original line. The distance of a particular firm from this line provides an estimate of its inefficiency. As this estimate includes both true inefficiencies, unobserved factors and any errors, it is likely to overstate efficiency gaps in general. As such we make an adjustment to the estimate to reflect these unobserved factors. Given that they are unobserved any adjustment is, to some extent, a matter of judgement. For this work we have reduced estimates by 25%.

### Stochastic Frontier Modelling

8.555 This approach differs from COLS in that it attempts to separate out true efficiency from other random variations in efficiency (e.g. one-off natural events). It does so by fitting the model in a fairly similar way and then examining the differences between modelled and actual numbers. In a typical statistical analysis one might expect these differences (the residuals) to follow a normal distribution. But in efficiency modelling

we may expect a skew, reflecting the fact that there will be a number of inefficient firms, but only one efficient one. The approach uses this skew to decompose this residual into true 'noise' and residual efficiency. Taking account of this noise in the model estimation in this way should, all else being equal, yield a more accurate estimate of inefficiency. As such this approach has generally been a focus of our analysis.

## Data

8.556 We have used the Lasting Infrastructure Costs Benchmarking (LICB) dataset compiled by the International Union of Railways (UIC) for this analysis. There are currently 14 European rail infrastructure managers participating in this dataset, of which ten have been used in our analysis.<sup>180</sup> We are grateful to the UIC for providing us with access to their dataset, and to Network Rail for working constructively with us in its use. The dataset covers the period 1996 to 2010, and Table 8.48 sets out the variables used from this dataset in our analysis.

**Table 8.48: LICB dataset – variables used in analysis**

Costs	Network size	Network usage	Network characteristics
Total maintenance and renewal costs	Track km	Passenger train km	Proportion of single track
Maintenance costs	Route km	Freight train km	Proportion of electrified track
Renewal costs	Single track km	Total train km	Passenger train density on network
	Electrified track km		Freight train density on network
			Total train density on network

8.557 In order to make the cost data comparable across countries we have made an adjustment to a common currency using GDP Purchasing Power Parity (PPP) exchange rates. We have also adjusted the data to constant prices. As such overall price differentials (such as wages) are taken into account at an economy wide rather than at a rail specific level. As a sensitivity test we have also adjusted using construction cost PPP, but do not consider this to be the best way of normalising the data. This is because it is not clear that a general construction industry correction factor is well-suited for specific track related renewals and maintenance, that the use

<sup>180</sup> These are Austria, Belgium, Finland, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland, and the United Kingdom. Other countries have been excluded either due to non-comparability (e.g. non-similar operating or infrastructure conditions) or data limitations.

of a narrower PPP definition necessarily increases data uncertainty, and the models are generally more unstable when construction PPP is used.

8.558 Following the analysis undertaken for PR08 a set of concerns have been raised regarding the quality of the LICB dataset. We have investigated these, and sought to develop our approach to overcome them as far as is possible. Table 8.49 lists the main concerns and the steps we have taken to investigate and address these.

**Table 8.49: Concerns raised regarding the LICB dataset**

Concern	Steps taken
<p>Data anomalies where certain years' values are missing or volatile</p>	<p>We have conducted a detailed review of the LICB dataset using a number of different approaches to identify outlying observations. Where outliers have been identified and robust explanation has been provided, we have accepted this, otherwise where a clear data entry error has been made we have applied a correction. Where this has not been possible, or concerns on the overall integrity of the data remain, we have removed the relevant country entirely from our analysis.</p> <p>To account for any additional unidentified data uncertainty, we have also undertaken Monte-Carlo simulation where we have applied a 5% uncertainty factor to each observation in our dataset. The results of this indicate our efficiency results remain robust to this additional uncertainty.</p>
<p>Renewals expenditure may be classed as enhancements by other IMs</p>	<p>This should be more of a historic issue as revised definitions of maintenance and renewals (aimed specifically at achieving consistency) were agreed amongst the LICB participants in 2009. Additionally, we have used adjusted renewals data supplied by Network Rail in our analysis. This has retrospectively adjusted Network Rail's costs back to 2003 to match the revised definitions.</p> <p>We have also conducted additional analysis to accommodate the possibility of systematic misreporting:</p> <ul style="list-style-type: none"> <li>• our data integrity analysis has looked at maintenance renewal splits by country and these variables over time to try to detect and resolve any changes in behaviour, and cross-country outliers; and</li> <li>• we have looked at the effects of removing countries about which Network Rail have raised concerns on overall efficiency scores, in particular where those countries have set the frontier.</li> </ul>

Concern	Steps taken
Some countries may not be renewing at 'steady state' rates	<p>The reported average track renewal rate for countries in our dataset is 2.6%, which is higher than that stated by Network Rail in its CP4 track asset policy. Additionally, Switzerland, the Netherlands and Germany all report rates higher than this average. All else being equal countries with higher renewal rates should incur additional costs, and therefore be less likely to set the frontier.</p> <p>We do not have sufficient evidence available to make steady state adjustments for other countries, and view that making such adjustments across the board would introduce a significant degree of artificiality into the data. As such we have not made systematic adjustments for our analysis.</p> <p>Also:</p> <ul style="list-style-type: none"> <li>• we find that Network Rail's efficiency score is not generally being lowered by the presence of other countries in the dataset with lower than average rates of renewal. Our analysis shows that countries with low rates of renewal are not always setting the frontier – in other words, it does not appear that our models find those countries that are renewing less than average to be more efficient;</li> <li>• we have, in-line with our PR08 work, adjusted Network Rail's costs by the CP4 steady state rate of track renewal outlined in their track asset policy of 2.3%. This is to accommodate the shifts in renewals volumes experienced as a result of the transition from Railtrack to Network Rail; and</li> <li>• where clear evidence of change in renewals behaviour is evident in the dataset we have excluded the relevant country from the analysis.</li> </ul>

8.559 Overall, we consider the LICB dataset to be of a sufficient quality to enable meaningful results to be drawn from analysis, and for this analysis to play a useful cross-check to other efficiency estimates included in this document.

## Analysis

8.560 In undertaking our work we have tested a large variety of cost functions. Our preferred cost specification considers total maintenance and renewals expenditure as a function of track km, passenger train density, freight train density, the proportion of single track on the network, and time. This specification has been determined by economic and engineering analysis along with checks of parameter values and stability against a range of models. We have also tested additional variables to these but generally found them to be insignificant or inconsistent with theory.

8.561 We consider that these variables capture the most significant characteristics relevant for modelling, with for example the vast majority of the variation in costs in the data (over 80%) explained by the length of track alone. We have also tested alternative econometric frameworks designed to take omitted variables into account but not found the results from these models to be credible. Furthermore, we have tested specific adjustments for omitted variables in our analysis, and found these to be insignificant in the models considered.

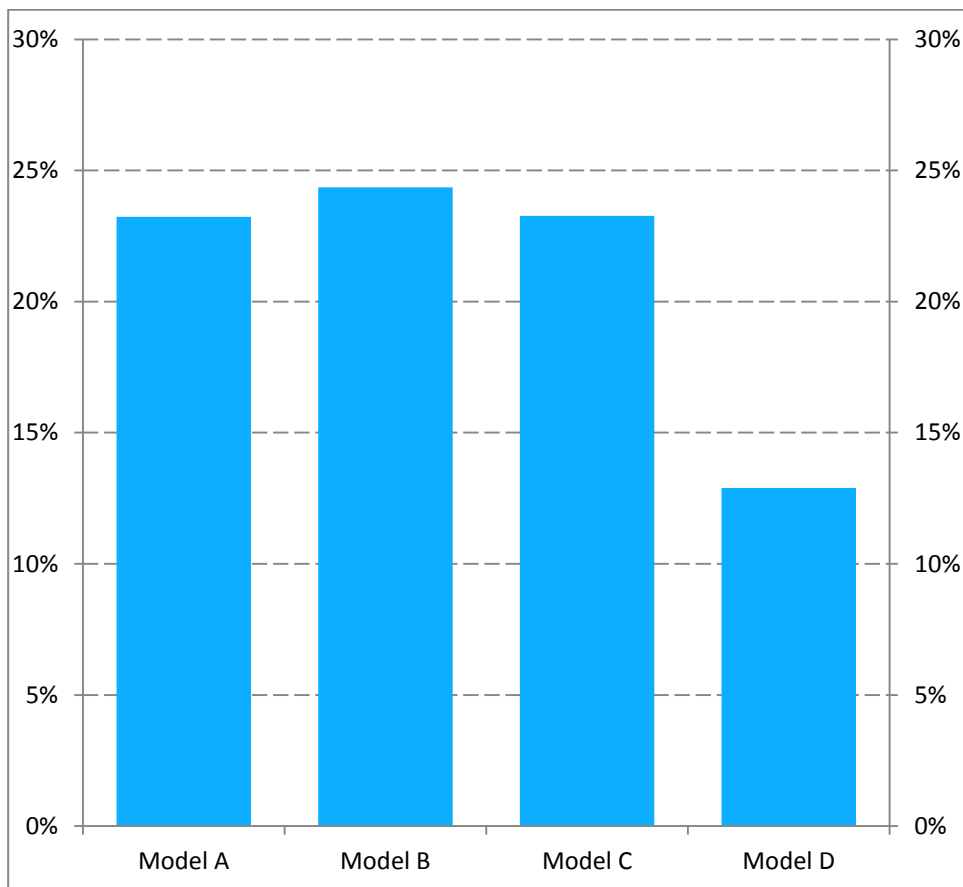
- 8.562 Using this cost function we have then tested a wide set of efficiency models. We have tested our models for overall theoretical plausibility (i.e. whether or not the assumptions underpinning the model are plausible), parameter plausibility (from an economic and engineering perspective), parameter stability (under the removal/addition of countries, years, or data perturbations), and finally plausibility of the efficiency estimates (i.e. whether or not there is variation across countries and years, and whether or not the spread looks intuitively sensible).
- 8.563 Following this process there were four models which passed all of our tests. We consider all of these models to be sufficiently robust from an econometric and engineering perspective, and to provide a reasonable model of a reality which is fundamentally unknown. Rather than choosing one of these specifications as the 'preferred' approach, we instead accept there is inherent uncertainty as to the true model and have carried all of these models through to our results. As such we provide a range of inefficiency estimates for Network Rail. We view this approach as fairer and more transparent than selecting just one model.

## Overall results

- 8.564 Figure 8.17 below shows the results from each of the models that we consider to be robust. This analysis produces a distribution of possible efficiency gaps for Network Rail in 2010 ranging from 13% to 24%. Looking at only the models that are not at the upper or lower end of this range would result in an efficiency gap estimate of 23%.



**Figure 8.17: Estimates of Network Rail's efficiency gap with preferred models**



### International regional top-down benchmarking

- 8.565 In preparation for the PR08 determination we worked with five infrastructure managers in Europe and North America to produce a sub-national, or regional benchmarking dataset, for a single year. The objective of the work was to create separate and independent analysis that could be compared to the econometric analysis prepared by us and ITS using the LICB dataset (discussed above), which is not disaggregated on a regional basis.
- 8.566 For PR13 we contacted all those infrastructure managers involved in the original study with a view to updating and expanding the analysis. Tight timescales and other resource pressures meant that a number of the original participants were unable to commit to the study but three companies agreed to participate in the update. Unfortunately difficulties in collating data have meant that sufficient progress has not been made for it to be appropriate to make use of this evidence in PR13.
- 8.567 We remain committed to the further development of this dataset because we consider that regional benchmarking both within Network Rail and against international peers has an important part to play in future reviews. As management of Network Rail is increasingly devolved to the route level, our ability to assess the performance of the routes will increase in importance and this work is central to our ability to achieve this.

While the work currently serves to complement our network level analysis we intend that it should become a credible standalone source of evidence in PR18.

8.568 Over the course of CP5 we will continue to develop this dataset alongside Network Rail's internal route level benchmarking, with a view to involving more European comparators and developing our benchmarking techniques.

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## 9. Enhancements expenditure

### Key messages in this chapter

- Enhancements are projects which improve the capacity or capability of the network, such as electrifying the Great Western Main Line or reinstating the line between Edinburgh and Tweedbank. A full list of projects assumed in the determination is set out in Annex E.
- The HLOSs set out what the Scottish Ministers and Secretary of State want to achieve in CP5; this included a substantial programme of work, which was welcomed by the industry. A lot of responses to the draft determination sought the inclusion in the final determination of projects not required by the HLOSs. These were not in scope for funding through this review, but if industry partners have other funding sources, projects can be taken forward under the investment framework during CP5.
- In its SBP Network Rail set out its plans to deliver the HLOSs, which it showed would bring major benefits for passengers and freight customers, including new journey opportunities, more frequent services and longer trains. It proposed 61 projects in England & Wales and 12 in Scotland, with an estimated cost of £12.4bn, including the ring-fenced funds. This compares to about £9bn in our PR08 determination and about £11bn of forecast spend<sup>181</sup> by Network Rail in CP4. Of the proposed £12.4bn approximately 30% was for a major programme of electrification schemes. A further 25% was for Crossrail and Thameslink. 11% was for completing other schemes started in CP4, such as Reading and Birmingham stations. 8% related to two key major capacity and connectivity programmes (Northern Hub and East West Rail). 7% related to a large number of smaller capacity schemes that will ensure that the extra number of passengers expected to arrive at key stations around the country is met. Other Scottish projects added up to 8% and a further 11% was made up by a package of ring-fenced funds (six in England & Wales and five in Scotland). A list of the ring-fenced funds assumed in the determination is set out in Annex E.

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<sup>181</sup> Forecast spend is more than that in our PR08 determination because the governments have funded additional schemes since 2008 and there are other projects funded by third parties which were not part of the 2008 review.

## Key messages in this chapter (continued)

- Of the £12.4bn, there are about £3.3bn worth of projects where the cost is determined outside of PR13 (Thameslink, Crossrail, some EGIP elements and Borders) and £1.3bn of costs for ring-fenced funds. We scrutinised the remaining £7.8bn which we reduced to £7bn, largely as a result of applying Network Rail's own efficiency overlay to more projects and reducing risk allowances where we concluded that the levels were too high. Part of our assessment used benchmarked costs, such as project management, which we compared with equivalent ones in global rail, water and aviation sectors. In its response to the draft determination Network Rail disagreed with our assessment and also updated the latest cost forecasts for three of the larger projects, this amounted to an extra £700m above that assumed in the draft determination. We considered its response but concluded that our original assessment was reasonable, given that our proposed enhancements cost adjustment mechanism, applied when a project is sufficiently well defined, will include any efficient cost increase.
- Whilst some of the SBP supporting documents were to a good standard, there was a lot of inconsistency in the quality and completeness of the information supplied which meant that more had to be provided later after we had started our assessment.
- Many of the projects (approximately £7bn) were at an early stage of development. This meant that a determination of efficient cost for the entire portfolio was difficult due to the high allowances for risk and uncertainty inherent to projects at this stage. It also meant that Network Rail had not yet been able to involve train operators fully in some of the projects to make sure that scope was best value. Because of this we have decided to take a different approach to securing efficiency and value for money, using a new enhancements cost adjustment mechanism.
- This means we have included a provisional level of funding in the settlement, based on our assessment of Network Rail's SBP submission. As costs become more certain and risk profiles more accurate, Network Rail will resubmit these and we will review them again. As part of this process we expect Network Rail to demonstrate how it has worked closely with train operators and suppliers in defining project scope. One way of doing this is for Network Rail to share cost savings with train operators from their engagement in project development and delivery – an enhancement efficiency benefit sharing mechanism. We are allowing this to happen because it should help Network Rail deliver savings for customers and funders, but are not mandating it. We will need to validate any such costs before they are eligible to be added to the RAB.

## Key messages in this chapter (continued)

- In Annex E, we have listed the schemes that will be covered by the enhancements cost adjustment mechanism. In its consultation response, Network Rail agreed in principle to this treatment. Since the draft determination we have worked constructively with Network Rail to further define the process. Other responses to the draft determination supported the approach but sought greater clarity on the detailed process, which we have now included in this chapter.
- The list of projects proposed by Network Rail meet the requirements of the HLOSs, although in Scotland there were two projects in the SBP, namely Carstairs journey time improvements and Edinburgh South Suburban electrification, that were not required by the HLOSs. A number of responses to the draft determination, notably Transform Scotland and Virgin Rail Group, emphasised the contribution the Carstairs project would have on cross border journey times. We recognise the strategic importance of the Carstairs project and the benefits it could bring to the industry, but it was not required by either HLOS; funding has therefore not been assumed in this review. This does not prevent it being taken forward in CP5 should extra funding be identified; the project could then be progressed through our investment framework without having to wait until the next periodic review.
- In respect of other projects in Scotland, we have already agreed the costs for Borders and some elements of the Edinburgh to Glasgow Improvement Programme (EGIP). For the remaining projects, we have decided to treat them along similar lines to the projects in England & Wales, where we will undertake a further review (the enhancements cost adjustment mechanism) when they have reached a more mature stage. The remaining elements of EGIP will be subject to bespoke target price arrangements, but all other projects will be included in the underspend / overspend framework (RAB roll forward policy) that we will continue in CP5 to incentivise efficient project delivery.
- There were a few consultation responses seeking more clarity on the outputs and milestones of the programme in this determination. These will be published in the enhancements delivery plan (March 2014), following consultation, and will be fixed around the timings of what Network Rail needs to do to deliver better service outputs for passengers and freight customers. It will also set out ways by which both train operators and passengers can be involved in defining the outputs and benefits to be achieved from the projects and funds.

## Key messages in this chapter (continued)

- The Strategic Freight Network fund has been widely supported in CP4 and is delivering infrastructure for more capacity and longer trains where it is needed. The fund will continue in England & Wales and a new fund will be created in Scotland. We have also agreed to rollover about £40m of expenditure from CP4 into CP5 to complete two schemes that are important enablers to grow rail freight from two major ports. This will be in addition to the proposed £12.4bn.
- In this chapter we set out the principles for how the ring-fenced funds (£1.3bn in total) will be governed and how we will ensure value for money. Generally, stakeholders have been well engaged in the management of CP4 funds through working groups. However, governance arrangements have not always been sufficiently formalised, and passenger groups have not been well represented. In some cases, reporting at fund-level has not been sufficiently visible to stakeholders. We will make sure that in CP5 passenger and freight customer interests are clearly reflected in the governance of the funds and issues that matter to them are considered when schemes are selected.
- In addition to those already mentioned, we received over 30 responses from train operators, local authorities and individuals referring to our enhancements assessment. The most common issues raised were our proposed treatment of the Northern Hub and expanding the scope of works on the Uckfield line to include electrification. We have already agreed to revisit the efficient costs of the Northern Hub once scope has been further defined. Electrification of the Uckfield line was not included in the HLOS requirements and we have therefore not assumed this in the determination.
- Overall, the main changes we have made from the draft determination which affect enhancement projects are: permission to rollover an extra £80m of funding (including the Strategic Freight Network) to complete projects that were started in CP4 but not finished; inclusion of over £300m assumed for new depots and stabling facilities; clarification of how the enhancements cost adjustment mechanism will work; and the update of Schedule 4 costs. These changes are explained further in this chapter.

## Introduction

9.1 This chapter covers:

- (a) a recap on the enhancement programmes announced in the two HLOSs;
- (b) an overview of Network Rail's proposals, as set out in its SBP;
- (c) an explanation of what decisions we make at this stage of the review, setting the context for our conclusions;
- (d) the major issues we faced in assessing enhancements, such as deciding on efficient costs and the treatment of risk; and

- (e) our conclusions on the enhancements portfolio and ring-fenced funds for Scotland and for England & Wales.

9.2 We have made reference to consultation responses throughout the chapter rather than as a stand-alone section, as they were considered in reaching conclusions on distinct aspects of our assessment.

## Enhancements in the HLOSs

### England & Wales

9.3 The Secretary of State specified the increase in passenger capacity that should be delivered in CP5. This is defined in a capacity metric that identifies the additional number of passengers that should be accommodated on services into major cities<sup>182</sup> and the main London termini<sup>183</sup>. In addition to this specification, the Secretary of State named a number of projects that the government wished to see progressed. This included projects already under way (such as upgrading Birmingham New Street and Reading stations) and new projects such as the electric spine and electrification in South Wales.

9.4 The Secretary of State also made provision for six ring-fenced funds (2011-12 prices):

- (a) a Strategic Rail Freight Network fund of £200m to fund improvements defined by the industry;
- (b) an East Coast Connectivity fund of £240m to improve capacity and reduce journey times on the East Coast Main Line;
- (c) a Passenger Journey Improvement fund of £300m to support journey time and performance improvements;
- (d) a Station Improvement fund of £200m, with up to half of this to be used for providing easier access for disabled passengers;
- (e) a Development fund of £140m to support innovation and the development in CP5 of potential schemes for CP6; and
- (f) a Level Crossing Safety fund of £65m to reduce the risk of accidents at level crossings.

### Scotland

9.5 The Scottish Ministers required Network Rail to deliver the following projects:

- (a) Edinburgh to Glasgow Improvements Programme;
- (b) Borders Railway;

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<sup>182</sup> Birmingham, Manchester, Leeds, Bristol, Leicester, Liverpool, Newcastle, Nottingham, Sheffield.

<sup>183</sup> Blackfriars, Euston, Fenchurch Street, Kings Cross, Liverpool Street, London Bridge, Marylebone, Moorgate, Paddington, St. Pancras, Victoria, Waterloo.



- (c) Aberdeen to Inverness Rail Line Improvements Phase 1;
- (d) Highland Main Line Rail Improvements Phase 2;
- (e) a rolling programme of electrification; and
- (f) Motherwell signal box re-signalling and Motherwell Depot stabling.

9.6 They also established five ring-fenced funds (2011-12 prices):

- (a) a Scottish Stations Fund of £30m to improve access to railway services;
- (b) a Scottish Strategic Rail Freight Investment Fund of £30m to encourage growth in rail freight and reduce emissions;
- (c) a Scottish Network Improvement Fund of £60m to develop the capacity and capability of general infrastructure and network communications systems;
- (d) a Future Network Development Fund of £10m to develop proposals for CP6 and beyond; and
- (e) a Level Crossings Fund of £10m.

## Network Rail's enhancements proposals – overview

- 9.7 Network Rail developed a portfolio of enhancement projects to meet the requirements of the HLOSs.
- 9.8 As well as the main SBP documentation, Network Rail submitted a large amount of project-specific supporting information, including client briefs, feasibility reports, cost estimates, efficiency and risk methodologies and a summary of project costs.
- 9.9 Whilst some of the documents were to a good standard, there was a lot of inconsistency in the quality and completeness of the information supplied. There was also little in the way of whole life cost justification for the selected options. Of most concern to us was inconsistency between project estimates, engineering reports and costs included in the SBP which had to be supplemented by further information after we had started our review.
- 9.10 There was a further challenge categorising project costs in a consistent manner, for example isolating direct costs (such as engineering works) and indirect costs (such as project management), and separating risk allowances from the cost estimate of the works. This was necessary so that we could analyse and benchmark costs across different projects; for example, we found that the direct costs for some of the comparable electrification activities had a wide variation for what is standardised work.

## England & Wales

- 9.11 The SBP set out a list of 61 projects and six funds with a proposed cost of around £11bn which Network Rail considered necessary to meet the HLOS. These have been

categorised as: committed schemes; named schemes; HLOS capacity schemes; ring-fenced funds and others.

**Table 9.1: Summary of Network Rail's proposed project costs by category**

£bn (2012-13 prices)	SBP
<b>Committed Projects</b> (e.g. Thameslink and Great Western electrification to Swansea)	6.2
<b>Named Schemes</b> (e.g. electric spine, links to airports and Waterloo station)	2.2
<b>HLOS Capacity Metric</b> (e.g. Chiltern platform lengthening)	0.9
<b>Funds</b>	1.2
<b>Other projects</b> (including the CP4 schemes continuing into CP5)	0.5
<b>Total</b>	<b>11.0</b>

- 9.12 Of the England & Wales total approximately 30% of costs were for Crossrail and Thameslink. A further 30% were for a major programme of electrification schemes (about 3% for electrification of the Welsh Valley Lines). 10% of costs related to two key programmes (Northern Hub and East West Rail) with a further 8% of costs made up by a large number of smaller capacity schemes that will ensure that the extra number of passengers expected to arrive at key stations around the country is met. 10% was for the ring-fenced funds and the remaining 12% was for schemes started in CP4 and completing in CP5.
- 9.13 Network Rail develops projects through the Governance of Railway Investment Projects (GRIP) framework<sup>184</sup>, which sets out various stages in a project lifecycle. Table 9.2 shows that there were a number of schemes at an early stage of development, with about two thirds having not yet completed the option selection stage.
- 9.14 Network Rail proposed in its SBP that the outputs and funding for some of these should only be fixed once they have reached a later stage when a single option has been selected (i.e. GRIP 4). This was the main issue we faced in determining efficient costs and is explained more fully in the section 'major issues in assessing enhancements'.

<sup>184</sup> <http://www.networkrail.co.uk/asp/4171.aspx>.

**Table 9.2: Stage of Network Rail's project development at the time of the SBP<sup>185</sup>**

Stage of project development	SBP value £bn (2012-13 prices)	Number of projects
Output undefined – GRIP 0	1.8	15
Output definition – GRIP 1	0.5	11
Pre-feasibility – GRIP 2	2.7	17
Option selection – GRIP 3	0.3	5
Single option development – GRIP 4	0.2	2
Construction, testing and commissioning – GRIP 6	0.3	6
Programmes (Crossrail, Thameslink, Northern Hub & IEP)	4.0	5
Ring-fenced funds	1.2	6
<b>Total</b>	<b>11.0</b>	<b>67</b>

- 9.15 The list of SBP projects was derived from modelling the effects of different options on the capacity metrics. The 'committed' and 'named' schemes were expected to deliver around 90% of the HLOS capacity metrics. The SBP proposed a further 27 projects costing about £900m to deliver the full metrics. These were informed by the route utilisation strategies<sup>186</sup>, which had involved cross industry involvement and wider stakeholder consultation. The portfolio of proposed projects was broadly similar to DfT's illustrative option (this was the list of schemes published by DfT alongside the HLOS which indicated how the capacity metrics might be met).
- 9.16 There were a number of schemes not required by the HLOS that were included in the IIP, some of which were emphasised in the consultation responses to both the SBP and the draft determination. These were not included in the SBP, but Network Rail and industry partners may continue to explore potential funding sources for them outside of this review, through for example the ring-fenced funds or investment framework.
- 9.17 The CP5 plans have a total value of around £11bn, compared with about £9bn in our PR08 determination (2012-13 prices). On balance, Network Rail has a good track record of delivering enhancements in CP4. The redevelopment of Kings Cross station opened on time. Platform lengthening schemes in both the midlands and south east were ready in time for longer trains to run. The second phase of the Thameslink programme allowing more trains to run between St Pancras and Blackfriars and longer trains to run between Bedford and Brighton was completed on schedule.
- 9.18 In relation to the projects assumed in our PR08 determination, there have been significant changes during the control period. Some projects have had their scope redefined or been deferred because less rolling stock has been introduced than

<sup>185</sup> Presented in SBP supporting document SBPT3182.

<sup>186</sup> <http://www.networkrail.co.uk/asp/4449.aspx>.

originally planned, resulting in about £2bn<sup>187</sup> of reduced spend. About two thirds of this is because the scope of the CP4 work for Thameslink, Stafford area improvements and Werrington junction changed (which we approved through the change control mechanism<sup>188</sup>). However, this does not reflect the full picture in CP4 because the Secretary of State has announced further schemes since 2008, such as the Northern Hub and electrification of the Great Western Main Line. Taking these into account Network Rail is expected to spend close to £9bn<sup>189</sup> on government funded enhancements in England & Wales during CP4.

## Scotland

9.19 The SBP set out a list of 12 projects and five funds with a total cost of around £1.4bn, which Network Rail considered was required to meet the Scottish Ministers' HLOS. Table 9.3 outlines these projects and their stage of development. EGIP is a programme that has individual projects at varying GRIP stages. Some works for Borders have already started on the ground but other elements are still in the planning phase.

**Table 9.3: Project costs in the Scotland SBP**

Projects and funds (2012-13 prices)	SBP (£m)	GRIP stage
<b>Committed projects</b>		
EGIP Electrification (Springburn to Cumbernauld)	26	4
EGIP Electrification (Glasgow to Edinburgh via Falkirk High)	124	3
EGIP (Edinburgh Gateway Station)	31	3
EGIP Infrastructure works	308	1
Borders Railway	124	6
<b>Total committed projects</b>	<b>613</b>	
<b>Other Scottish projects</b>		
Aberdeen to Inverness improvements Phase 1	280	0
Highland Main Line journey time improvements Phase 2	121	0
Rolling programme of electrification	171	3
Motherwell re-signalling enhancements	3*	0
Motherwell area stabling	10	0
Other projects to meet the outputs	80	0
<b>Total other Scottish projects</b>	<b>665</b>	

<sup>187</sup> Reported in Network Rail's period 13 finance pack for 2012-13.

<sup>188</sup> <http://www.rail-reg.gov.uk/server/show/nav.2177>.

<sup>189</sup> Reported in Appendix 24 of the SBP databook which updates actual and forecast expenditure for CP4 and replaces the 2013 delivery plan update.

Projects and funds (2012-13 prices)	SBP (£m)	GRIP stage
<b>Funds to deliver specific outcomes</b>		
Scottish stations fund	31	n/a
Scottish strategic rail freight investment fund	31	n/a
Scottish network improvement fund	62	n/a
Future network development fund	10.5	n/a
Level crossings fund	10.5	n/a
<b>Total funds to deliver specific outcomes</b>	<b>145</b>	
<b>Total</b>	<b>1,423</b>	

\* the supporting information provided with the SBP adjusted this from £11m included in the published SBP.

9.20 About 40% of the costs were for the committed projects: increased capacity and faster services between Edinburgh and Glasgow; and the new Borders railway line linking Midlothian and the Scottish Borders.

9.21 Network Rail's plans have a total value of around £1.4bn, compared with about £465m<sup>190</sup> in our PR08 determination (2012-13 prices). Since 2008, Transport Scotland has announced a further £518m<sup>191</sup> (2012-13 prices) for EGIP and Borders bringing total CP4 expenditure to about £1bn. Whilst a significant amount will be spent over the next year on EGIP and Borders a number of large projects have already been delivered in CP4, including: a new electrified railway between Airdrie and Bathgate; and improvements to the Paisley corridor allowing more frequent and reliable services between Glasgow and Ayrshire.

## What we decide in our determination

9.22 This section sets out what aspects of the enhancements portfolio we decide in the periodic review, providing the context for our conclusions.

### Outputs

9.23 We said in our outputs consultation<sup>192</sup> that we intended to continue to have milestones for enhancements in Network Rail's delivery plan and to have a change control mechanism. Both these approaches worked well in CP4 and are widely supported. Setting out when each stage of a project will be delivered (and keeping this updated) is useful information for stakeholders and customers. We will use these milestones to monitor whether Network Rail is on course to deliver each project. We will categorise some of the milestones as 'outputs', which means that they could be subject to

<sup>190</sup> Reported in Appendix 24 of the SBP databook which updates actual and forecast expenditure for CP4 and replaces the 2013 delivery plan update.

<sup>191</sup> Reported in Appendix 24 of the SBP databook which updates actual and forecast expenditure for CP4 and replaces the 2013 delivery plan update.

<sup>192</sup> <http://www.rail-reg.gov.uk/pr13/consultations/outputs.php>.

regulatory enforcement if they are missed or likely to be missed (a further explanation of outputs is set out in chapter 3).

- 9.24 The outcomes of delivering enhancements are not specifically picked up in the National Passenger Survey. Nonetheless, enhancements can be one of the biggest drivers of customer satisfaction in specific locations or on specific routes where improvements are delivered. Therefore, we will make sure that regulated outputs reflect elements in Network Rail's control and are based on the timing of the delivery of passenger and freight customer benefits, as this is what matters to customers. These will be finalised in the enhancements delivery plan, which will be published by Network Rail and agreed by us before the start of CP5. The overall programme amounts to about £12bn; this is a very significant expenditure of taxpayers' and passengers' money. We will therefore report both on the projects and the ring-fenced funds in the Network Rail Monitor. Combined with the enhancements delivery plan this will highlight the purpose of, and benefits to be achieved by, each project so that progress is clear and can be easily understood.
- 9.25 Network Rail will consult on a draft of its enhancements delivery plan in December 2013, before finalising this by the end of March 2014. The delivery milestones should therefore reflect stakeholder input, and the main issue here is likely to be ensuring a match between the service level changes that operators are trying to deliver and Network Rail's obligations. For example, the delivery of longer platforms with the introduction of longer trains.
- 9.26 Several consultees raised concerns about the timing and integration of certain enhancement projects with other third party funded schemes. It is important that the potential synergies between CP5 enhancements and other schemes that would also deliver benefits are taken into account in the enhancements delivery plan, which re-enforces the importance of stakeholders engaging in Network Rail's consultation.
- 9.27 For projects at an early stage of development the regulated outputs in the March 2014 enhancements delivery plan will be to achieve GRIP 3. After that they will be changed to the delivery milestones, when these are further defined, through the existing change control mechanism that involves consultation with affected stakeholders.
- 9.28 The enhancements delivery plan will include projects that are funded (or part funded) through the review. Other third party funded schemes are subject to separate contractual and funding arrangements.

### **Efficient costs to be added to the RAB**

- 9.29 Although we do not take decisions on milestones in the determination we have to estimate what level of efficient costs should be added to the RAB, so that Network Rail's revenue requirement can be calculated and access charges set. In doing this, we have had to consider carefully how to treat risk given that Network Rail included significant risk provision for many projects that were still at an early stage of development.

- 9.30 First of all, we checked that the proposed projects met the required outputs, i.e. the requirements of the HLOSs. In England & Wales, we verified whether the projects over and above the committed and named schemes would deliver the capacity metrics.
- 9.31 We then checked the costs of delivering both the individual projects and the wider portfolio were efficient, based on a review of Network Rail's own proposals.
- 9.32 Finally, we decided how to incentivise Network Rail to outperform our determination and, alongside this, how to incentivise cross industry working with train operators and the supply chain so that project scope is optimised for best value before the detailed design stage. In CP4, Network Rail has started to engage earlier with the supply chain and employ a radically different relationship through project alliances. We support this initiative and have made sure that we do not prejudice any such commercial arrangements.

### **Governance of the ring-fenced funds**

- 9.33 The governance arrangements for the ring-fenced funds, including how value for money is assured, will be finalised in the enhancements delivery plan. However, we have set out in this determination the principles that they must meet.

## **Major issues in assessing enhancements**

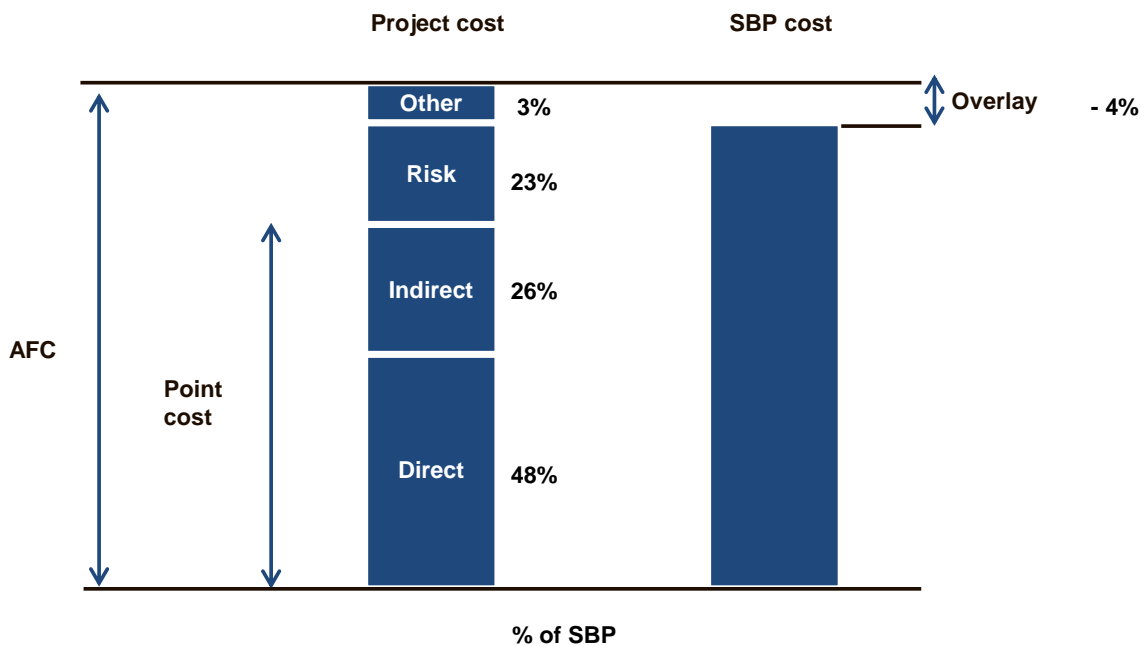
- 9.34 Here we set out the major issues we considered in reaching our decisions.

### **Determining efficient costs**

- 9.35 Determining efficient costs for an enhancement project differs from other areas of expenditure, such as renewals. By their nature enhancements often involve bespoke solutions involving a range of different types of work. For example, an electrification scheme may need to reconstruct a number of bridges as well as erecting overhead wires. This means that, unlike renewals, costing the work is project specific and is not generally based on repeatable work items. Network Rail has built up a cost estimate for each project and applied an efficiency overlay, based on: its own benchmarks; the effects of changes to its project delivery process; and improvements to how it manages its supply chain. It also made some adjustments to take account of risk reduction from delivering a large portfolio of work. This build-up of Network Rail's cost estimates is illustrated in Figure 9.1.

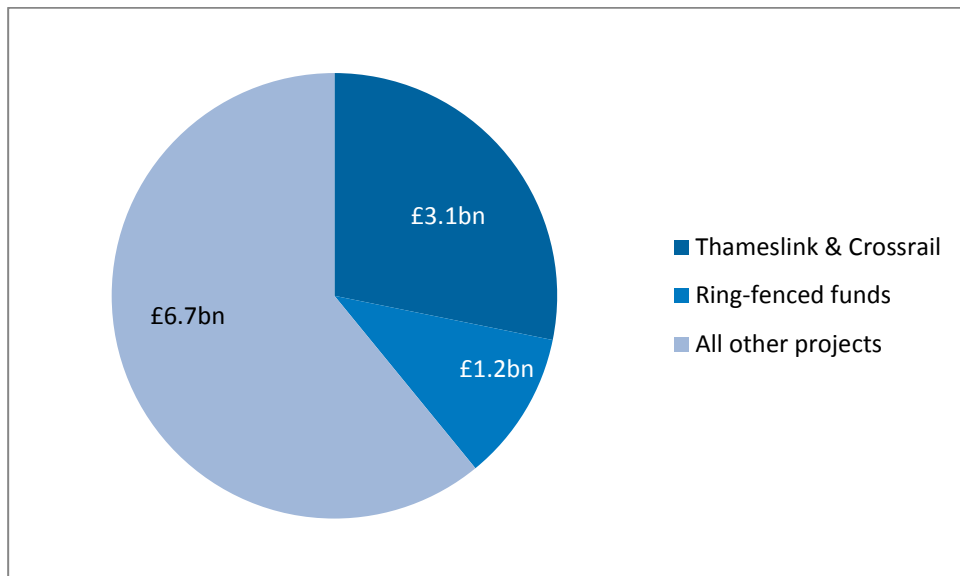


**Figure 9.1: Network Rail’s build-up of a project cost estimate**



- 9.36 Network Rail’s internal benchmarking of enhancements was based on data collected from CP4 projects, but coverage was low in terms of comparable work and the rates only apply to direct costs, such as construction. In addition, Network Rail was unable to collect enough good quantitative external benchmarking information. We therefore decided to extend the use of benchmarking in our own assessment, particularly to understand indirect costs, such as design or project management, and risk provisions.
- 9.37 While the total spend on enhancements proposed in the SBP was £11bn for England & Wales, our determination of efficient cost applies to £6.7bn because:
- Thameslink and Crossrail total £3.1bn; the costs for these have already been agreed between Network Rail and DfT and both projects are governed by protocols with a pain/gain share mechanism to incentivise efficient delivery; specific contractual arrangements are already in place and we have agreed not to duplicate or cut across these; and
  - the funds account for £1.2bn. This is a capped amount and we will determine the efficient spend and value for money in the funds during the control period.

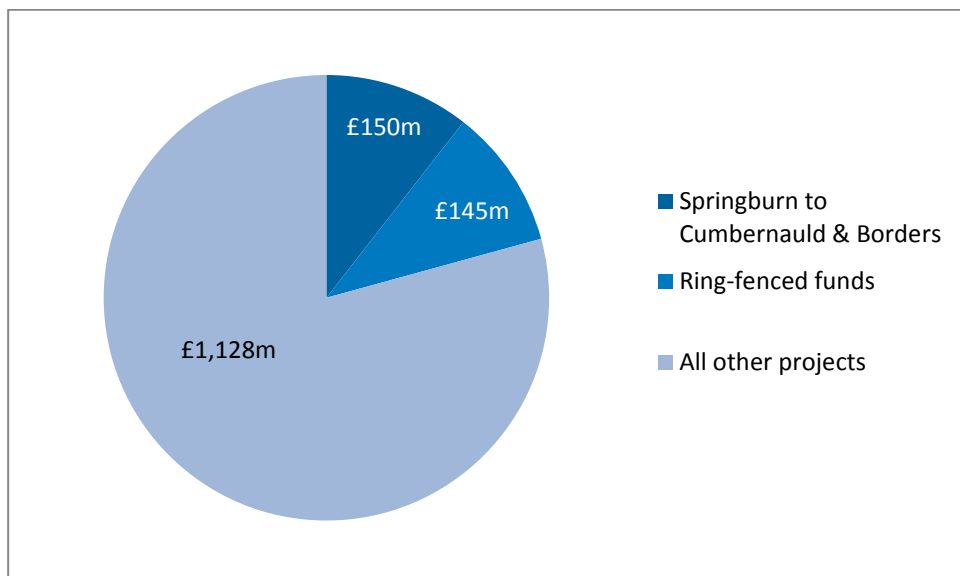
**Figure 9.2: Network Rail's breakdown of projects in England & Wales**



9.38 In Scotland, of the £1.4bn proposed in the SBP:

- (a) we have already assessed the Springburn to Cumbernauld and Borders projects through the investment framework (combined total of £150m) and these are subject to target price arrangements with Transport Scotland with their own pain/gain share mechanisms; and
- (b) the ring-fenced funds amount to £145m. This is a capped amount and we will determine efficient spend and value for money during the control period.

**Figure 9.3: Network Rail's breakdown of projects in Scotland**



## Project scope and costs

9.39 We carried out a review of efficient project costs informed by two studies: Arup<sup>193</sup> provided advice on whether the projects would meet the England & Wales HLOS metrics; a consortium of Nichols/Turner & Townsend/URS<sup>194</sup> scrutinised the scope and cost estimates of about £7.2bn worth of the projects in England & Wales and Scotland.

### **Arup review: Check of Network Rail's HLOS capacity metrics for CP4 and CP5**

9.40 Arup undertook a detailed review and validation of the model used by Network Rail to define whether the proposed projects would meet the HLOS requirements. This was supplemented by a cross check with Network Rail's route planners on the inputs to the modelling.

9.41 The team also checked on the level of operator involvement, either through the RUSs or subsequent industry consultation, which can indicate whether the projects proposed in the SBP had originated from the RUSs and therefore had good business cases with stakeholder support.

### **Nichols consortium review: Review of Network Rail's SBP infrastructure enhancement proposals for CP5**

9.42 Thameslink and Crossrail were excluded from this work. Other elements out of scope were the ring-fenced funds and projects where our own staff were better placed because of the work we have done in CP4, these were the schemes in CP4 rolling over into CP5, EGIP and Borders.

9.43 Because Network Rail's own benchmarking was insufficient, we included in the Nichols work a remit to draw out any comparisons it had in global rail, water and aviation sectors.

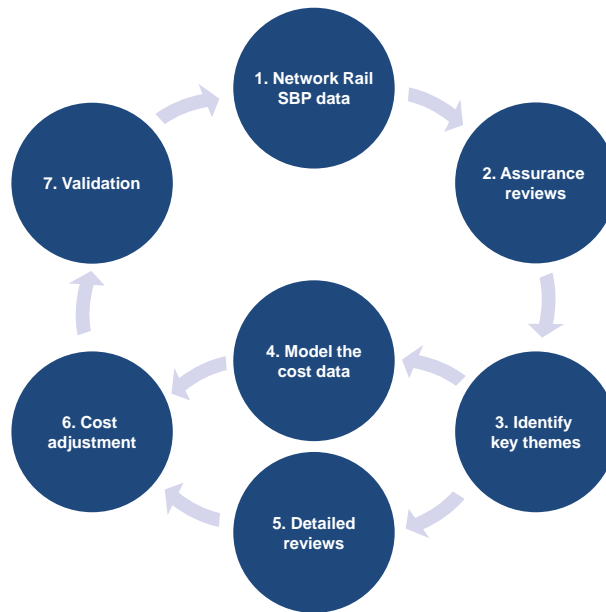
9.44 The consortium structured its review around a seven step process as shown in the figure below.

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<sup>193</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

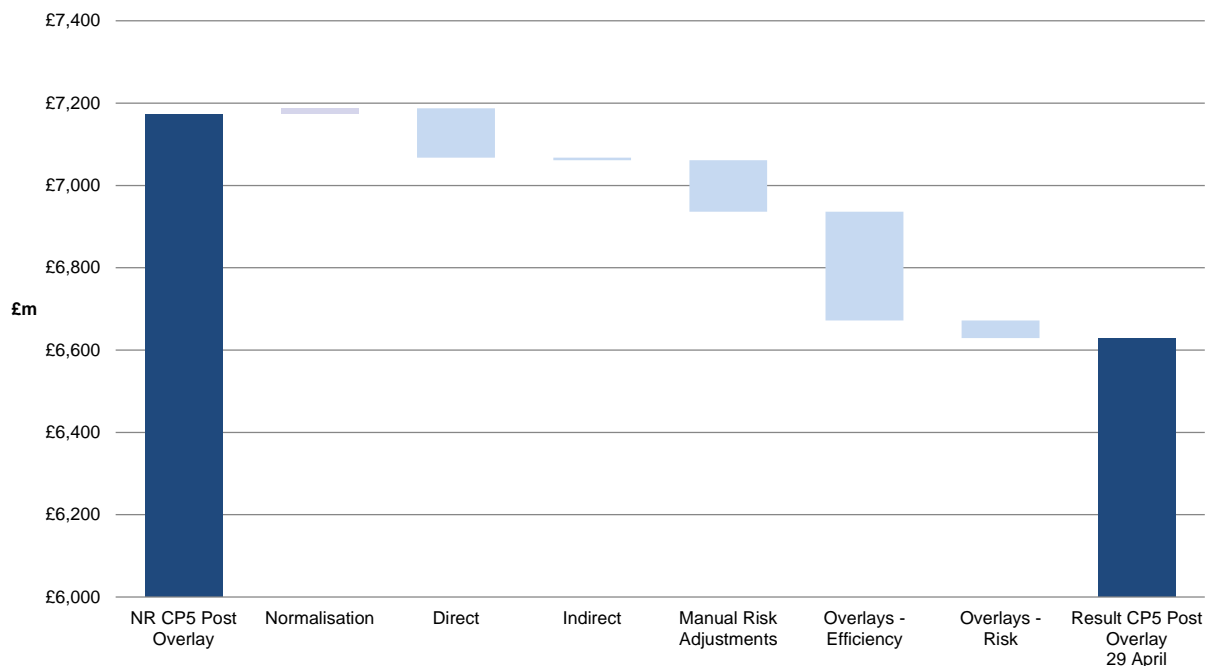
<sup>194</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

**Figure 9.4: Nichols consortium review methodology**



9.45 Of the projects it was able to analyse, both upward and downward adjustments were made to correct any omissions and ensure estimates were in the right price base. For electrification and power supply schemes, the consortium benchmarked direct costs across the CP5 projects. For indirect costs it used its own benchmarking data to check whether those proposed for each project were in line with expected norms. The consortium then looked at both the individual project risk allowances and overall risk portfolio overlay. Finally it assessed Network Rail’s efficiency proposals and applied it to a greater number of projects. Its adjustments are summarised in Figure 9.5 and Table 9.4.

**Figure 9.5: Overview of cost adjustments from Nichols consortium review**



**Table 9.4: Overview of cost adjustments from Nichols consortium review**

Adjustment type	(£m)	Description
Normalisation	+14	Changes in figures required to align Electric Spine project costs with the DfT forecast, adjustments resulting from reconciliation issues between the Network Rail estimates provided and their SBP submission, and changes required to harmonise the cost base to 4Q12
Direct	-120	A net reduction resulting from proposed adjustments to direct costs including their commensurate indirect and risk uplifts
Indirect	-6	A small reduction resulting from proposed adjustments to indirect costs based on comparisons with accepted norms
Manual Risk Adjustment	-125	Proposed reductions to specific project risk and contingency provisions
Overlays – Efficiency	-265	A net reduction resulting from the proposed changes to Network Rail’s efficiency overlay, and to apply this to additional SBP projects
Overlays – Risk	-43	A reduction in relation to Network Rail’s portfolio risk overlay, including changes to both the rate applied and the projects impacted
<b>Total</b>	<b>-545</b>	

- 9.46 We checked the Nichols consortium's work against an in-house review of a sample of projects, which was based on our own experience and analysis of CP4 projects added to the RAB through the investment framework, which is the mechanism that allows stakeholders to fund investment in between periodic reviews. Further information on the investment framework can be found on our website<sup>195</sup>.
- 9.47 Network Rail disagreed with the findings of this work in its consultation response seeking the reinstatement of about £310m. It considered that the application of the portfolio risk overlay and the efficiency risk overlay was inappropriate. It also challenged unit cost reductions and other estimating adjustments. We asked Nichols to review Network Rail's response in detail and advise whether in the light of this it would change its original methodology or its proposed adjustments. It concluded that its proposed adjustments were overstated by £20m.
- 9.48 A significant number of other consultation responses disagreed with the adjustments we made to the Northern Hub.

### Frontier shift

- 9.49 In addition to the individual project reviews, we commissioned CEPA<sup>196</sup> to build upon its analysis of frontier shift for other areas of expenditure and advise how this could be applied to the enhancements portfolio. It concluded a median case of 0.4% per annum savings for enhancements.

### Treatment of projects at an early development stage

- 9.50 A further complication in determining efficient costs is the uplifted levels of risk and uncertainty inherent in projects at an early stage of development. An equally important issue for these projects is that Network Rail has not yet been able to fully engage with train operators in developing scope and selecting the best option. It is widely recognised that decisions made at an early stage of a project have the biggest influence on outturn costs. This was well illustrated in the RVfM study<sup>197</sup>. It is therefore extremely important for train operators to be involved at early stages so that the best whole industry scope is developed that delivers the required operational benefits.

### England & Wales

- 9.51 Of the £6.7bn<sup>198</sup> costs that we examined there was about £6bn based on an indicative definition of scope and risks, i.e. a single option had not yet been developed. Of this

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<sup>195</sup> [http://www.rail-reg.gov.uk/upload/pdf/investment\\_framework\\_guidelines\\_october\\_2010.pdf](http://www.rail-reg.gov.uk/upload/pdf/investment_framework_guidelines_october_2010.pdf).

<sup>196</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

<sup>197</sup> Whole system programme management: final report, Atkins, May 2011, available at: <http://www.rail-reg.gov.uk/upload/pdf/rvfm-atkins-programme-management-250511.pdf>.

<sup>198</sup> As set out in Figure 9.2.

broadly £1.5bn<sup>199</sup> was allocated for risk. This high risk provision made determining efficient costs more difficult and weakens outperformance incentives.

- 9.52 In the SBP, Network Rail proposed that about £2.3bn worth of these projects should be treated differently. It proposed that our determination should include provisional estimated costs (which for some projects included a 60% uplift for uncertainty). It suggested, once the schemes are more developed and have cost probability distributions, a more accurate portfolio cost estimate can be made; we could then review this and agree an efficient cost. The difference between this portfolio cost and the provisional estimate could then be adjusted for through the RAB or the opex memorandum account, as appropriate, at the start of CP6.
- 9.53 We asked Network Rail to explain why so many projects were at an early stage of development given that it expects to spend £69m<sup>200</sup> in CP4 on developing schemes for CP5. Most are schemes which DfT included in its HLOS based on limited development work and so the outputs were not sufficiently defined. In these cases we consider it is unreasonable that Network Rail should be penalised. Other projects were at an early stage of development because Network Rail thought it would not be needed for the HLOS, or the development work will be sequential to other CP5 projects (e.g. power supply upgrades). The targeting of development funding in future control periods needs to be better than in CP4, with closer working across the industry with funders.
- 9.54 Even with the proposed treatment of the £2.3bn schemes there was too much uncertainty in the remaining £4.3bn; which still contained around 20-30% risk uplift from the base estimate. The cost uncertainty also meant that an efficient cost determination on a £4.3bn portfolio would be difficult because it would include around £1bn<sup>201</sup> of risk provision and the accuracy of an efficient cost determination would be reduced.
- 9.55 We have, therefore, decided to build upon the proposal made by RDG and treat all projects where we set an efficient cost (the £6.7bn portfolio) differently from PR08 and review costs for these later in the control period when they are more certain. The projects proposed for this treatment are listed in Annex E and include Northern Hub, Electric Spine, East West Rail, Waterloo and traction power upgrades. This will allow:
- (a) better targeting and setting of efficient costs for the bulk of CP5; and
  - (b) opportunities to achieve better value for money through deeper engagement of TOCs and FOCs so that we have greater certainty that the right projects are

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<sup>199</sup> Calculated by applying the average risk allowance (25%) to £6bn.

<sup>200</sup> Reported in Network Rail's P3 finance pack for 2013-14 and adjusted to 2012-13 price base.

<sup>201</sup> Calculated by applying an average risk allowance (25%) to £4.3bn.



scoped to achieve the best customer benefits within the framework of long-term sustainable asset policies.

- 9.56 Appropriate governance has to be put in place involving the train operators to ensure the right scope is selected; scope is sufficiently developed; and train operators are engaged as early as possible so that project scope is optimised for best value before the detailed design and delivery stages. Network Rail already involves train operators in the long term planning process and it has also been exploring ways of involving them more fully in project development through a form of gain-share mechanism.
- 9.57 In its consultation response, Network Rail welcomed this expanded approach and we have had constructive discussion with it to refine the proposed framework. Many other consultation responses supported the approach in principle but sought greater clarity on the detailed process, which we have done in the next section.
- 9.58 A further point made by Network Rail was that, since the SBP submission the costs for Great Western electrification, Midland Main Line electrification and East West rail have increased by about £376m in total as a result of further development and design work. It acknowledged that the new approach is specifically designed to deal with this happening but considered that it would be sensible to include this additional amount in our assumptions for the determination. As the portfolio of projects develops costs for some may increase whereas costs for others may decrease. We have not added the amount Network Rail suggested at this stage, just as we have not assumed any further cost reductions. This will be addressed through the enhancements cost adjustment framework.

## Scotland

- 9.59 Similarly in Scotland, of the £1.1bn of costs we reviewed, around £800m<sup>202</sup> was based on an indicative definition of scope and risk. In its SBP, Network Rail proposed that the following three schemes should be assessed at a later date in the same way as it proposed for England & Wales, due to the low level of certainty in its cost estimates:
- (a) Aberdeen to Inverness Improvements Phase 1;
  - (b) Highland Main Line Journey Time Improvements Phase 2; and
  - (c) EGIP – Infrastructure works.
- 9.60 We think there were high levels of uncertainty in the remaining projects, for example in the phasing of the rolling programme of electrification and the proposed solution for the Edinburgh gateway station. As in England & Wales, we have therefore decided to treat all projects where we set an efficient cost (the £1.1bn portfolio) differently from

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<sup>202</sup> The sum of all projects that are GRIP 0 to GRIP 2.

PR08 and review costs for these later in the control period when they are more certain.

- 9.61 Network Rail is developing proposals for an alliance with the next ScotRail operator, with the new franchise due to start in April 2015. This provides clear opportunities for Network Rail to make sure appropriate governance is in place to work closely together on defining the right scope for the projects. However, this should not exclude working with other train operators operating in Scotland.

### **Enhancements cost adjustment mechanism - process for determining efficient costs in England & Wales and Scotland**

- 9.62 We are determining the efficient cost and outputs in two steps. The first concluded with this determination, where we included in our assumptions our assessment of efficient costs from the information provided with the SBP. This incorporated the review done for us by the Nichols consortium. We have made adjustments to ensure the funding allocation was appropriate for the stage of project development. We applied an efficiency overlay that was commensurate with a portfolio that was largely at an early stage. This was used in calculating the revenue requirement and access charges.
- 9.63 We aim to conclude the second step around the end of year 1 of CP5, i.e. March 2015, at which point project development will be more advanced, and therefore the cost certainty will be higher. We will not wait until March 2015 to start reviewing projects but will progress them as soon as they are ready. This will mean that we can determine more accurately the costs to be added to the RAB. There was general support for this approach in the consultation responses, with many of the train operators welcoming the opportunity to work with Network Rail on developing the schemes. We have agreed with Network Rail that there needs to be some flexibility around the end date to cater for a small number of projects that will not quite be at GRIP 3 at this point in time. This flexibility needs to be limited in order to minimise uncertainty and we will agree the extent of flexibility through the enhancements delivery plan.
- 9.64 In its consultation response, Network Rail confirmed when it expects to have reached GRIP stage 3 for the qualifying projects, which will happen on a rolling basis with the majority by December 2014. During the development work, as more projects reach GRIP stage 3 we will monitor the emerging costs at portfolio level as well as project level. We will challenge projects, particularly where costs escalate above the level assumed in this determination.
- 9.65 We will approach this progressively by reviewing each project as it reaches GRIP stage 3 and will confirm the efficient project cost allocation after each review, thus giving Network Rail certainty that funding is available for each scheme. The required project funding will be progressively logged up to determine the overall portfolio funding envelope. After this is complete the baseline will be set, and as more projects

move into the detailed design and delivery phase, Network Rail will need to manage any individual cost increases within the overall funding envelope. This should avoid any pauses in project delivery, a concern raised in the consultation responses, particularly by RIA.

- 9.66 The project cost reviews at GRIP stage 3 will be based on a submission from Network Rail which should demonstrate:
- (a) the output is consistent with the HLOS, verified by the HLOS capacity model where necessary;
  - (b) where appropriate, an update of business case assumptions to confirm value for money;
  - (c) evidence of operator buy-in to the selected option (e.g. through workshops, value management exercises, or any commercial benefit sharing agreements);
  - (d) a delivery plan change control submission to set out project milestones;
  - (e) evidence that the estimate incorporates planned efficiency initiatives wherever appropriate;
  - (f) a defined strategy on compliance with interoperability TSIs and other relevant statutory provisions, e.g. the project authorisation strategy, endorsed by the Network Rail Authorisations Panel; and
  - (g) evidence that the selected option is the best whole life cost solution.
- 9.67 In our draft determination, we said we did not expect the aggregate costs to exceed the amount we set in the determination, but should this happen then there would need to be agreement from the governments as to the way forward. We discussed this further with Network Rail who emphasised the risk of capping expenditure in the determination in that funding may run out before some of the projects at a very early stage can be developed. We have agreed that the estimating uncertainty in the SBP means that the revised aggregate efficient cost may be higher than assumed in the determination. There is scope for Network Rail to be funded for the additional amount, as long as we are satisfied that the costs are efficient and the scheme is eligible to be added to the regulatory asset base.
- 9.68 We will assess Network Rail's performance against the baseline set by the enhancements cost adjustment mechanism rather than the determination.
- 9.69 In addition to Network Rail's closer working arrangements with the supply chain, we consider there is a big opportunity for Network Rail to reduce costs and outperform this determination through closer working with train operators on enhancement projects to determine the most efficient scope in the design stages and deliver construction work in a more cost effective way.
- 9.70 We want to encourage Network Rail and train operators to enter into commercial agreements on relevant enhancements projects that will reward operators if cost

savings are achieved as a result of their involvement. We are not mandating this approach, and it is for Network Rail to decide which projects and the specific terms of any commercial agreement, but we consider it a means to reduce costs further than current industry engagement allows.

- 9.71 In terms of funding eligibility, we will consider any incentive payment to be part of the project efficient cost where Network Rail and train operators can demonstrate costs have been reduced, including how long-term value has not been compromised by short-term reward or how wider network and cross boundary issues have not been compromised. We consider that this will help Network Rail and train operators to focus enhancements on delivering best value for money for the railway's customers and this approach does not require any changes to the regulatory framework. Incentive payments to train operators could be at both the conclusion of the scope definition and then subsequently for the delivery phase. This will be particularly important for projects where the franchise may change as part of the significant re-franchising programme that will take place in CP5.

### **Incentivising efficient delivery**

- 9.72 Chapter 12 explains how Network Rail is incentivised to outperform efficient project delivery, including how the underspend/overspend framework (RAB roll forward policy) will apply to enhancements in CP5.
- 9.73 Specifically in Scotland we have agreed with Network Rail's proposal that the other elements of EGIP should be considered as a bespoke target price arrangement (set at the beginning of the programme, with agreed pain/gain incentives). This relates to the following three projects in the SBP:
- (a) electrification of Glasgow to Edinburgh via Falkirk High;
  - (b) Edinburgh Gateway Station; and
  - (c) infrastructure works.
- 9.74 All other enhancement projects in Scotland (except for Borders) are subject to the underspend/overspend framework (RAB roll forward policy).

### **RAB roll forward policy**

- 9.75 We set out earlier in this chapter a new process for determining efficient costs for some of the enhancements in England & Wales and Scotland that takes account of the early stage of development of a large number of projects submitted in the SBP. This section describes how the framework for incentivising outperformance will work.
- 9.76 The underspend/overspend framework for enhancements will broadly operate as in CP4. In addition to the deadband being removed, the key difference is that the PR13 determination for enhancement costs will not be the baseline for the framework. Instead it will be set following our second review of the portfolio costs. It will be this

expenditure level that Network Rail will be incentivised to outperform. This will also be used as the base in our assessment of Network Rail's financial performance.

- 9.77 We will treat differences between the final determination and the baseline as a change to outputs and make a financial adjustment at the end of the control period to make the re-setting of the baseline financially neutral.
- 9.78 The logging up of enhancements underspend and overspend is detailed in chapter 12, broadly speaking it will be on the following basis:
- (a) it will not apply to Crossrail and Thameslink (where there are tailored protocols in place) or EGIP and Borders (where there will be target price arrangements put in place), as these projects have their own pain/gain share mechanism;
  - (b) it will not apply to: the ring-fenced funds (including CP4 rollovers); the research and development allowance; ETCS cab fitment; and depots and stabling;
  - (c) for all other enhancement projects (including the Welsh Valley Lines electrification) where Network Rail underspends efficiently, i.e. it underspends whilst delivering the required outputs in full, it will retain the benefit of that outperformance for five years. We will reflect this through an adjustment of the RAB at the beginning of CP6. We will calculate the amount to be deducted as the amount of underspend less 25%. Where Network Rail has underspent due to a failure to deliver required outputs we will reduce the RAB to reflect this but it will not retain 25% of the underspend. Failure to deliver required outputs may also result in us taking enforcement action in line with our published policy.
  - (d) in England & Wales, we will log-up 75% of any aggregate overspend (i.e. at the portfolio level) subject to any manifestly inefficient overspend being disallowed; and
  - (e) in Scotland, we will undertake a specific ex-post efficiency assessment on the projects covered by the underspend/overspend framework.
- 9.79 For the relevant projects we will apply the framework on the aggregate spend, which means Network Rail is free to budget for individual schemes as it sees fit.

## Our conclusions

- 9.80 In this section, we set out our conclusions on: whether the projects meet the requirements of the HLOSs; what level of efficient cost is assumed for the revenue requirement; and what governance arrangements we want for the ring-fenced funds.

### England & Wales

#### HLOS capacity metric requirements

- 9.81 The Arup review concluded that the model used was fit for purpose. The capacity interventions proposed in the SBP will accommodate the forecast peak growth in the HLOS. Despite high levels of passenger growth, overcrowding at the end of CP5 will

be significantly reduced in some areas (notably in Manchester and at some London terminals).

9.82 From its findings we have drawn the following conclusions:

- (a) most model inputs were based on projects that originated through the RUS planning process and hence have had a high degree of consultation with industry parties, such as train operators and passenger groups, and wider stakeholders, such as local authorities;
- (b) in general the RUS process identified the projects with the strongest business cases, and it is a selection of these projects which were included in the IIP, HLOS and SBP; and
- (c) for each terminal station Network Rail had attempted to spread the interventions across the different routes feeding the station. This was evidenced further by meetings with the Network Rail strategic planners and a specific examination on Leeds and Manchester radial routes.

9.83 During both our SBP and draft determination consultations, we received many responses from stakeholders proposing schemes that they considered should be included in the list of projects assumed for the determination. In the light of the Arup findings we have concluded that these would deliver over and above what is required by the HLOS capacity metrics and we have not included them in the determination.

9.84 However, some of these may qualify for the ring-fenced funds which have their own mechanisms for prioritising investment.

9.85 Because we have created a new process allowing Network Rail to engage more fully with train operators before costs are finalised, there is still opportunity to influence the scope of work in the planning phases and propose better value for money solutions.

## **Review of enhancement projects**

### **Overview**

9.86 Table 9.5 shows a breakdown of our assumed costs for projects in England & Wales. This was mainly informed by the Nichols review but it also included some other adjustments we made. The remainder of this section summarises our conclusions on each category of projects in the table. We considered Network Rail's response to the draft determination, where we agreed with some of its points and acknowledged that costs for some projects may have changed considerably since the SBP as scope has developed further.

9.87 The enhancements cost adjustment mechanism is a new process that will deal with changes to cost estimates (both up and down). We think that this process will address Network Rail's points as we will agree more accurate efficient costs when the projects reach a more advanced stage. As such, we have concluded that Network Rail's



consultation response does not materially affect our original assessment in the draft determination.

**Table 9.5: Overview of our assumptions on project costs in England & Wales**

£bn (2012-13 prices)	SBP	DD	FD	Difference (SBP to FD)	Difference (DD to FD)
Thameslink & Crossrail	3.1	3.1	3.1	0	0
Ring-fenced funds	1.2	1.2	1.2	0	0
Electrification schemes	3.2	3.0	3.0	(0.2)	0
Other committed schemes	1.7	1.5	1.5	(0.2)	0
Other named schemes & CP4 rollover	0.9	0.8	0.8	(0.1)	0
HLOS capacity metric schemes	0.9	0.7	0.7	(0.2)	0
Other adjustments	-	0.5	0.5	0.5	0
Additional funding since draft determination	-	-	0.6	0.6	0.6
<b>Total</b>	<b>11.0</b>	<b>10.8</b>	<b>11.4</b>	<b>0.4</b>	<b>0.6</b>

### ***Thameslink and Crossrail***

9.88 Both of these projects will deliver significant benefits to passengers travelling across London. We have confirmed that the costs in the settlement are consistent with those agreed with DfT and Crossrail Ltd. In CP5 we will continue to operate under the protocols for these projects, where we recognise that there are specific arrangements to incentivise Network Rail.

### ***Ring-fenced funds***

9.89 We made no downwards adjustments as the amounts were specified in the HLOSs. In England & Wales we combined these with the CP4 rollovers for the Strategic Rail Freight Network and Stations Improvement funds. We also included some extra funding for the Level Crossings fund. These adjustments are explained later in this chapter. The final section of this chapter deals with other issues relating to these types of funds.

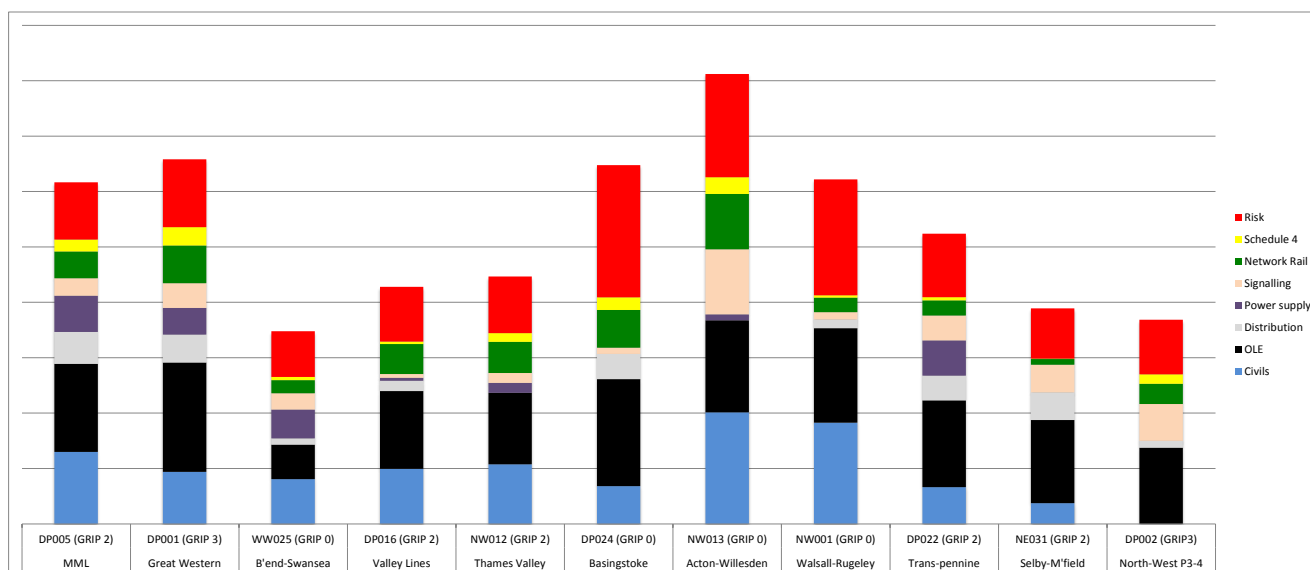
### ***Electrification schemes***

9.90 The Nichols consortium did a detailed assessment of the electrification schemes and costs contained within the SBP. Aside from Thameslink and Crossrail, the electrification portfolio was the largest group of projects in the SBP. It was dominated by; Great Western Main Line, Midland Main Line, North West, Transpennine and Welsh Valley Lines. The Welsh Valley lines electrification will enable the more efficient operation of passenger services on the Valley lines network, replacing ageing diesel traction with a cascaded fleet of refurbished electric trains. The core scheme will involve provision of overhead line equipment with additional infrastructure provided as part of the Cardiff area signalling renewals scheme.



- 9.91 Electrifying the railway will bring many benefits for both passengers and freight users, most notably the ability to run more frequent trains with shorter journey times and less environmental impact, such as noise and diesel fumes.
- 9.92 There were a number of other related projects in the SBP, such as Intercity Express Programme, gauge clearance, power enhancement and station/platform schemes, which represented a complex picture, with a significant number of interfaces between projects.
- 9.93 The Electric Spine is a new programme announced by DfT, and defined in the HLOS as “a high capacity passenger and freight electric corridor running from the South Coast through Oxford, Bedford and via the Midland Main Line to the East Midlands and South Yorkshire, with a link from Oxford to the West Midlands and the North-West”. Network Rail identified this as having uncertain scope and outputs at the time of its SBP submission. However, it did include the Midland Main Line (MML) electrification and remodelling of Derby station, both of which were further developed than the remaining programme. In its SBP, Network Rail proposed completion of the MML electrification in early CP6. In the consultation responses to the SBP, there was strong stakeholder challenge arguing that this should be accelerated so that full electrification to Sheffield is achieved in CP5.
- 9.94 Given that the MML electrification is further developed than other elements and has very strong operator support, we expect that there is opportunity to re-prioritise the roll-out of the programme, for example by bringing electrification to Sheffield into CP5.
- 9.95 We have set an assumed level of funding for the Electric Spine programme – including MML electrification and Derby station. It is now for Network Rail and operators to urgently progress the design and development work of the whole portfolio to define the best value outputs in CP5, taking into account rolling stock availability, schedule risks and efficient delivery in the context of a large amount of other electrification work in CP5.
- 9.96 Given the low level of maturity of the majority of Electric Spine schemes, we have also re-profiled the spend within CP5 assuming that there will be a two year development and design period before implementation gathers pace. As mentioned earlier, we need to make sure that infrastructure delivery is aligned with the introduction of new or cascaded trains and we will do this as the enhancements delivery plan is finalised.
- 9.97 The Nichols consortium produced some comparative analysis of the schemes which is summarised in the following charts. Network Rail challenged these comparisons in its consultation response but we have concluded that they remain valid.

**Figure 9.6: Electrification comparisons from Nichols consortium review (the unit rates have been redacted)**



### Other committed schemes

- 9.98 The **Northern Hub** was the largest project in this category. The outputs of this project will enable more frequent train services, faster journey times and new connections across the Pennines plus additional journey opportunities to Manchester airport. The project is designed to support economic growth and has had extensive input from a range of stakeholders. Work started in CP4 and will extend into CP5 to include capacity works in the Castleford corridor, new platforms at Manchester Piccadilly and capacity improvements between Manchester, Liverpool, Rochdale, Sheffield and Chester.
- 9.99 A significant number of consultation responses related to the adjustments we made to the SBP submission for this programme. These responses included a proposal that the £130m announced by government in March 2012 (relating to one element of the programme) should be ring fenced. Concerns were also raised in respect of a perceived £20m 'cut' it was thought we were planning to make to this element.
- 9.100 Network Rail made a detailed response stating that we had inappropriately removed about £80m from the assumed expenditure in the SBP.
- 9.101 We assessed the cost build up submitted with the SBP to deliver the Northern Hub, totalling around £620m. This included the sum of £130m announced by government which we did not assess separately. We concluded that the high level of risk included in the cost estimate was not justified in the SBP submission and we considered that we should apply Network Rail's efficiency overlay to those costs. As a result we reduced the assumed funding of £620m by £122m.
- 9.102 We acknowledge that the final scope has yet to be determined and will involve many of the bodies that responded on this issue. Once this has been finalised with affected

stakeholders, then we will define them as specific obligations that Network Rail must deliver.

- 9.103 We also acknowledge that costs may change as scope is finalised, particularly as scope becomes more clearly defined. We agree with the consultation responses that the programme as a whole is not yet far enough developed to establish an accurate efficient cost. We have already stated that we plan to re-assess costs for the Northern Hub through the enhancements cost adjustment mechanism. This will happen by March 2015 at the latest.
- 9.104 Even beyond this point Network Rail has the ability to set individual project budgets at a different level from our assumed amount as the framework allows them to manage costs at a portfolio level, meaning that any 'overspend' on the Northern Hub could be compensated for by an 'underspend' elsewhere, or vice-versa. This flexibility is an important part of the framework and is weakened if elements of the portfolio are ring fenced. In addition, the Secretary of State's HLOS did not specify a ring fenced amount for the Northern Hub. We therefore disagree with the consultation responses that an element of the programme should be ring fenced and have not done this.
- 9.105 The **Intercity Express Programme** (IEP) is a package of gauge, track and platform enhancements on the East Coast and Great Western main lines. The works will enable deployment of super express trains in CP5. The first units to be built will be introduced into service on the Great Western Main Line from 2017 and on the East Coast Main Line from 2018. The new trains will bring faster services and additional capacity to major UK cities, along the Great Western Main Line between London, Reading, Bristol, Cardiff and Swansea, and on the East Coast Main Line between London, Leeds, Newcastle and Edinburgh. The Nichols consortium's review highlighted that Network Rail had not applied its efficiency overlay or portfolio risk overlay to this project. In its consultation response Network Rail set out the reasons why it had not applied the overlays to this programme. We agreed in part with Network Rail's view on the application of the portfolio risk overlay (overstated by about £5m) but considered that it does not make a material difference to the determination. However, we will address this in the enhancements adjustment mechanism.
- 9.106 **East West Rail** comprises the re-opening of Bedford – Bletchley – Bicester – Oxford as a through route with a link to Aylesbury. This will open up new journey opportunities for both passengers and freight by providing direct connectivity between Oxford, Aylesbury, Milton Keynes and Bedford. This should facilitate economic growth by stimulating residential and commercial development along the route. The project has strong local stakeholder support. As with IEP, the main adjustment we proposed was to apply Network Rail's own portfolio and efficiency overlay, which had not been done. In its consultation response, Network Rail updated the latest status of this project. This will be taken into account in the enhancements cost adjustment mechanism.

### ***Other named schemes and CP4 rollover schemes***

- 9.107 The project to redevelop **Waterloo** was the largest project in this category. The scheme is at the pre-GRIP stage and the intention is to define and develop a scheme that will deal with long-term growth at London's busiest terminus station. Uncertainty around the outputs of this project illustrated why we have decided to revisit costs when the outputs are more fully defined. Network Rail applied its efficiency and portfolio overlays but we have removed these to bring the costs in line with the amount assumed in the SoFA. We have also re-profiled the costs to be more realistic as the project is likely to be a phased delivery throughout CP5.
- 9.108 **Western access to Heathrow** will create a new route from Heathrow terminal 5 onto the Great Western Main Line heading west. Network Rail and DfT have been working with aviation stakeholders and the project has strong local support. The information provided was good. But the Nichols consortium's review highlighted that the wrong cost base was used in the SBP submission and we have adjusted this accordingly. The HLOS stated that delivery of this project is anticipated to extend into CP6.
- 9.109 Completion of **Birmingham New Street** station is due in March 2015. The main work in CP5 is to reconstruct the eastern portion of the station, including building a new shopping centre above. This will enhance the passenger experience, reduce overcrowding and improve access. Progress throughout CP4 has been good, in spite of considerable difficulties, both with overcoming extra works required by structural problems with the existing building and with the continuing difficult access which has to be carefully controlled to minimise disruption to the operational parts of the station.

### ***HLOS capacity metric schemes***

- 9.110 This bundle contained 27 projects at a total cost of about £900m. The Arup work confirmed that these projects would deliver the remaining portion of the capacity metrics over and above the committed projects and named schemes. We have made some minor adjustments, including reducing the estimate for the Reading to Ascot platform lengthening to account for opportunities to reduce scope through the use of selected door opening rather than infrastructure works.
- 9.111 About half of the costs relate to five **traction power supply upgrade projects** in the Anglia, Sussex, Wessex, Kent and London North East routes. Whilst we have made some adjustments to these projects at this stage of the review they will be revisited in the enhancements adjustment mechanism.
- 9.112 Platform extensions at eight stations on the **Uckfield Line** to allow ten car train operation continues a series of similar projects on the Sussex route in CP4.
- 9.113 Several consultation responses from local authorities and Railfuture suggested that this project should be designed for electric trains rather than the diesel trains that currently run on the route. This would mean that the project scope would be extended to include electrification works as well as platform lengthening works. The main justification for this was that, as the industry moves towards an electrified railway, the

availability of diesel trains will be limited whereas electric trains will be in greater supply. Therefore, they considered that the line should be electrified as well as platforms lengthened as this would provide greater value for money. It was also noted that a positive consequence of this proposal would be the release of more diesel trains to other parts of the network.

- 9.114 This proposal would rely on there being a committed plan to procure new electric vehicles, without which the investment would be over and above what is required to meet the desired output.
- 9.115 The Secretary of State did not specify electrification of this route in the HLOS. However, the HLOS did specify the amount of capacity that needs to be met at London Bridge. As part of the illustrative option, DfT suggested that a way of achieving this would be peak train lengthening with additional diesel units and platform extensions. Network Rail then included this in its SBP.
- 9.116 Network Rail must design a scheme that meets the government's specification and is based on the most accurate assumptions regarding train formations. There are currently no plans to introduce electric trains on this route and therefore it would be inappropriate to design a scheme that assumed that they would be. Should this change then there are mechanisms that allow Network Rail to redesign the project as appropriate. Therefore, at the moment we have concluded there is no justification to widen the scope of the Uckfield train lengthening project to include electrification works. However, Network Rail will need to consider what provision might be made in the context of wider HLOS requirements for future electrification as this is one of two isolated diesel routes in the area.
- 9.117 The scope and outputs for the **London Victoria station congestion relief** scheme should provide a much needed increase in circulating space and reorganisation of the ticket office and gatelines. The work needs to dovetail with the other master plan improvements at Victoria and also London Underground's tube station upgrade.
- 9.118 A key part of the **East Kent re-signalling** scheme is the construction of a new station at Rochester on land provided by the local authority. Other work consists of track and signalling improvements to get 12 car trains on the route and to reduce signalling headways between Rochester and Gillingham.
- 9.119 **North West train lengthening** work consists of platform extensions at up to 60 sites. Although the detailed selection and definition of project requirements is at an early stage, this is work which is familiar to Network Rail, having completed a large number of platform extensions on the network in CP4.
- 9.120 Works for the **Midland Main Line capacity** project comprise platform extension and associated track and signalling works. We found some inconsistency in pricing between different locations. However, when compared to benchmark rates, the direct construction costs were slightly low, whilst the indirect costs were high. We have altered the cost allocation to reflect this. The specification for the work, which was at

GRIP 2, was based on the rolling stock in use today. Any change to this will affect the planned project outputs.

### **Other adjustments**

**Table 9.6: Breakdown of other adjustments to the SBP in England & Wales**

<b>£m (2012-13 prices)</b>	<b>DD</b>	<b>FD</b>	<b>FD-DD</b>
Capitalisation of overheads	(56)	(56)	0
Management of inflation, management of occupational health, frontier shift	(39)	(39)	0
Property and other schemes that are income generating	375	375	0
Additional Schedule 4 costs	169	148	(21)
Additional match funded R&D financial incentive	45	45	0
<b>Total</b>	<b>494</b>	<b>473</b>	<b>(21)</b>

9.121 As explained in chapter 5, Network Rail's support functions provide services to enhancements projects where the costs of these activities are capitalised rather than expensed in the year. Analysis of the SBP showed an additional capitalised cost of £62m in CP5 which did not directly link to its assumptions on support costs and Network Rail has not been able to adequately explain this inconsistency. As a result, we have deducted £62m from enhancement costs across Great Britain. We have divided this amount between England & Wales and Scotland based on current train kilometres and have therefore deducted £56m in England & Wales.

9.122 As with other areas of expenditure, we have applied an overlay for cost savings that will come about by better management of inflation and better management of occupational health. This is described more fully in chapter 4. We have also applied an overlay for frontier shift, where we have agreed with the CEPA analysis described earlier in this chapter.

9.123 As explained more fully in chapter 18, there will be some projects in CP5 that were not included in the SBP but which will generate an income for Network Rail. We must consider these in Network Rail's other single till income. Therefore, we have included an assumed cost of these projects, £416m across Great Britain. As with the capitalised cost, we have divided the total between England & Wales and Scotland based on current train kilometres, resulting in an additional £375m in England & Wales.

9.124 As a result of our **recalibration of Schedules 4 and 8**, explained in chapter 20, Network Rail requested that we make an allowance of an extra £169m in its enhancements costs in the draft determination. At that time we did not have time to scrutinise this amount before publication. Since then Network Rail has explained the methodology for its calculation and updated the figure to £148m. We are satisfied that



the approach was appropriate and included this extra amount in our revenue requirement calculation.

9.125 As set out in chapter 19, we are signalling our support for **R&D and innovation** as a means of improving Network Rail's productivity and reducing its costs in the medium to long-term. We have introduced a matched-funding financial incentive whereby we will match each additional pound which it spends on R&D or innovation (up to £45m). This is in addition to the innovation element of the Development fund, announced in the HLOS.

### ***Additional funding identified since the draft determination***

9.126 In England & Wales we have assumed about **£650m** extra expenditure will be needed above the levels in the draft determination for:

- (a) the completion of three CP4 seven day railway initiatives (mobile maintenance units, W12 clearance on the ECML and bi-directional signalling on the Brighton Main Line) already explained in the network availability section of chapter 3;
- (b) funding provision for depots and stabling, explained next in this chapter;
- (c) the treatment of ETCS cab fitment, explained later in this chapter;
- (d) extra rollover of CP4 funds, explained later in this chapter; and
- (e) level crossings, explained in chapter 11.

9.127 Most of this amount (about £500m) relates to the treatment of ETCS cab fitment and funding provision for depots and stabling. Both of these items were included in the affordability assessment of the draft determination. Essentially, these costs have been moved into the assumed levels of enhancements expenditure: ETCS cab fitment from renewals expenditure; depots and stabling from franchise expenditure. As such, the inclusion of these had a negligible net effect on affordability.

### **Depots & stabling and ancillary Works**

9.128 The CP5 enhancement programme will provide greater route capacity and capability, facilitating longer and more frequent trains, and in some cases new journey opportunities. This will require either new or cascaded rolling stock for services to start running by the end of CP5. Given the current refranchising timetable, and the further project development work still required, it has not yet been possible to specify with any certainty what the scope of work will be for the necessary depot, stabling and rolling stock compatibility works for each route.

9.129 A cost estimate for these works was provided by DfT, totalling £80m for depots and stabling for the HLOS capacity metric projects, £102m for depot and stabling works resulting from the electrification programme in CP5, and £130m for gauge, platform and electric compatibility works, totalling £312m in CP5. Given that these works are sometimes delivered by the train operators or rolling stock suppliers, we did not



include this in our calculation of Network Rail's revenue requirement in the draft determination.

- 9.130 In its response, DfT stated that it considered Network Rail would deliver best value in undertaking this work and requested that it should be added to Network Rail's funding and obligations. This is driven by concerns that the award date for new franchises on some routes does not allow sufficient time for the new operator to design and deliver this work in time for the commencement of new services. The work also needs to be integrated into the overall route enhancement plans, and is essential to enable the new service patterns envisaged in CP5.
- 9.131 The DfT estimate is at a low level of maturity, but given this work is a critical enabler for the new train services, we have decided to include a funding provision of £312m on an efficient emerging cost basis for Network Rail to administer and programme manage. Network Rail could either deliver projects itself, or could allocate funding to third parties such as a train operator or rolling stock company, if they were better placed to deliver the work.
- 9.132 We have recognised that it is unreasonable to make Network Rail wholly accountable for the delivery of depots, stabling and route compatibility works, since the depot location, the scope and specification of work are all dependent on decisions by the train operator and DfT rather than Network Rail.
- 9.133 Where the depots or ancillary work needs to be completed ahead of franchise award, it will be for the local industry planning groups to propose a set of assumed requirements. Network Rail will then need to confirm with DfT that the requirements are consistent with its franchising plans. The output risk will ultimately be carried by DfT and this will be formalised as part of the enhancements delivery plan entry and the change control process to make clear the assumed output, scope, cost and schedule, and the division of risk.
- 9.134 Network Rail will need to put governance in place to provide assurance that the funding provision is effectively allocated, and there are checks and controls in place to give assurance that the costs incurred are efficient.
- 9.135 During CP5, we will carry out ex-post efficiency reviews to ensure that expenditure is efficient and, with this proviso, the out-turn costs will be added to the RAB at the end of the control period (i.e. it will not be part of the enhancements cost adjustment mechanism or included in the overspend/underspend framework).

## Scotland

### Review of projects

- 9.136 Table 9.7 shows a breakdown of our assumed costs for projects in Scotland. This was mainly informed by our own review but it also included some other adjustments recommended by the Nichols consortium.

**Table 9.7: Overview of our assumptions on project costs in Scotland**

£m (2012-13 prices)	SBP	DD	FD	Difference (SBP to FD)	Difference (DD to FD)
EGIP	489	490	490	1	0
Borders	124	127	174	50	47
Other Scottish projects	665	583	477	(188)	(106)
Ring-fenced funds	145	145	145	0	0
Other adjustments	-	62	58	58	(4)
Other additional funding since draft determination	-	-	12	12	12
<b>Total</b>	<b>1,423</b>	<b>1,407</b>	<b>1,356</b>	<b>(67)</b>	<b>(51)</b>

***Edinburgh to Glasgow Improvements Programme (EGIP)***

9.137 The Scotland HLOS required Network Rail to deliver EGIP, which will be subject to separate commercial arrangements. Network Rail has been developing the scope of works and delivered some infrastructure elements of the programme in CP4 through the investment framework. Network Rail included a total of £489m of CP5 expenditure in the SBP for EGIP.

9.138 We approved a target price for electrification of Springburn to Cumbernauld through the investment framework in January 2013, with the latest forecast of CP5 expenditure at £16m. We have assumed that this is the efficient expenditure for this project rather than Network Rail's SBP proposed cost of £26m.

9.139 Network Rail has split the remaining forecast EGIP expenditure into three projects:

- (a) electrification of Glasgow to Edinburgh via Falkirk High;
- (b) construction of Edinburgh Gateway Station; and
- (c) infrastructure works including: work at Glasgow Queen Street to accommodate longer trains and improve capacity; platform extensions; signalling improvements; and works at Edinburgh Waverley station to improve capacity.

9.140 Some of the scope has been developed to GRIP 4 in CP4, such as design for electrification of the Glasgow to Edinburgh via Falkirk High line. However, Network Rail is currently awaiting clarification from Transport Scotland on the detailed requirements and timings for the overall programme. There is still uncertainty around some elements of the scope, for example works at Glasgow Queen Street and Edinburgh Waverley stations. We have assumed Network Rail's most recent estimate of £474m, as a provisional sum and we will decide the efficient cost at a later date, when Network Rail and Transport Scotland have agreed the target price arrangements.

## **Borders**

9.141 The Scotland HLOS requires completion of this project, to reinstate the former Waverley Line between Edinburgh and Tweedbank. Although Network Rail stated that this project is at GRIP 3 in the SBP for planning purposes, the main civil works for this project recently started and the project is on schedule to complete in June 2015. We approved the funding for this project through the investment framework in October 2012, including forecast CP5 expenditure of £127m. Network Rail's response to the draft determination stated its latest cost forecast highlighting an increase in CP5 expenditure to £174m with a resultant decrease in CP4 expenditure. This is in line with recent project reports and we have changed our assumption to reflect this.

## **Other Scottish projects**

- 9.142 Network Rail has worked with Transport Scotland to develop both **Aberdeen to Inverness Improvements (Phase 1)** and **Highland Main Line Improvements (Phase 2)** to GRIP 3 and GRIP 2 respectively in CP4. However, the requirement and phasing for both were changed in the Scottish HLOS.
- 9.143 Aberdeen to Inverness Improvements (Phase 1) was developed as a programme of works with four phases, planned to be delivered across CP5 and CP6. In response to the HLOS, Network Rail has included the cost of all four phases in CP5, totalling £280m. We applied some minor adjustments based on the conclusions of the Nichols review in the draft determination. Transport Scotland raised concerns that Network Rail's estimate was too high as it expects this programme to be delivered over two control periods. However, the CP5 scope cannot be confirmed until timetabling work and option selection is complete. Since the draft determination we have decided to set a cap for the CP5 expenditure of £191m to address Transport Scotland's concerns.
- 9.144 The SBP included £121m for Highland Main Line Journey Time Improvements Phase 2. However, this estimate was based on broad assumptions as significant timetable and scope development will need to be re-worked before the scope is confirmed. The Nichols consortium reviewed the costs and recommended there was too much uncertainty to determine the efficient cost, but identified some minor adjustments due to an incorrect price base and we have assumed an efficient cost of £117m.
- 9.145 The HLOS includes a **rolling programme of electrification**, covering around 100 single track kilometres per year following completion of EGIP. Network Rail proposed five routes to be included in the programme totalling around 225 single track kilometres. Network Rail included a proposed cost of £171m for this programme. The Nichols consortium reviewed this estimate recommending that around half the scope is sufficiently defined to apply the adjusted efficiency target. In its consultation response, Network Rail highlighted a reduction of around £12m due to acceleration of Rutherglen & Coatbridge electrification. We have therefore assumed an efficient cost of £156m. The SBP does not include electrification of the East Kilbride branch which

has not been included in our determination. However, we recognise the industry is working up plans to deliver this through a potential alliance and funding can be addressed in between periodic reviews through the investment framework.

- 9.146 **Motherwell signal box re-signalling** and **Motherwell Depot stabling** improvements will support more effective operation of train services in the area, improved servicing of trains and improved track maintenance. Network Rail included CP5 cost estimates of £11m for the Motherwell re-signalling and £10m for the stabling improvements. At the time of SBP publication, it became clear that the southern end of the re-signalling was incorrect, reducing Network Rail's estimate to £3m. We have reviewed these and concluded that they were reasonable; that is £3m for Motherwell re-signalling and £10m for Motherwell stabling improvements. Network Rail identified some rephrasing of the stabling improvements with associated alterations in cost in its response to the draft determination. We will consider these changes when we determine the efficient cost for this project through the enhancements adjustment mechanism.
- 9.147 The remodelling of **Carstairs Junction** provides an opportunity to take advantage of a CP5 renewal project in the area and significantly reduce long distance journey times. The **Edinburgh Suburban electrification** project would remove an 'island' of non-electrified railway in the Edinburgh area and provide more flexibility for freight services. The HLOS did not specify the requirement for either project and we removed them for the draft determination. A number of responses to the draft determination, most notably Transform Scotland and Virgin Rail Group, emphasised the contribution that the Carstairs project could make to cross border journey times.
- 9.148 The merits of each scheme does not change our assessment in matching the list of projects with the HLOS requirements and we have not included them in our assumed level of expenditure as they were not required by either the Scottish Ministers or the Secretary of State and they have not changed their position on this since our draft determination. This does not prevent either scheme being taken forward in CP5, for example through the investment framework, should funding be identified. Indeed, in respect of Carstairs, and the benefits this will bring to Anglo-Scottish services, further discussion about the development of this scheme is underway.

## Other adjustments

**Table 9.8: Breakdown of other adjustments in Scotland**

£m (2012-13 prices)	DD	FD	FD-DD
Capitalisation of overheads	(6)	(6)	0
Management of inflation, management of occupational health and frontier shift	(8)	(8)	0
Property schemes that are income generating	23	23	0
Assumed investment framework schemes that are income generating	19	19	0
Additional Schedule 4 costs	29	25	(4)
Additional match funded R&D financial incentive	5	5	0
<b>Total</b>	<b>62</b>	<b>58</b>	<b>(4)</b>

- 9.149 As explained in chapter 5, Network Rail's support functions provide services to enhancements projects where the costs of these activities are capitalised rather than expensed in the year. Analysis of the SBP showed an additional capitalised cost of £62m in CP5 which did not directly link to its assumptions on support costs and Network Rail has not been able to adequately explain this inconsistency. As a result, we have deducted £62m from enhancement costs across Great Britain. We have divided this amount between England & Wales and Scotland based on current train kilometres and have therefore deducted £6m in Scotland.
- 9.150 As with other areas of expenditure we have applied an overlay for cost savings that will come about by better management of inflation and better management of occupational health. This is described more fully in chapter 4. We have also applied an overlay for frontier shift, where we have agreed with the CEPA analysis described earlier in this chapter.
- 9.151 As explained more fully in chapter 18, there are some projects not included in the SBP that will generate an income for Network Rail, which we have considered in Network Rail's other single till income. Therefore, we need to include an assumed cost of these projects, £416m across Great Britain<sup>203</sup>. As with the capitalised cost, we have divided the total between England & Wales and Scotland based on current train kilometres, resulting in an additional £42m in Scotland.
- 9.152 As a result of our **recalibration of Schedules 4 and 8**, explained in chapter 20, Network Rail requested that we make an allowance of an extra £29m in its enhancements costs in the draft determination. We did not have time to scrutinise this amount before publication. Since then Network Rail has explained the methodology for its calculation and revised the figure to £25m. We are satisfied that the approach

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<sup>203</sup> This is made up of two amounts of £231m and £185m as discussed in chapter 18.

was appropriate and included this extra amount in our revenue requirement calculation.

9.153 As set out in chapter 19, we are signalling our support for **R&D and innovation** as a means of improving Network Rail's productivity and reducing its costs in the medium to long-term. We have introduced a matched-funding financial incentive whereby we will match each additional pound which it spends on R&D or innovation (up to £5m).

#### ***Other additional funding identified since the draft determination***

9.154 In addition to the changes we assumed on Borders and other Scottish projects, we have assumed about **£12m** extra expenditure will be needed above the levels in the draft determination for:

- (a) the completion of some CP4 seven day railway initiatives, already explained in the network availability section of chapter 3;
- (b) the treatment of ETCS cab fitment, explained next in this chapter; and
- (c) level crossings, explained in chapter 11.

### **Treatment and funding of European Traffic Control System (ETCS)**

9.155 In the SBP, Network Rail set out the industry's ETCS implementation milestones for CP5, with its assumed costs (for both infrastructure and train fitment) in its signalling renewals expenditure. ETCS is the agreed future train control and command system for the European main line network, and the national implementation plan spans some 30 years. It is fundamental to how Network Rail will reduce its signalling infrastructure costs and requires some risk transfer to train operators. The current plan is to commission the Great Western Main Line between London and Bristol in 2019 and the East Coast Main Line between London and Peterborough in 2020. It is a cross-industry programme requiring coordinated changes to lineside infrastructure, control centres, rolling stock (including passenger, freight and engineering trains) and the roll-out of new operational procedures.

9.156 In its SBP, Network Rail assumed £194m (£206m pre-efficient) to fund train-fitment, i.e. retro-fitting rolling stock to make it compatible with ETCS train control on the above routes. It has embedded these costs into its route based signalling renewal plans. The funding assumed was for 'first of class' design and for wider fleet fitment for non-franchised fleets such as freight and open access operators. Because vehicle cab layouts vary, the design will need to be bespoke for each different class of rolling stock. The £194m includes £25m for driver training facilities and recruitment.

9.157 In the draft determination, we proposed to treat this element of ETCS funding as a ring-fenced enhancements fund, reported in the CP5 enhancements delivery plan, and that we would allow for a reasonable level of risk.

9.158 The consultation responses supported this approach. Network Rail emphasised the uncertain nature of the project, pointing out that efficient out-turn costs could be



higher. We also recognised that costs could be lower if the national roll-out plan changes, for example if the route commissioning dates are deferred due to changes in rolling stock cascade dates.

- 9.159 In our assumptions we have reallocated £194m from renewals expenditure to enhancements expenditure for ETCS cab-fitment. This will not be a capped amount and we have decided to treat this as a funding allowance based on an efficient emerging cost basis; it will also be excluded from the overspend/underspend framework. We will validate the efficient cost progressively throughout the control period through ex-post efficiency reviews.
- 9.160 This approach negates the need for a risk provision on top of the £194m as indicated in our draft determination, since Network Rail will be funded for actual efficient spend and will not be penalised through the overspend/underspend framework.
- 9.161 Network Rail will need to put governance in place to provide assurance that the funding provision is effectively allocated to third party deliverers, and there are checks and controls in place to give assurance that the costs incurred are efficient.
- 9.162 Also, we have decided that ETCS milestones, for both train fitment and infrastructure, should be included in the enhancements delivery plan. This is because the successful commissioning of ETCS on the operational railway is dependent on many industry partners who need clarity and certainty of Network Rail's obligations. Train operators need to plan and implement operational changes in time for any commissioning. Publishing milestones in the delivery plan, subject to ORR scrutiny and regulatory change control, would give such certainty.
- 9.163 The treatment of ETCS infrastructure expenditure will remain in the renewals category since it was embedded in the signalling unit costs. Over time it will become part of Network Rail's standard approach to renewing life-expired signalling assets. If there is a material change to the ETCS infrastructure scope required in CP5, then this will be treated as a deferred renewal and a RAB adjustment made accordingly.

## **Rollovers and enabling investment**

- 9.164 It is important to ensure that our approach to a periodic review does not create a hiatus in project delivery. This was emphasised in the consultation responses from representatives of the supply chain as well as by Network Rail and train operators. It is particularly important as the current programme is both large and at an early stage of development. As well as ensuring the enhancements adjustment mechanism is progressive, we have allowed Network Rail to: rollover funding from CP4 to finish off projects that are in delivery; and fund project development for CP5 schemes now before the formal start date of the control period. These are summarised in Table 9.9 and Table 9.10.



**Table 9.9 Summary of rollovers to be spent in CP5**

<b>£m (2012-13 prices)</b>	
<b>Rollovers included in the draft determination</b>	
Birmingham New Street Gateway	
Bromsgrove electrification	
Redditch Branch enhancement	
Kent power supply upgrade	
Barry to Cardiff Queen Street corridor	
<b>Total</b>	<b>165</b>
<b>Rollovers agreed since the draft determination</b>	
Strategic Freight Network	
National Station Improvement Programme	
Access for all	
Northern Urban Centres (including Liverpool to Leeds journey time improvements)	
<b>Total</b>	<b>81</b>

**Table 9.10 Summary of enabling investment to be spent in CP4 for CP5 schemes**

<b>£m (2012-13 prices)</b>	
<b>Enabling Investment</b>	
Midland Main Line electrification	
Northern Hub	
Electric spine	
Others	
<b>Total</b>	<b>65*</b>

\* Most recent estimate in Network Rail's P3 finance pack.

9.165 In June 2013, Network Rail asked to rollover about £40m of the CP4 **Strategic Freight Network** ring-fenced fund due to delivery difficulties on two projects: Southampton to West Coast Main Line train lengthening; and Ipswich Yard. We recognised that both of these are important enablers to grow rail freight from two major ports and allowed the rollover. This extra funding will be added to the CP5 allowance for the **Strategic Rail Freight Network** ring-fenced fund, bringing the total capped amount to **£246m** and a requirement to complete these two schemes.

9.166 In June 2012, before the England & Wales HLOS was published, Network Rail sought to rollover funding of the **National Stations Improvement Programme** to complete the rollout of systems that enhance the provision of information on customer information screens at stations. In addition to this, Network Rail has recently requested rollover of funding for works at Twickenham and Chelmsford stations that

have been delayed for reasons outside of its control. We have agreed to rollover around £7m for these works.

- 9.167 Network Rail has requested the rollover of about £29m of the **Access for All** funding to finish off works at 29 stations across England & Wales. In May 2012, we allowed Network Rail to bring forward the CP5 allocation (about £57m) into the last year of CP4 to accelerate the programme, despite having concerns that this would not be spent. In the end this was not all spent and we have allowed it to rollover to the first year of CP5, when it was originally planned. We will be monitoring this closely.
- 9.168 The rollover of NSIP and Access for All funding will be added to the CP5 allowance for the **Stations Improvement fund** bringing the total capped amount to **£242m** and a requirement to complete the 32 schemes.

## Interoperability

- 9.169 Interoperability is a European Commission initiative to promote a single market in the rail sector, making it easier for trains to travel across different rail networks. This is partly achieved through common specifications – Technical Specifications for Interoperability (TSIs). Statutory requirements for interoperability are set out in The Railways (Interoperability) Regulations 2011.
- 9.170 The SBP included the assumption that implementing an interoperable railway would not require specific additional costs in CP5 beyond existing levels of capital expenditure. We have decided that the assumed level of expenditure for maintenance, renewal and enhancements is sufficient to meet the requirements of the interoperability regulations and the TSIs, and therefore our determination is on this basis.

## Review of ring-fenced funds

- 9.171 Both HLOSs made provision for ring-fenced funds. In some cases these were a continuation of a mechanism in use in CP4. Funds provide Network Rail flexibility (sometimes with rail industry partners) to specify projects to deliver outputs or strategic aims. This gives the industry flexibility around how certain strategic objectives should be delivered. In CP4, total expenditure on the equivalent funds is expected to be £1.4bn in England & Wales and £43m in Scotland (2012-13 prices)<sup>204</sup>.
- 9.172 In England & Wales, Network Rail has proposed a further breakdown of some of the funds, in line with the HLOS. We agree with the proposed split.
- 9.173 Our role in relation to the funds is:
- (a) to check Network Rail's approach for each fund is likely to deliver efficient outcomes, by making sure effective governance processes are followed and that

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<sup>204</sup> Reported in Appendix 24 of the SBP databook which updates actual and forecast expenditure for CP4 and replaces the 2013 delivery plan update.

it delivers projects at efficient costs. We do this by assessing a sample of schemes;

- (b) to check if progress is on target to meet Network Rail delivery plan milestones;
- (c) to ensure transparency and approve changes to Network Rail's delivery plan; and
- (d) to resolve disputes or any arising issues.

9.174 We do not participate in scheme selection.

9.175 As part of our review, we looked at the use of CP4 funds<sup>205</sup>. Generally, stakeholders have been well engaged in the management of funds through working groups. However: governance arrangements have not always been sufficiently formalised; passenger groups have not always been well represented on governance or working groups (for example, the performance fund uses an industry group, the National Task Force, for governance); in some cases management and reporting at fund-level has been weak (particularly in early stages), resulting in slippages and risk of non-delivery in CP4.

9.176 In our August 2012 outputs consultation<sup>206</sup>, we asked for views on indicators to measure the efficiency and effectiveness of the use of the funds. The responses were generally supportive of funds. Several were keen on greater transparency of cost/programme reporting and business cases. Some supported the introduction of indicators to measure efficiency. Network Rail opposed introducing indicators as they may be too cumbersome and will not work for all funds. It also did not consider that average benefit cost ratio (BCR) is an effective indicator but rather the number of schemes completed would be a more appropriate measure. Passenger Focus stated that we need to consider passenger-centric outputs rather than just process and milestones.

9.177 The Secretary of State's statutory guidance to us<sup>207</sup> set an expectation that value for money should play a key role in prioritising the use of industry-led funding pots in England & Wales.

9.178 In the Scotland HLOS, Scottish Ministers required that management of the funds reflect a number of principles, including: simplicity; evidence based; benefits to passengers and freight users; clarity on purpose and transparency on outcomes. The final arrangements in Scotland must adhere to these.

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<sup>205</sup> <http://www.rail-reg.gov.uk/pr13/PDF/sdg-efficient-enhancement-expenditure-0312.pdf> and <http://www.rail-reg.gov.uk/server/show/nav.2231>.

<sup>206</sup> <http://www.rail-reg.gov.uk/pr13/consultations/outputs.php>.

<sup>207</sup> [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/3642/sos-guidance-to-orr.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3642/sos-guidance-to-orr.pdf).

- 9.179 Many of the HLOS projects and funds are focused on increasing capacity on the network at key pinchpoints, but there are also wider issues to be tackled in terms of network resilience both from a climate change and a performance point of view. To this end, a Passenger Journey Improvement fund of £309m (2012-13 prices) was included in the Secretary of State's HLOS, which we have assumed in this determination. This fund will be targeted at improving the service to passengers. It is expected that activities will be focused on three areas: journey time improvement; performance/reliability improvement; and other enhancement opportunities that emerge. We are looking to Network Rail and the industry to identify where interventions are required. We expect options for adding line speed improvements to existing renewal and enhancements schemes will be considered, as will locations for targeted improvements (for example, six of the top ten locations for reactionary ('knock on') delays are on the Brighton Main Line). The flooding at Cowley Bridge junction in 2012 is an example of problems with network resilience.
- 9.180 Both during and beyond CP5, there will be significant opportunities to raise line speeds and increase capacity – including the electrification of significant parts of the network, and in particular the roll-out of ETCS and other new technologies for the management and operation of the network. Alongside the expected longer term impact of HS2, these changes have the potential to offer additional journey-time improvements, with potential economic and connectivity benefits. We are looking to Network Rail, working with the industry, to consider on the back of its Market Studies consultation the scope for journey time improvements from the enhancement of long-distance routes, their social costs and benefits, and their impact on connectivity across Great Britain. It should compare options to make wider changes in the line speeds across the network as technological changes come on stream, alongside targeted interventions to improve journey times and capacity by, for example, addressing bottlenecks. This work should report in time to inform the strategic business plan for the 2018 periodic review.
- 9.181 Many of the consultation responses to the draft determination supported our conclusions on the ring fenced funds, which were based in some part on the consultation responses we received in August 2012 on the outputs framework.
- 9.182 ATOC and several train operators raised a specific point about the Customer Information Strategy, seeking clarity on a specific funding route for this system enhancement work. In England & Wales, the Secretary of State made provision for £100m for the Station Improvement fund, explicitly including better passenger information within the scope of this fund. Therefore, the Customer Information Strategy is eligible for funding through the governance arrangements that are established for the Station Improvement fund; as this fund is intended to enable measures to improve the quality as well as the availability of passenger information. The need to fund the strategy should be seen in the context of the licence obligations on train operators and Network Rail.

## Governance arrangements

9.183 We expect that robust and transparent governance arrangements will be in place for CP5. These will be finalised in the enhancements delivery plan. Network Rail will consult on its draft enhancements delivery plan in December 2013. We will take any consultation responses into account before agreeing the final plan. However, the SBP supporting document 'Definition of CP5 enhancements' included a section on each of the funds which we have reviewed against the following criteria:

- (a) degree of formalisation;
- (b) passenger input;
- (c) reporting arrangements; and
- (d) criteria for scheme selection.

9.184 Through the review we have agreed with Network Rail the following measures.

### ***Degree of formalisation***

9.185 Governance arrangements for new funds will be formalised by the existing cross industry planning oversight group on behalf of RDG<sup>208</sup>. The Network Rail fund holder will ensure Terms of Reference (ToR) for each fund are established and that these will be consistent with the overarching governance arrangements. As it will not be practical to involve every stakeholder in all of the funds, Network Rail should set out why specific stakeholders are involved. Regional transport agencies such as TfL and the PTEs are important stakeholders and are currently included in the Rail Industry Planning Group (RIPG)<sup>209</sup> which was originally established by Network Rail to provide governance<sup>210</sup> over the RUS programme.

### ***Passenger representation***

9.186 As in CP4, passenger groups will be involved through RIPG, which will oversee all funds. Passenger interests should be clearly reflected in the governance of the funds (except for the Strategic Rail Freight Network fund) with issues that matter to them considered when schemes are selected. This will be done at both the overview level with passenger group involvement and at a local level with train operator involvement. Other organisations such as local authorities and local enterprise partnerships also represent passenger interests. We expect to see evidence that scheme selection meets the needs of passengers.

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<sup>208</sup> <http://www.raildeliverygroup.com/>.

<sup>209</sup> This group is currently chaired by Network Rail and involves DfT, Transport Scotland, Welsh Government, ATOC, Rail Freight Group, Rail Freight Operators Association, TfL, Centro, Passenger Focus and ORR.

<sup>210</sup> <http://www.networkrail.co.uk/browse%20documents/rus%20documents/route%20utilisation%20strategies/network/other%20publications/rus%20governance.pdf>.

- 9.187 This issue is wider than the ring-fenced funds and applies to all projects. Network Rail already involves passenger groups, such as Passenger Focus and the Disabled Persons Transport Advisory Committee in different stages of project development.
- 9.188 At the very early stages there is an established long term planning process that is well known and transparent<sup>211</sup>. There are two formal public consultations, open to everyone and traditionally attracting good responses from passengers, elected representatives, local authorities and business groups.
- 9.189 As projects develop and become more defined there are further opportunities for passengers to be involved. There are good examples where Network Rail has involved passengers, such as using Twitter on the Northern Hub; public exhibitions on the plans for Reading station; commissioning Passenger Focus to do completion surveys on small scale station works; and organising a passenger test at Birmingham New Street.
- 9.190 In its consultation response, Network Rail confirmed that it will take account of Passenger Focus research in setting priority schemes. We have told Network Rail to include in its enhancements delivery plan how and when passengers can be involved in the enhancements programme, which includes both the ring fenced funds and other projects.

### ***Reporting and transparency***

- 9.191 A one-page template, describing each scheme being progressed through the funds, will be published on Network Rail's website. In addition, progress will be reported to the RIPG and through the enhancements delivery plan. In its consultation response Network Rail confirmed that it will include this in its delivery plan.

### ***Scheme selection***

- 9.192 A minimum BCR will be set for funds where it is appropriate, such as the Network Rail Discretionary Fund (NRDF) element of the Passenger Journey Improvement fund. The selection criteria should be made transparent and will be set out in the enhancements delivery plan. In its consultation response Network Rail confirmed that it will include this in its delivery plan.
- 9.193 In cases where a BCR is not applicable, there will be alternative selection criteria which should ensure that benefits to passengers and freight users are considered. This should be made easily understandable and transparent to stakeholders.
- 9.194 The steering group for any fund is responsible for deciding what projects should be progressed. It is then the responsibility of the fund holder to secure the right levels of funding for a specific project, and to deliver it efficiently through the Network Rail investment authority process.

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<sup>211</sup> <http://www.networkrail.co.uk/Long-Term-Planning-Process/>



9.195 The scheme selection for Scottish funds requires that key decisions are taken that will benefit Scotland's rail users and support the policies and priorities of Scottish Ministers. Transport Scotland therefore has a specific role in the governance arrangements.

### **Monitoring in CP5**

9.196 We want to increase transparency and incentivise efficient delivery and value for money of schemes progressed through the funds.

9.197 We will use both in-house staff and the independent reporters to complete reviews on a sample of schemes and track recommendations from previous studies on how to improve fund management and governance. In England & Wales, we will check that projects are delivering minimum BCRs and, where a BCR is not applicable, we will assess whether benefits to passengers and freight users are being realised. In Scotland, we will review projects against the principles specified in the HLOS. As with all of our reviews, we will publish results on our website and conclusions in our Network Rail Monitor.

### **Passenger benefits**

9.198 We discuss above the benefits to passengers that will be delivered by the individual projects. In addition to these, we will make sure that the interests of passengers are reflected in the governance of the funds so that the issues that matter to them are considered when schemes are selected.

9.199 Although the outcome of enhancements do not get specifically picked up in the National Passenger Survey, the delivery of improvements from enhancements will be a significant driver of passenger satisfaction. To ensure that Network Rail's delivery plans reflect what matters to passengers and freight customers, we will make sure that the enforceable milestones that are set on the timing of the delivery of passenger and freight customer benefits.

9.200 We will also carry out selected surveys on scheme completion to measure consumer benefits.

### **Freight benefits**

9.201 The Strategic Freight Network has been widely supported in CP4 and is delivering infrastructure for more capacity and longer trains where it is needed. The fund will continue in CP5 in England & Wales and a new one will be created in Scotland.

9.202 In addition, there are many freight benefits accruing from other schemes. For example, gauge clearance on the Midland Main Line through the electric spine combined with East West Rail will provide potentially shorter routes because freight will be able to move from Southampton to Daventry more directly than it currently does. Another example is the remodelling of Ely North junction to provide for forecast



freight flows across East Anglia as well as enhanced passenger services between Cambridge and each of King's Lynn and Norwich.

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# 10. Deliverability of engineering work

## Key messages in this chapter

- In determining the component parts of the CP5 package we have looked at whether outputs are achievable. We also explain whether the overall package can be delivered safely. In this chapter we set out our conclusions on whether Network Rail is capable of delivering the maintenance, renewals and enhancement work set out in this settlement.
- Network Rail is a GB wide company and whilst much of the work will be delivered by the devolved routes our assessment of programme deliverability has been done at the overall level. Our conclusions are therefore at a Great Britain wide level.
- Using total expenditure for maintenance, renewals and enhancements as an approximate indication of the amount of engineering work to be done in CP5 compared with CP4 there is broadly the same level of activity (see Table 3 in the Executive Summary). Network Rail's own assessment concluded that it has a high level of confidence in successfully delivering the required work whilst still meeting its obligations on cost and performance.
- We reviewed Network Rail's assessment, taking into account its track record and how it is planning to manage the delivery risks that it has identified so far.
- We also commissioned our own work in specific areas of risk, such as on complex programmes like ETCS, or work requiring significant step changes in activity, for example the electrification programme.
- Several consultation responses from national freight train operators raised concerns which concurred with our assessment of the main risks and welcomed Network Rail's commitment to identify and reduce delivery risks and update its assessment regularly. We must now ensure that this happens.
- In conclusion we agreed that Network Rail has identified the key factors constraining delivery and has action plans in place to deal with them. There is a process in place with executive-level review to identify further risks and manage them. Given the risks remaining we have decided to regularly review Network Rail's progress against its own action plans.

## Key messages in this chapter (continued)

- The main uncertainty was the enhancements at an early stage of development where it has not yet been possible to fully define the scope of work. We require Network Rail to update its deliverability assessment regularly as these projects become more certain and the delivery dates become clearer in the enhancements delivery plan. This is important to make sure Network Rail has assessed deliverability of the overall programme as these projects become more defined. We also require Network Rail to update its deliverability assessment when it submits its plan for spend on civil engineering renewals for years three, four and five.

## Introduction

- 10.1 In the relevant chapters we explain our approach on a range of outputs and efficient costs that will form the CP5 package that Network Rail is funded to deliver:
- (a) in chapter 11, we look at whether we think the overall package will be delivered safely;
  - (b) in chapter 3, we looked at outputs and explain our conclusions on each of these including judgements as to whether specific targets, such as PPM, are challenging but achievable; and
  - (c) in chapters 5 to 9, we looked at efficient expenditure and concluded whether efficiency targets were achievable. For example, in determining efficient operations costs we did a specific deliverability assessment of the operating strategy. And, for our assumptions on maintenance and renewals costs, we examined the volume levels.
- 10.2 This leaves the question as to whether the total programme of engineering work (maintenance, renewals and enhancements) can be delivered and this chapter explains our conclusions on this.
- 10.3 Network Rail is a GB wide company and whilst much of the work will be delivered by the devolved routes our assessment of programme deliverability has been done at the overall level. Our conclusions are therefore at a Great Britain wide level.
- 10.4 We have compared CP4 to CP5 by using expenditure as a proxy for the amount of work required and by looking at discreet increases in planned volumes. One of the most significant increases in renewals is within the signalling asset, which will nearly double in volume, partly as a result of the operating strategy explained in chapter 7. As well as the work mix changing there will also be different challenges in terms of complexity, for example the operational roll-out of ETCS on parts of the main line network.
- 10.5 Several consultation responses had concerns about the ability of Network Rail to deliver the CP5 programme with GB Railfreight and DB Schenker particularly

unconvinced that some activities could be delivered. Transpennine Express raised the concern that a lack of Network Rail operational planning resource will be a limiting factor in delivering CP5 engineering work. We will be seeking evidence from Network Rail that they are taking steps to address these risks.

- 10.6 In general though, responses to the draft determination broadly concurred with our conclusions. Freightliner expressed concern that Network Rail had not updated its deliverability assessment frequently enough during CP4, particularly as the programme of work moved into delivery. Several responses from the supply chain and county councils referred to the risk of creating a hiatus between CP4 and CP5 in the way we propose to treat enhancements; we have dealt with this in chapter 9.

## Framework for assessing deliverability

- 10.7 Assessing deliverability in the context of a periodic review does not fit neatly with any established frameworks, such as HM Treasury's tool kit for assessing a project's management case. As set out in chapter 9 the HLOSs specified a large number of projects, many of which have not yet been developed sufficiently to define and plan the scope of work. This has made it difficult to conclude in absolute terms on whether the package of work is deliverable. We have therefore reviewed Network Rail's process of assessing and managing the risks, and commissioned some specific reviews of our own to test Network Rail's conclusions.
- 10.8 We have had to strike a balanced view on whether Network Rail's current action plans are sufficient, given the current uncertainties and the time available to manage and reduce the risks.

## Network Rail's analysis

- 10.9 Network Rail has developed ways of assessing deliverability under different planning horizons, i.e. short-term planning of possessions, medium term integration of projects and long-term planning to identify strategic demand/supply issues. In the SBP its deliverability analysis focused on identifying long-term risks. Its assessment collated and challenged the ten individual route plans until it had a sufficiently robust national assessment. The assessment focused on understanding what the critical factors were and identifying mitigating actions. We have agreed with Network Rail that it is not realistic to expect a single integrated and resourced plan for all maintenance, renewals and enhancements work for CP5 at this stage of the planning cycle.
- 10.10 The analysis provided with the SBP looked at the key factors influencing deliverability, their status and the actions required to increase the confidence in Network Rail's ability to deliver the plan.
- 10.11 The SBP included a summary of the conclusions of its assessment, with the main factors constraining deliverability being:
- (a) increased access requirements compared to CP4;

- (b) a shortfall in plant and logistics, particularly tilting wagons and ballast cleaners;
- (c) the amount of track renewals and the ability to deliver these with less disruptive engineering closures, e.g. an adjacent line open; and
- (d) the amount of electrification work, in particular requiring more supervisory, engineering and management resources.

10.12 Network Rail has action plans against each of these and has a high level of confidence that it can address them in the time available to successfully deliver the required outputs for CP5.

10.13 Following the draft determination we asked Network Rail for an update on its progress in this area. It explained how it was improving its programme integration function to provide more accurate longer-term forecasts. For example it has established a new set of integrated planning principles, and initiated a regular review meeting that considers a six-yearly critical resource forecast. It has also issued improved planning guidelines and rules so that there is consistent long-term forecasting from its devolved routes.

10.14 Network Rail also updated us on its progress with addressing the mitigating actions it had identified in the SBP, for example, the risk of potential shortages of tilting wagons has been identified and procurement is underway to supplement the fleet for CP5 demands.

## **Our analysis and conclusions**

10.15 We have agreed with Network Rail's assessment of what it needs to do to build the capability of its own organisation and that of the supply chain so that the work volumes in CP5 are achievable. We noted that although the aggregate maintenance, renewal and enhancement expenditure is broadly the same as CP4, the volume of enhancement work is greater, and the portfolio is less mature than was the case at the same point in the previous control period. There is also a significant demand for electrification resources that was not required in CP4 and some notable route-based concentrations of work, such as on the Great Western Main Line.

10.16 We found that it had identified the right risks and was actively managing them, with action owners named and an executive-level review process in place.

10.17 In addition to our review of the SBP, we commissioned some specific pieces of work to look at areas of complexity and uncertainty:

- (a) Halcrow reviewed Network Rail's readiness to implement the ETCS schemes in CP5. They concluded that the likelihood of success depended on Network Rail

completing a series of important actions in 2013<sup>212</sup>. We will be closely monitoring Network Rail's progress against these;

- (b) Nichols reviewed the programme management arrangements of the emerging portfolio of projects in the north of England, which is a CP5 deliverable. Network Rail has agreed to the recommendations and is getting on with implementing them. This increased our confidence that this programme can be delivered within CP5<sup>213</sup>;
- (c) we reviewed Network Rail's electrification resourcing strategy and attended an internal Network Rail review to build our confidence that Network Rail's actions were being put into practice. For example a key mitigating action is for Network Rail to contractually commit to framework agreements with suppliers so that they have certainty to start building capability ahead of the main implementation timescales; and
- (d) as part of our CP4 work we are reviewing the deliverability of the Great Western Main Line electrification programme which we remain concerned about, and are currently seeking evidence that the route electrification programme is part of a robust and integrated programme of work and is therefore deliverable within the timescales DfT have specified.

10.18 Under an early start mechanism we have allowed Network Rail to commence work on some enhancements projects now so there is no hiatus and Network Rail can plan ahead with the industry. This will help to mitigate risk of non-delivery in CP5.

10.19 However, there are still significant challenges for Network Rail to overcome, including:

- (a) there is not currently a joined-up and integrated specification and plan covering all infrastructure, rolling stock and depot changes required for CP5. This is needed as soon as possible to give assurance that scope and outputs are aligned and optimised;
- (b) there are notable concentrations in the scale of work being undertaken by Network Rail in CP5 that inevitably create deliverability risks, for example the Western route which is responsible for about 20% all projects with a total cost of over £3bn including Reading, Crossrail, IEP, several electrification schemes and ETCS. Network Rail's route plans and our detailed review of the electrification projects provides evidence of the focus and commitment to this major upgrade programme, but this undoubtedly represents a major challenge to efficient and timely delivery. Other examples are the East Coast Main Line and Midland Main Line that have a total of around £2bn of assumed investment;

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<sup>212</sup> <http://www.rail-reg.gov.uk/server/show/nav.2231>.

<sup>213</sup> <http://www.rail-reg.gov.uk/server/show/nav.2231>.

- (c) the profile of SBP expenditure shows cost falling significantly towards the end of the control period. This appears to be unrealistic for a portfolio that includes so many schemes at an early stage of development and we have made an adjustment to re-profile Waterloo and Electric Spine expenditure towards the end of the control period; and
- (d) in some areas there will be demand peaks for highly specialised skills.

10.20 In the draft determinations we concluded that Network Rail had put in place a process for identifying and managing the overall delivery risks it faced in CP5 and therefore we supported its assessment that it should be able to deliver the work volumes.

10.21 Further to the consultation responses and an update from Network Rail, we have not changed our assessment, but we are aware that there are particular pinch-points, for example around engineering access and critical resources such as signalling testers, that remain a significant challenge for the industry. We will be holding frequent review meetings with Network Rail to check that its deliverability assessment is being updated, that its work-bank planning process continues to improve, and that its planned actions are being delivered to reduce the risk of non-delivery.



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# 11. Health and safety

## Key messages in this chapter

- Network Rail has a legal obligation under the Health and Safety at Work etc. Act 1974 to maintain and, where reasonably practicable, improve work-related health, safety and welfare risks to workers, and the health and safety of passengers and others affected by rail operations. Nothing in our determination should prevent Network Rail from complying with health and safety law.
- We will continue to proactively inspect Network Rail's management of health and safety in CP5 and to monitor Network Rail's delivery of its asset policies, including where this affects infrastructure safety. We will continue to use our regulatory tools to secure legal compliance with health and safety law.
- We will continue to use our railway management maturity model as a benchmark to measure improvement in Network Rail's health and safety management capability.
- This determination addresses safety concerns identified in respect of Network Rail's ability to manage planned track maintenance activities and understand and control the risks associated with structures and earthworks failures.
- We are setting one regulated output for level crossings; Network Rail is required to deliver projects (including level crossing closures), to maximise the reduction in risk of accidents at level crossings using the £67m ring-fenced fund made available by the Secretary of State and an additional £32m provided in this determination.
- The Scottish Ministers provided a ring-fenced fund of £10m to facilitate the closure of level crossings. This is being managed in the same way as other specific funds made available by the Scottish Government.
- We have assumed a different profile for efficiency assumptions for track maintenance (this includes off track in CP5), partly because of our concern about how quickly Network Rail can introduce its planned initiatives and new ways of working without compromising safety.
- Risks to the workforce will be reduced through provision of £163m to enable the taking of faster and safer isolations, and £70m is being made available to replace a number of road-rail vehicles.
- Funds have been made available to develop new technologies to improve protection and warning for track workers (£10m) and to develop specialised, safer road-rail vehicles (£10m).

## Key messages in this chapter (continued)

- We are looking for Network Rail to improve its occupational health management and in doing so achieve £20m in cost savings in the final year of CP5, with a total saving of £55m in CP5.
- We expect Network Rail to improve its health and safety performance in CP5 and we will monitor its implementation of the strategies on safety and wellbeing and health and wellness.

## Introduction

- 11.1 Network Rail is required through the determination to provide a railway that is safe for passengers, the workforce and the public, provides a good service to its customers and delivers value for money for taxpayers and funders.
- 11.2 Health and safety has been integral in our assessment and in our determination and in this chapter we explain the health and safety context in which we have made our decisions. Our determination has been informed by the current health and safety risk profile presented by Network Rail's operations and our assessment of its ability to manage those risks. We have also considered the health and safety risks that Network Rail will face in CP5 arising from its planned activities.
- 11.3 Health and safety is a matter reserved for the UK Government and its requirements are set out in the HLOS prepared by the Secretary of State. Health and safety arrangements and requirements apply equally to England, Wales and Scotland.
- 11.4 The primary legislation that protects passengers, the public and the workforce is the Health and Safety at Work etc. Act 1974, which requires employers to ensure so far as is reasonably practicable the health and safety of their employees and those affected by their operations<sup>214</sup>.
- 11.5 We assess Network Rail's health and safety performance through our inspection and investigation work; we monitor its health and safety performance through indicators provided by the rail industry and we compare its performance with other railways.
- 11.6 We have a range of regulatory tools to secure improvements in health and safety standards and to secure legal compliance with health and safety law. We have a strategy for the regulation of health and safety risks<sup>215</sup>.

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<sup>214</sup> The term reasonably practicable has a long established history in legislation, it is a narrower term than physically possible and means that the degree of risk in a particular situation can be balanced against the time, trouble, cost and physical difficulty of taking measures to avoid the risk.

<sup>215</sup> See our website at: <http://www.rail-reg.gov.uk/server/show/nav.1243>.

## Our approach to health and safety in the determination

11.7 In our determination we have taken into consideration:

- (a) the health and safety risks to passengers, the public and the workforce as a result of Network Rail's operations;
- (b) our assessment of Network Rail's ability to control those risks, based on evidence from our inspection findings and our assessment of Network Rail's health and safety management system using our railway management maturity model; and
- (c) whether the challenge to Network Rail in terms of our overall package, including the level and phasing of our efficiency challenge, is consistent with Network Rail meeting its safety obligations.

11.8 To make our assessment and draft determination, we reviewed the SBP, held a specific health and safety meeting with Network Rail as part of our series of challenge meetings and sought clarification on health and safety issues at route meetings. In the final determination we have taken account of stakeholder responses.

## HLOS requirements

11.9 The Secretary of State considers the continued safe operation of the railway to be of the utmost importance and requires the industry to continue to improve its record on passenger and worker safety through the application of the "so far as reasonably practicable" approach and to ensure that current safety levels are maintained and enhanced by focusing domestic efforts on the achievement of European Common Safety Targets.

11.10 The Scottish Ministers have committed to working closely with the Secretary of State to ensure that the interests of Scotland are fully reflected on issues of safety.

11.11 The Secretary of State included a specific ring-fenced fund of £65m (this was in 2011-12 prices, the £67m referred to elsewhere in this chapter includes an uprating for inflation) to reduce the risk of accidents at level crossings. The Scottish ministers provided a ring-fenced fund of £10m to facilitate the closure of level crossings in Scotland.

## Network Rail's SBP submission

11.12 Network Rail made a number of proposals for health and safety in CP5 in its SBP, including:

- (a) eliminating all fatalities and major injuries to the workforce with a 50% reduction in train accident risk by 2019;
- (b) in the longer term, 'everyone goes home safe, every day';

- (c) to reduce the risk of accidents at level crossings by 8%, using the ring-fenced level crossing fund; and
- (d) to improve worker safety through three investment funds; for road-rail vehicles, for taking safer and faster electrical isolations and the development of new technology to alert track workers of approaching trains.

## Health and safety in CP4

- 11.13 In the following paragraphs we briefly provide some health and safety context for the decisions in our determination. Further detail on our view of the health and safety performance of Britain's railways is provided in our annual report<sup>216</sup>.
- 11.14 European legislation requires the establishment of industry wide Common Safety Targets and individual member state metrics (called National Reference Values). As of April 2012 the railway in Great Britain was broadly meeting employee and workforce targets.
- 11.15 The HLOS for CP4 set the rail industry a target to reduce passenger and workforce risk by 3% by March 2014. Passenger and workforce risk is measured using RSSB's Safety Risk Model<sup>217</sup>. At January 2013 (SRM version 7.5), passenger risk had reduced by 5.7% and workforce risk had reduced by 11.6% since the start of CP4. This is an 'all industry' measure and does not make clear Network Rail's specific performance on workforce safety.
- 11.16 Network Rail uses a fatalities and weighted injuries measure<sup>218</sup> to measure workforce safety and it sets itself targets. During this year the fatalities and weighted injuries measure (FWI) has worsened and at September 2013 the measure was 0.153 compared to the target of 0.092.
- 11.17 There is little reliable workforce safety data for other European countries, but intelligence suggests that workforce fatalities and injuries are commonly caused by working on or near running lines, working at height, near high voltage electricity and operating road-rail vehicles. These are the same workforce safety issues that we find on our mainline railway.

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<sup>216</sup> *Health and safety report 2013*, ORR, July 2013, available at <http://www.rail-reg.gov.uk/server/show/nav.2998>.

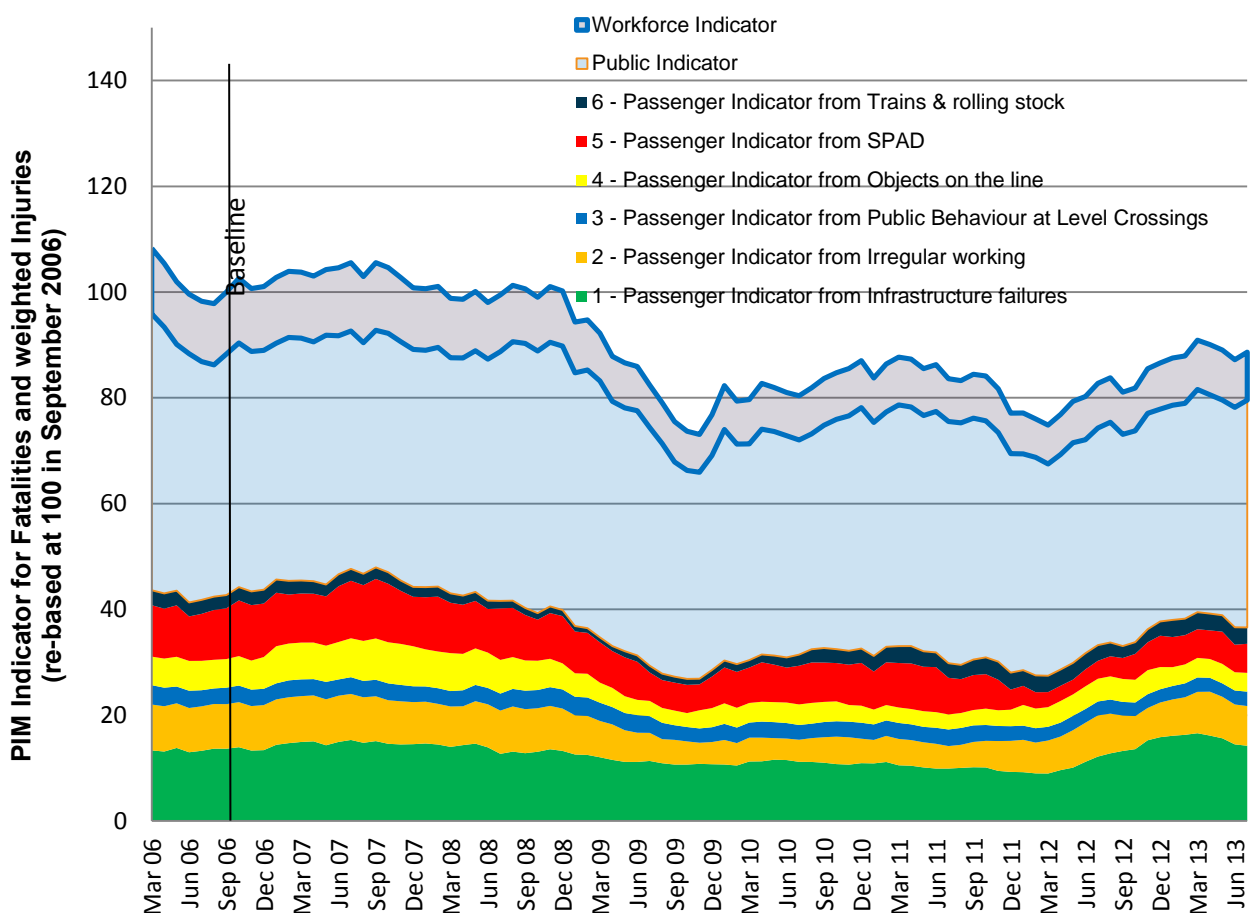
<sup>217</sup> The Safety Risk Model (SRM) is a quantitative representation of the potential accidents resulting from the operation and maintenance of the GB rail network. It comprises a total of 120 individual models, each representing a type of hazardous event. A hazardous event is defined as an event or an incident that has the potential to result in injuries or fatalities.

<sup>218</sup> Network Rail primarily measures workforce safety by the Workforce safety (fatalities and weighted injuries) measure. This measure compares the weighted number of personal injuries that are reported in its Safety Management Information System (SMIS) for all Network Rail staff and contractors working on Network Rail's managed infrastructure, normalised per million hours worked. This measure provides information to help monitor and control accidents and injuries to the workforce.

11.18 Train accidents are rare, but they are the most likely cause of serious harm to members of the public including passengers. The RSSB has developed an industry model to help understand the underlying risks that might result in a train accident. This is the precursor indicator model (PIM); the model quantifies changes in the underlying risk and plots historical data to predict future trends. RSSB set a benchmark for the PIM in September 2006 in order to measure changes from that point.

11.19 The figure below shows the PIM at July 2013, with an overlay to show the overall public (including passengers) and workforce indicators. The figure shows that the PIM has fluctuated but with an overall downward trend until early 2012.

**Figure 11.1: Precursor Indicator Model for train accident risk**



Source: RSSB PIM version 7.5, July 2013.

11.20 The overall PIM measurement has increased steadily since early 2012 and the risk to train passengers has now returned to about the same level as it was in December 2008. Since March 2013 the measure has fallen slightly. Of all the measured precursors in this model, failed earthworks (due to heavy rainfall and flooding in the summer of 2012) are now the largest single source of train accident risk to passengers. In 2012, the incidence of structural failures was about three times the

average for the preceding three years. The PIM is a mainline industry-wide measure, but the management of the infrastructure is the responsibility of Network Rail.

- 11.21 The PIM indicator for public behaviour risk at level crossings in 2011-2012 was at an all-time low, reflecting the work by Network Rail and the industry, but the risk has increased 7% in 2012-2013. Level crossings still present nearly half of the potential catastrophic train accident risk, if injuries to passengers in road vehicles are included.
- 11.22 Network Rail's health and safety performance as measured by the number of adverse events is good compared to other European countries, however, our determination reflects the recent increases in passenger risk (including public risk) from infrastructure failures, the continuing risks associated with level crossings and the risk of fatalities and serious harm to the workforce.

## **Our inspection work and our assessment of Network Rail's SBP**

- 11.23 It is important to assess how well a business can control the risks arising from its undertakings so that unsafe events do not happen. We assess how well Network Rail is able to identify and control risk through a programme of proactive, risk-based audit and inspection work.
- 11.24 Findings from our inspection work are judged against our railway management maturity model to assess Network Rail's performance against a number of components necessary for an effective safety management system. In CP4, we assess that Network Rail has improved some aspects of its management capability towards excellence but other components are some way below excellent and require improvement.
- 11.25 Our determination for CP5 has been informed in particular by our findings from our inspection and investigation work in the areas of infrastructure safety, workforce safety and occupational health.

## **Track and off track maintenance and renewals**

- 11.26 In CP4, we have inspected Network Rail's management of track, off track and civil engineering assets, because failures in these assets are precursors to train accidents.
- 11.27 We found insufficient resource in maintenance depots to carry out all the planned maintenance work in track and off track assets. Approximately 2,700 jobs were lost when Network Rail introduced a standard structure and resource model in its maintenance depots, to improve efficiency and reduce costs. The sizing model in off track, drainage and some aspects of track maintenance was not properly scoped and it underestimated the actual work volumes. The lack of resource to deliver the planned maintenance volumes has been compounded by failures to fully implement new technologies such as automated track inspection systems and improve productivity through changes to working practices.

- 11.28 We prompted Network Rail to carry out a capability study, because we were concerned about its failure to deliver its planned track maintenance volumes. This found that maintenance volumes were insufficient to sustain asset condition in the longer term and it recommended significant additional resource to increase maintenance volumes and recover asset condition in track, fencing, vegetation and drainage.
- 11.29 Planned maintenance addresses underlying causes of failures and insufficient planned maintenance increases the reliance on inspection and reactive maintenance to maintain a safe railway. It is unlikely that Network Rail will meet its planned track and off track maintenance volumes in CP4.
- 11.30 We have served formal enforcement notices requiring improvements to the physical condition of the assets (for example repairs to fencing) and requiring improvements to processes for maintaining a safe asset (for example management processes for proper track inspection).
- 11.31 In its SBP, Network Rail said that maintenance efficiencies in CP5 will come from headcount reductions, improving productivity and avoiding unnecessary work. Network Rail forecast a headcount reduction of 1,262 (8%) on the CP4 exit numbers, with a sharp reduction at the start and end of CP5. The proposed headcount reductions are not of the same order as in CP4, but in our assessment they are significant on top of the reductions already made.
- 11.32 Network Rail proposes to improve productivity through a number of central initiatives, described in this determination at chapter 8. These include risk-based maintenance; remote condition monitoring, changes to working practices including multi-skilling and improved information management and mechanisation.
- 11.33 Our assessment of the central initiatives found they are better described than similar initiatives in CP4, but their delivery is dependent on a number of other factors, for example the successful resolution of industrial relations issues and the delivery of renewal and enhancement programmes. Network Rail acknowledges many of the initiatives require a long lead time, and they will not provide sustainable efficiencies until the end of CP5.
- 11.34 Network Rail's Transforming Safety and Wellbeing strategy sets out a number of key enablers to support the central initiatives and to help achieve changes to working practices. Enablers include an improved safety culture, a simplified rules structure and innovation by the routes. These enablers depend on developing employee competence, capability, judgement and awareness to allow Network Rail to move to being a safer and more efficient organisation.
- 11.35 There is no plan linking headcount reductions in CP5 with the implementation of the central initiatives and enablers and therefore no contingency plans or go/no-go decision points in the event of central initiatives and enablers not delivering.



- 11.36 We found a difference of opinion between some routes and the Network Rail centre about what, if any, efficiency will be realised through a simplified rules structure, which is a key enabler. Independent reporters concluded that a simplified rules structure was unlikely to realise any significant net cost saving benefits but it should achieve benefits from improved compliance (safety benefits). The reporters' report can be found on our website<sup>219</sup>.
- 11.37 We found that some routes lacked an understanding of the resource required to deliver the planned off track and drainage work, even though they have agreed to achieve the maintenance and renewal efficiencies.

## Response to our draft determination

- 11.38 A number of respondents to the draft determination, including RMT, TSSA and ASLEF commented on potential adverse effects on safety from the proposed efficiencies in track maintenance and track renewals. In particular concerns were raised about staffing levels in maintenance depots, multi-skilling and risk-based maintenance.

## Our determination

- 11.39 The determination makes a number of provisions to help Network Rail to implement its asset policies and deliver a safe track and signalling infrastructure.
- (a) partly because of concerns about how quickly Network Rail can introduce changes without compromising safety, we have assumed a different profile for efficiency assumptions for track maintenance (this includes off track in CP5). This means that Network Rail has more time to introduce initiatives and new ways of working to improve efficiency. Chapter 8 has more details.
  - (b) Network Rail provided some new information in its response about costs and efficiencies for track renewals and our final determination has increased funding for track renewals by approximately £100m. We will monitor Network Rail's delivery of track renewals to ensure that high criticality renewals are prioritised.
  - (c) we are strengthening the outputs framework and indicators for asset management and we will be monitoring Network Rail's delivery of planned asset maintenance and renewal volumes.
  - (d) we require Network Rail to produce an overall maintenance strategy, at the same time as its delivery plan, to clarify how the various maintenance initiatives will be optimised and integrated across its asset base. This strategy should include a change plan to show how it will be implemented taking account of human factors and staff competency issues.
  - (e) we will continue to audit and inspect the implementation of Network Rail's asset policies and we will use our regulatory tools when necessary to ensure safety.

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<sup>219</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

## Structures and earthworks

- 11.40 Civils structures include bridges, tunnels, earthworks, embankments cuttings, estuarine defences and their associated drainage assets.
- 11.41 Failures of earthworks increased in CP4, both in overall numbers and severity, including earthwork failures at Cruachan, Loch Treig, St Bees, and Brithdir. There have been a number of occasions when trains have run into failed earthworks, including three within a two month period in Scotland. Nobody was seriously hurt in these incidents but the potential for harm is clear. We served an improvement notice in August 2012, requiring Network Rail in Scotland to assess the risks associated with failed earthworks in adverse weather and put in place appropriate operational control measures (for example speed restrictions). We see operational controls as an interim solution and expect the frequency and severity of earthwork failures to be reduced in CP5 through proper asset management (for example, through the proper provision and maintenance of drainage to cope with severe weather events). We also expect Network Rail to carry out a similar process of risk assessment and controls in other routes.
- 11.42 CP4 has also seen a number of significant structural failures including at Stewarton, Enterkin Burn Viaduct, River Crane, Bromsgrove, Old Beck and Scout Tunnel. Our inspection work found a significant backlog in structures examinations and we served an improvement notice requiring the backlog of inspections to be addressed. Network Rail has responded to the notice and its knowledge of asset condition is improving, but there are still some significant gaps. For example, at the end of June 2013, 5,900 of the 28,300 bridges in Network Rail's portfolio did not have a current capability assessment (a strength assessment within the last 18 years). Network Rail is working to close this gap by the end of CP4.

### Our determination

- 11.43 This determination makes a number of provisions to help enable Network Rail to implement its asset policies and we will be monitoring Network Rail's delivery of safe civil structures in CP5:
- (a) this determination introduces a new civils adjustment mechanism, which is set out in chapter 8. This will allow the volume and nature of the work on civils structures to reflect Network Rail's improving understanding of its asset;
  - (b) we will ensure that Network Rail takes account of its own risk-ranking process and prioritises structures assets with a high probability of failure and a very significant consequence from that failure (multiple fatalities) in the maintenance and renewal programmes in CP5; and
  - (c) Network Rail's structures and earthworks policies have been significantly revised for CP5 and we will continue to monitor how well Network Rail manages the sustainability of the assets and their resilience to adverse weather events.

11.44 Abellio in its response supported our approach on the long-term sustainability of the civils structures. They recognised that operational measures to control safety risk had been improved but want to see permanent long-term resilience. No other material consultation responses were received on this issue.

## Level crossings

- 11.45 There are around 6,500 level crossings managed by Network Rail and this accounts for 50% of catastrophic train risk. The safe design, management and operation of level crossings can reduce the risks, have a positive effect on user behaviour and so reduce the number of fatal and serious incidents.
- 11.46 Network Rail made a commitment in March 2012, following a number of high profile level crossing accidents to reduce the risk of accidents at level crossings by 50% by the end of CP5 through level crossing closures, renewals and upgrades. It is on target to achieve a risk reduction of 26% by the end of CP4. Risk reduction is measured using Network Rail's Level Crossing Risk Indicator Model; the model generates a risk score that can be used to compare risk between level crossings and to monitor changing levels of risk.
- 11.47 In its SBP, Network Rail proposed to reduce the risk of accidents at level crossings by 8% using the ring-fenced fund made available by the Secretary of State. Projects to achieve the 8% risk reduction included closing 30 high risk level crossings, fitting 200 red light enforcement cameras, and replacing whistle boards with train detection equipment at 300 high risk locations.
- 11.48 In our draft determination we said Network Rail should use the ring-fenced fund to deliver the maximum risk reduction at level crossings irrespective of geographical location (England, Scotland and Wales) and that the fund should be managed centrally and used across the whole level crossing portfolio.
- 11.49 The Scottish Ministers in their HLOS provided a ring-fenced fund to facilitate the closure of level crossings to achieve efficiency benefits, although they recognise that there will also be potential safety benefits.

## Response to our draft determination

- 11.50 In its response to the draft determination Network Rail proposed a £120m fund to reduce the risk of accidents at level crossings by 25% in CP5. The £120m<sup>220</sup> is broken down as follows:
- (a) £67m ring fenced fund, already provided in the draft determination. Network Rail's response indicates that this is now expected to achieve a 16% risk reduction. This is significantly different from the 8% risk reduction quoted in the SBP. Network Rail says this is because its most recent plans are primarily for

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<sup>220</sup> The amounts in the subparagraphs do not sum exactly to £120m due to rounding.

closing crossings. The best benefit to cost ratio comes from closing high risk passive crossings (crossings with fixed warning signs but with no barriers, warning lights or warning sounds);

- (b) £10m ring fenced fund already provided in the draft determination for level crossing closure in Scotland;
- (c) £32m for level crossings closures (in addition to the £67m in the draft determination); and
- (d) £10m to provide new products for routes including red light enforcement and replacing whistle boards with train detection equipment.

11.51 A number of respondents welcomed the ring-fenced level crossing fund; ASLEF and TSSA thought more funding should be made available for risk reduction at level crossings.

## **Our response / determination**

11.52 We have considered all stakeholder consultation responses and conclude:

- (a) a level crossing ring-fenced fund of £99m (including the £67m ring-fenced fund in the draft determination) is provided to achieve the maximum reduction in risk of accidents at level crossings. The delivery of the planned projects to deliver this is a regulated output;
- (b) arrangements to maximise the sustainable reduction in risk should be set out in Network Rail's delivery plan. These arrangements should include the process for reporting to ORR each year on projects to achieve the maximum risk reduction and actual risk reduction achieved;
- (c) the fund should be retained and managed centrally and used across the level crossing portfolio in England, Scotland and Wales;
- (d) Network Rail proposes to deliver a 25% reduction in risk at level crossings as soon as possible and in any case by the end of CP5, this follows on from the 25% reduction in risk delivered in CP4. The baseline will be measured using Network Rail's level crossing risk reduction model;
- (e) a £10m ring-fenced fund is provided to facilitate level crossing closure in Scotland. This fund will be managed in the same way as other specific funds provided by the Scottish Government, described in chapter 9; and
- (f) the risk reduction achieved by using the ring-fenced level crossing fund is in addition to reducing risk so far as is reasonably practicable through, for example, routine risk assessment, the renewals and enhancements programmes, or the introduction of red light enforcement cameras, train detectors to remove the need for whistle boards and cameras to gather data about level crossing use.

## Workforce health and safety

- 11.53 Our recent inspection work continues to show that improvements are required in Network Rail's management of workforce health and safety. Network Rail recognises this is the case and its Transforming Safety and Wellbeing strategy sets out a number of proposals including the development of the right safety leadership and culture.
- 11.54 In its SBP, Network Rail proposed three separate investment funds to improve the health and safety of the workforce; £100m to develop new technology to warn track workers of approaching trains, £141m for improvements to road-rail vehicles and £230m for taking safer and faster electrical isolations.
- 11.55 These investments are considered here in our determination because safety improvements were cited as the main reason for the investments. Where we considered the costs of these investments went beyond Network Rail's obligations under the Health and Safety at Work etc. Act 1974, we applied our section 4 duties under the Railways Act 1993 (amended by the Railways Act 2005), to decide on the level of funding.

## Track worker safety

- 11.56 Network Rail proposed an investment fund of £100m in its SBP to develop new technologies to improve protection and warning for track workers.
- 11.57 Workers are required to work on or near lines where trains are running to carry out inspection and maintenance work. The number of worker fatalities as a result of being hit by a train is at an all-time low; one fatality occurred in 2009 and more recently there was a fatality in 2012. However, there have been some recent incidents when workers have been hit and survived and a number of near misses.
- 11.58 There are a number of different ways to protect track workers from being hit by trains, including the use of warning systems that give workers enough time to reach a place of safety. Some warning systems are automatic or semi-automatic, but it is still common for track workers to rely on warnings given by people (lookouts) using a flag or horn.
- 11.59 Our inspection and investigation work in the area of track worker safety has found examples of poor planning and improper risk assessment by Network Rail managers and poor communications, behaviours and hazard perception by those carrying out the work. We have used formal enforcement action to secure improvements in the design and operation of the current warning systems.
- 11.60 We asked Network Rail to address the main risks associated with working on the track in its SBP and Network Rail has set out how it intends to do this in its Transforming Safety and Wellbeing strategy.
- 11.61 We fully support and have been pressing for improvements in track worker safety; where work on or near the line is necessary then track workers should have the

highest levels of protection, so far as is reasonably practicable. However, our determination does not provide the £100m as Network Rail proposed because it has not made a compelling case. Instead our determination includes a ring-fenced fund of £10m for the development of new technologies to alert track workers in recognition of the significant benefits to both safety and efficiency that can be obtained from the introduction of such technology. This should be managed as a central fund to ensure that development work is focused and efficient. We will agree the governance arrangements for this fund with Network Rail as part of its delivery plan (which will be published by the end of March 2014).

11.62 Network Rail has committed to improving track worker safety in CP5 and we will monitor the implementation of its Transforming Safety and Wellbeing strategy. We also expect to see improvements to worker safety through the increasing use of technology and the requirement for fewer people to work on or near the line.

11.63 No material consultation comments were raised in relation to this issue.

## Road-rail vehicles

11.64 Network Rail proposed an investment of £141m to improve the safety and efficiency of road-rail vehicles.

11.65 Road-rail vehicles are used extensively in maintenance, renewal and construction work, for lifting and moving materials and equipment. Most of these vehicles are converted for the railway from construction machines by attaching rail wheels and many of these machines are used for tasks for which they were not originally designed. For example excavators are converted to lifting machines.

11.66 The road-rail excavator fleet has a particularly poor safety record; workers have been seriously injured or killed when machines have overturned because of their high centre of gravity or machines have run away because of poor braking. These machines have also come into contact with overhead line equipment and have the potential to foul adjacent lines when trains are running. Investigation of accidents and our inspection work has found an underlying pattern of poor machine design and poor risk control. We have served over 20 enforcement notices on road-rail vehicles in CP4 and the industry has responded by making piecemeal improvements with layers of safety features and warning devices being fitted retrospectively.

11.67 In its SBP, Network Rail proposed a specific investment of £141m to improve the safety and productivity of five types of road-rail vehicle:

- (a) mobile elevated working platforms;
- (b) modular lorries;
- (c) Iveco Daily 4x4s;
- (d) Mitsubishi Canters; and
- (e) excavators with lifting capacity (Liftex machines)



- 11.68 For the machines listed (a) to (d) above, Network Rail proposed an investment of £70m for a new fleet of vehicles with an improved specification and configuration and to allow life-expired vehicles to be replaced. These machines are conventional machines and commercially available and are converted to perform with road and rail capability.
- 11.69 Network Rail proposed a fund of £71m to procure a specifically designed and manufactured fleet of machines to replace the current excavator machine (type (e) above).
- 11.70 Independent reporters reviewed the proposals, but their report was not available at the time of the draft determination and so we included the full investment amount (£141m) at that stage.
- 11.71 The reporters concluded that there was a case for investment for the replacement of mobile elevated working platforms, modular lorries, Iveco Daily 4x4s and Mitsubishi Canters (types (a) to (d) above). We considered the costs of these investments went beyond Network Rail's obligations under the Health and Safety at Work etc. Act 1974, so we applied our section 4 duties under the Railways Act 1993. We applied efficiency in our model, but at similar levels to those forecast by Network Rail and we assessed the post-efficient expenditure required for road-rail vehicles (a) to (d) above as £70m. The reporters' report can be found on our website<sup>221</sup>.
- 11.72 The reporters found that the design for the new 'Liftex' machine (type (e) above) was insufficiently developed to demonstrate its technical feasibility to meet the necessary safety and productivity challenges. They found there was clear potential for productivity and safety improvements and thought further development was worthwhile.

## Our determination

- 11.73 This determination provides:
- (a) £70m for the replacement of mobile elevated working platforms, modular lorries, Iveco Daily 4x4s and Mitsubishi Canters; and
  - (b) £10m as a ring-fenced fund to develop a replacement machine for the current excavators in recognition of the benefits this could unlock. The fund should be managed centrally to ensure that the design developed meets all safety requirements. We will agree the governance arrangements for this fund with Network Rail before April 2014 through its delivery plan.
- 11.74 No material consultation comments were raised in relation to this issue.

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<sup>221</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.



## Taking safer and faster isolations

- 11.75 The current methods for taking isolations on both the DC and AC electrical networks have not changed for many years. There is heavy reliance on procedures to control the risks of electrocution and electric shock, rather than by using safely designed equipment that allows isolations to be taken remotely. One worker has been killed or seriously injured almost every year since 1998 working on or near Network Rail's power systems.
- 11.76 Our investigations find confused isolation arrangements, poor understanding of what equipment is live and a lack of clarity about when isolations are required. Current electrical standards on the railway lag behind other UK industries and we have taken recent enforcement action to ensure compliance with the specific requirements of the Electricity at Work Regulations 1989. We have required Network Rail to review its isolation processes particularly at the design and build stage and some progress has been made.
- 11.77 In its SBP, Network Rail proposed an investment fund of £230m for taking safer and faster isolations in CP5. This proposal included: £127m for DC isolations in key locations in Wessex, Sussex and Kent (£100m of which is in CP5); £79m for improvements to the AC network in England & Wales; £11m for improvements to the AC network in Scotland; and £40m for further unspecified DC improvements. Network Rail has cited safety improvements as the main reason for the investments.

## Our determination

- 11.78 Our analysis found that Network Rail:
- (a) has made a positive case for an investment of £190m, for taking safer and faster isolations on the AC network (£90m) and DC network (£100m);
  - (b) did not provide a sufficient case for the investment of £40m on the DC network; and
  - (c) £27m of the £230m was for work in CP6 and was not considered.
- 11.79 We considered the costs of these investments went beyond Network Rail's obligations under the Health and Safety at Work etc. Act 1974 and so we applied our section 4 duties under the Railways Act 1993. We have applied the efficiency assumption for electrical power and fixed plant renewals to the £190m investment and we assess the efficient expenditure at £163m. We will monitor the use of this fund in enhancement work to ensure that it delivers the required safety improvements.
- 11.80 No material consultation comments were raised in relation to this issue.

## Occupational health

- 11.81 Poor management of occupational health issues has a detrimental effect on the individuals who suffer ill-health and it creates inefficiencies and costs within organisations.

- 11.82 Our recent inspection work found that Network Rail has no suitable coordinated approach to health management, particularly at route level. We found poor risk assessments and a lack of appropriate basic controls on site. Network Rail acknowledges that historically occupational health issues have not been managed systematically. However, it has now produced its employee health and wellbeing vision and strategy and a six-point action plan to start to deliver this strategy in CP5.
- 11.83 Network Rail suggested that it could self-finance its occupational health programme in CP5, i.e. that spend on occupational health would be covered by corresponding productivity improvements and hence efficiency savings.
- 11.84 At the time of the draft determination, we had limited information from Network Rail on the costs associated with ill-health. We carried out some research, literature reviews and case studies and attempted to quantify the costs of inefficiency in occupational health. We considered what good practice looks like, what processes support good practice and their associated costs and estimated likely efficiency savings.
- 11.85 In our model to quantify the costs, we used three key variables: headcount, absence levels and cost of absence. In the draft determination we applied a conservative increase to our overall efficiency estimates of approximately 0.07% per annum across Network Rail's support, operations, and maintenance, renewals and enhancements costs to reflect the savings which could be achieved through improvements in occupational health. This amounted to approximately £20m of savings in the final year of CP5.

## **Response to our draft determination**

- 11.86 In its response to our draft determination, Network Rail provided some new information. It indicated that staff absence levels had reduced significantly in CP4 and were now consistent with comparable industries. Network Rail used an alternative bottom-up modelling approach, to calculate potential savings and assumed a 5% improvement in absence rates over CP5. Network Rail's own analysis suggested it could achieve a net saving of £5m over the whole of CP5.
- 11.87 TSSA welcomed our focus on occupational health but questioned why the upfront costs of implementing a better regime had not been factored into our assessment.

## **Our response**

- 11.88 We have now reviewed the approach and assumptions that we used in our draft determination and we have also considered the analysis that Network Rail included in its draft determination response.
- 11.89 Estimates of the cost of ill health are highly dependent on the methodology and assumptions used. We do not consider there to be a single approach to modelling efficiencies in this area and we think that Network Rail's approach is a suitable alternative to our own. However, we consider that Network Rail's assumptions are too conservative, particularly its assumption on the average cost of absence per

employee (Network Rail assumed this was £254, whereas we consider a value of £750 is more appropriate as it is closer to the value used by the Confederation of British Industry (CBI)). Also, Network Rail's analysis considered savings within CP5, rather than savings compared to its position at the end of CP4.

- 11.90 We have now updated our analysis with the latest information we have for our key assumptions (headcount, absence levels and cost of absence per employee). We have also considered the cost estimates from using Network Rail's preferred approach but reflecting our own key assumptions. This updated analysis provided estimates that were broadly consistent with our draft determination efficiency assumptions, i.e. that Network Rail could reduce its annual cost of ill health by £20m by the last year of CP5.
- 11.91 Part of the challenge facing Network Rail in improving its occupational health performance is to induce a culture change within the organisation to encourage engagement in its employee health and wellbeing strategy. Given that this change is not likely to drive significant cost increases, we did not specifically include any costs of implementing Network Rail's occupational health programme in our draft determination efficiency assumptions.
- 11.92 The magnitude of any further costs associated with improving performance are uncertain but experience elsewhere shows that these are typically small i.e. that the return on investment is high. We understand that Network Rail intends to provide some additional resources, e.g. to recruit a chief medical officer, and deliver procedural changes to support improvements in this area but we have received limited information of the associated costs.
- 11.93 Additionally, any capital expenditure required to implement Network Rail's strategy, e.g. improvements to its information management systems, could be funded through the spend-to-save mechanism<sup>222</sup>. Furthermore, not making any cost adjustments seemed appropriate because our efficiency assumption was already conservative.

## Our determination

- 11.94 Given that our draft determination assumptions were conservative, and that our latest analysis is broadly consistent with our original analysis, we have decided to retain our annual CP5 efficiency assumption of 0.07% from our draft determination. Therefore, in calculating Network Rail's revenue requirement for CP5, we have assumed that the company can reduce its annual cost of ill health by around £20m by the end of CP5, through the better management of occupational health and wellness.
- 11.95 Although we have calculated our efficiency estimates using absence figures, we recognise that there are limitations with using absence-related metrics, e.g. these

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<sup>222</sup> The spend-to-save mechanism is discussed further in our financial framework chapter (chapter 12).

figures can be under-reported. Therefore, we will be encouraging Network Rail to implement a broad range of improvements to achieve efficiencies in this area.

- 11.96 Given the number of different approaches that can be used to assess the costs of ill health, we have already started to discuss with Network Rail how we can improve our approach in this area. We will continue this dialogue in CP5.

### **Suicides on the railway**

- 11.97 A number of respondents to the draft determination raised the issue of suicides on the railway. The number of suicides varies annually but the numbers have increased since 2002 and in 2012-13 there were 238 suicides on the railway. The determination has not provided specific funding for this issue, because Network Rail must do all that is reasonably practicable to address this risk through the overall settlement. Network Rail has shown leadership on this issue in the industry and through its work with the Samaritans. In CP5 we will continue to support Network Rail in its work to engage with train operators on this issue.

### **Network Rail's long-term strategies for safety, health and wellbeing**

- 11.98 For the first time Network Rail has set out a strategic direction for safety in its Transforming Safety & Wellbeing document, with the intention by 2019, of 'eliminating all fatalities and major injuries and reducing train accident risk by 50%, and a longer term vision of 'everyone goes home safe every day'. The strategy document was published in November 2012 and covers the two control periods up to 2024.
- 11.99 In our assessment, the strategy addresses the known health and safety risks and behavioural issues, but plans to deliver the strategy are still being developed or are in the early stages of implementation. We will discuss with Network Rail the processes it intends to use to measure, audit and review the effectiveness and success of its new strategy.
- 11.100 Network Rail has recently produced its long-term strategy for its management of employee health and wellbeing. The strategy covers two control periods up to 2024. Network Rail has produced a six point action plan to deliver improvements in CP5. In our assessment the strategy addresses the right issues; we will monitor its implementation in CP5.

### **Indicators and enablers**

- 11.101 We will continue to assess Network Rail's health and safety management performance in CP5, through our inspection and audit work and we will continue to use our railway management maturity model to assess Network Rail's health and safety management capability.
- 11.102 We will continue to monitor Network Rail's health and safety performance by tracking the full range of information and data provided by Network Rail and the wider rail industry, including RSSB. In particular, we will monitor:

- (a) Network Rail's implementation and delivery of its long-term strategies for health and safety;
- (b) the current PIM or any revision of it (RSSB is in the process of preparing a PIM to reflect risk from Network Rail's activities); and
- (c) that Network Rail achieves European Common Safety Targets as required by the HLOS.

11.103 Where we have any concerns about Network Rail's health and safety performance and compliance with the law we will continue to use our regulatory tools and legal powers in accordance with our health and safety enforcement policy.

# 12. Financial framework

## Key messages in this chapter

- We have allocated to Network Rail the risks that it is best placed to manage, e.g. input price changes. This will help incentivise Network Rail to deliver continuous improvements in value for money and operate commercially where appropriate.
- The revenue that we allow Network Rail for CP5 should be sufficient for it to deliver the outputs that it is required to deliver if it operates economically and efficiently, taking into account normal fluctuations in costs and revenues.
- In our financial framework, we have not provided funding for risks in advance of them occurring. But Network Rail's balance sheet buffer is fully available for it to use to manage risk and hence fund unexpected increases in costs. In addition, other material exceptional risks can be dealt with through the re-opener provisions.
- We have engaged collaboratively with Network Rail to improve the incentives on spend to save schemes, e.g. information management and property income.
- We will only allow Network Rail to recover our forecast of its efficient financing costs, as it is not expected to issue unsupported debt in CP5. This approach is called the adjusted WACC approach and everything else being equal, significantly reduces Network Rail's revenue compared to our approach in CP4. This reduction in revenue could cause financial sustainability issues. We have therefore increased the amortisation charge by £2bn for Great Britain.
- This chapter sets out how we will roll forward Network Rail's RAB in CP5. We have decided to largely keep the overall approach the same as in PR08 but in some areas, e.g. the treatment of unit costs, we have simplified our approach to the addition of expenditure to the RAB, to more effectively incentivise Network Rail. Our detailed approach will be set out in our updated regulatory accounting guidelines for CP5, which will be published prior to the start of CP5.
- The amortisation charge is largely based on long-run renewal expenditure and financial sustainability considerations. Enhancement expenditure is not amortised.
- In order to improve transparency we have also published in Annex F what our determination of Network Rail's revenue requirement and access charges would be if we had used its cost of capital without making the adjusted WACC adjustments or using the PR08 ring-fenced approach. We also show what access charges would have been without network grants.

## Key messages in this chapter (continued)

### Main changes since our draft determination

- We have allowed Network Rail to use outperformance to fund schemes that add value to the network.
- We will not introduce separate limits on financial indebtedness for England & Wales and Scotland.

## Introduction and context

- 12.1 This chapter sets out our determination of the financial framework for Network Rail in CP5. The decisions set out in this chapter are important as they can have a significant impact on Network Rail, e.g. on the level of its revenue requirement and how we treat risk as well as the policies associated with calculating the RAB and the related amortisation charge. In the impact of financial framework on financial parameters chapter (chapter 13), we set out how our decisions on the financial framework impact on Network Rail's revenue requirement.
- 12.2 It is essential that customers and funders get the best value from the money that they put into the industry. To achieve this, it is important that our financial framework policies deliver an appropriate allocation of risks to Network Rail, i.e. those risks that it is best placed to manage efficiently. If Network Rail manages those risks efficiently then it can expect to earn an appropriate return.
- 12.3 The revenue that we allow Network Rail for CP5 should be sufficient for it to deliver its required outputs on the basis that it operates economically and efficiently, taking into account normal fluctuations in costs and revenues. However, providing Network Rail with a surplus within allowed revenues, i.e. an in-year risk buffer that is sufficient to compensate it for all possible risk, is unlikely to represent value for money as Network Rail is unlikely to be best placed to manage all risks<sup>223</sup>.
- 12.4 Therefore, in this chapter we also consider how Network Rail can deal with the financial consequences of unexpected increases in costs<sup>224</sup>. We have decided that this can be best achieved through the use of balance sheet buffers<sup>225</sup> and re-opener provisions<sup>226</sup>.

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<sup>223</sup> When considering risk buffers, it is also necessary to consider how the underlying income and expenditure allowances have been derived, i.e. whether our assumptions are too cautious or too aggressive.

<sup>224</sup> These cost increases could have arisen from material events that are beyond reasonable management control or could not have reasonably been foreseen.

<sup>225</sup> The balance sheet buffer is the difference between Network Rail's actual level of financial indebtedness and the level of financial indebtedness allowed by its network licence at a point in time. In



- 12.5 Network Rail's balance sheet buffer is fully available for it to use to manage risk in all situations not just in exceptional circumstances, and hence is available to fund unexpected increases in costs. This should allow Network Rail to deliver its required outputs and will also allow Network Rail to be more innovative and to take some risks when developing ways of improving efficiency<sup>227</sup>.
- 12.6 The decisions we have taken on the financial framework are important and in particular our decision to use the adjusted WACC approach affects other parts of our financial framework, e.g. risk buffers and the restriction on the level of financial indebtedness.
- 12.7 The RAB is a key building block in our methodology for determining access charges as it forms the basis for calculating the level of allowed return and impacts on the allowance for amortisation within Network Rail's revenue requirement.
- 12.8 This chapter sets out how we will roll forward Network Rail's RAB in CP5. We have decided to largely keep the overall approach the same as in PR08 but in some areas, e.g. the treatment of unit costs, we have simplified our approach to the addition of expenditure to the RAB, to more effectively incentivise Network Rail. Our detailed approach will be set out in our updated RAGs for CP5, which will be published prior to the start of CP5.
- 12.9 This chapter covers the following issues:
- (a) our approach to risk and uncertainty. This includes:
    - (i) inflation and input prices;
    - (ii) traction electricity, industry costs and rates;
    - (iii) incentive strengths;
    - (iv) risk buffers;
    - (v) the financial ring-fence;
    - (vi) level of financial indebtedness; and
    - (vii) re-opener provisions;
  - (b) the investment framework/spend to save;

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its network licence the restriction on its level of financial indebtedness is presented as a percentage of the RAB (i.e. debt/RAB).

<sup>226</sup> Re-opener provisions are mechanisms that can be used in certain situations to re-open the price control to allow changes to be made to the revenues that Network Rail is allowed to recover, for example, where material events have happened that are beyond reasonable management control or could not have reasonably been foreseen. As a result, the financial consequences of some elements of the risks that Network Rail faces would be transferred to Network Rail's funders and customers.

<sup>227</sup> If Network Rail is using its balance sheet buffer to fund unexpected increases in costs, depending on the reason for the higher costs, we may also take enforcement action against it, e.g. if there were problems delivering an enhancement project.

- (c) the cost of capital;
  - (i) the adjusted WACC approach; and
  - (ii) other cost of capital considerations,
- (d) our approach to financial sustainability;
- (e) amortisation and the RAB;
  - (i) amortisation;
  - (ii) RAB roll forward;
  - (iii) Non-capex additions to the RAB and the opex memorandum account;
  - (iv) reactive maintenance; and
  - (v) funding of enhancements,
- (f) tax;
- (g) network grant;
- (h) grant dilution;
- (i) outperformance; and
- (j) use of financial outperformance.

## Background

12.10 Network Rail's ultimate parent company is a not-for-dividend company limited by guarantee (CLG) and has members instead of shareholders. As a CLG, Network Rail's ultimate parent company is a private organisation operating a commercial business owned by its members.

12.11 Network Rail's members are appointed largely to perform the role of shareholders in holding Network Rail's Board of Directors to account (e.g. approve/reject major transactions and vote on remuneration arrangements) but there are crucial differences to the role of shareholders. In particular, Network Rail's members have virtually no capital at risk<sup>228</sup>, whereas shareholders who provide equity for a business would normally take significantly more risk. This means the members are not directly incentivised to seek to drive the company to improve its financial performance.

12.12 Network Rail's members do not therefore bear the risks or realise the rewards of Network Rail's activities, and therefore the company does not pay them the dividends that shareholders would expect as a return on their risk capital.

12.13 Network Rail is solely financed by debt, therefore all of the profits left after interest has been paid on its debts are retained within Network Rail rather than being distributed to

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<sup>228</sup> Network Rail's members each have £1 of capital at risk.

members or, if it had shareholders, as dividends<sup>229</sup>. Network Rail raises debt from private sector investors like a normal company. However, Network Rail's debt is guaranteed by the UK Government through the FIM<sup>230</sup>.

- 12.14 As part of PR13, we have undertaken a thorough review of the financial framework for Network Rail and the incentives that this creates. In May 2012, we set out our high-level decisions on financial framework issues<sup>231</sup>. These decisions included our approach to the cost of capital, price control separation/disaggregation and the duration of the price control. Following our consultation in August 2012, we set out our decisions in December 2012<sup>232</sup> on some of the more detailed issues relating to Network Rail's financial framework, e.g. our approach to inflation.
- 12.15 Our financial framework is consistent with the key transformational goals we set out alongside our PR13 objectives, especially aligning incentives and having a clear focus on what matters to passengers, freight customers and taxpayers – particularly improving value for money.
- 12.16 We have developed the financial framework for CP5 by considering all of our statutory duties and using our judgement to apply an appropriate amount of weight to each of them.
- 12.17 We have taken into account the views of stakeholders. In particular, we have worked closely with Network Rail, DfT and Transport Scotland to establish a financial framework for Network Rail that meets our objectives whilst also considering the requirements of others.
- 12.18 In its response to our draft determination, Transport Scotland supported the financial arrangements that we set out in our draft determination, in particular the adjusted WACC approach. DfT has made specific comments on various issues that we discuss below.
- 12.19 In PR08 we introduced an 'early start' mechanism which allows Network Rail in certain circumstances to request early notification in the periodic review process about whether or not we would allow activity and expenditure to be funded through its access charges. We thought that this policy was needed as some of the investment projects that Network Rail was likely to propose in its SBP would have long lead times

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<sup>229</sup> Network Rail has used outperformance to pay rebates to DfT and Transport Scotland, invest in the network and pay down debt.

<sup>230</sup> The amount of debt that can be raised under the FIM is currently capped at 90% of the RAB (90% is equal to the current debt to RAB licence limit of 75% \* 1.2), which is well above Network Rail's current level of gearing (64.4% at 31 March 2013). Network Rail's estimated value of the RAB at 31 March 2013 was approximately £45bn, so the cap on the FIM was around £41bn at 31 March 2013 (in 2012-13 prices). This compares to Network Rail's debt at 31 March 2013 of £29bn.

<sup>231</sup> *Setting the financial and incentive framework for Network Rail in CP5*, May 2012, available at: <http://www.rail-reg.gov.uk/upload/pdf/financial-incentive-framework-cp5.pdf>.

<sup>232</sup> *Financial issues for Network Rail in CP5: decisions*, December 2012. This document is available at: <http://www.rail-reg.gov.uk/pr13/consultations/financial-issues.php>.

and the periodic review process may disrupt planning to the extent that there would be uncertainty about the level of funding in the run up to the final determination.

- 12.20 Therefore, the early start mechanism provides more clarity of the required outputs of the determination and the allowed revenue at an earlier stage of the price control process. This should mean that Network Rail does not delay investment. This is important as delays can reduce the efficiency of investment and increase costs in the supply industry.
- 12.21 We decided in our May 2012 document that we would retain the current early start mechanism as it helps to manage the peaks and troughs of Network Rail's workload and avoid delays in investment.
- 12.22 The early start mechanism required Network Rail to propose in its SBP the expenditure and outputs in the first year of CP5 that it considered should qualify for early start funding. This investment would need to have a defined (observable/measurable) output, clear and agreed dates for delivery, firm cost proposals and funder support (if relevant). The projects that we have used the early start mechanism for are discussed in the enhancements chapter (chapter 9), e.g. the Northern Hub.

## Approach to risk and uncertainty

### Introduction

- 12.23 All businesses face risk and uncertainty on their costs and revenues from the impact of external events. Economically regulated businesses such as Network Rail are no exception. For the PR13 regulatory framework, we have decided how these risks, e.g. inflation, should be allocated between Network Rail, its customers and funders.
- 12.24 Allocating to Network Rail the risks that it is best placed to manage should ensure that it is incentivised to secure continuous improvements in value for money and operate commercially where appropriate, e.g. in managing its financial risks.
- 12.25 In this chapter we explain our approach to some aspects of financial risk that may not be efficiently controllable by Network Rail. These include inflation and input prices and traction electricity, industry costs and rates. We then explain how risk buffers and re-opener provisions can be used to manage risk.

### Inflation and input prices

#### Background

- 12.26 Network Rail, like other businesses and households, faces the risk that the prices it pays for goods and services, may rise or fall, i.e. inflation is a general risk faced by everyone. The inflation that each consumer faces depends on the particular mix of goods and services that it consumes. This is no different for Network Rail, as inflation can affect not only the prices that it must pay for labour and materials, but also the

interest rates that it must pay on its borrowings and the real value of its assets and liabilities.

- 12.27 The general level of inflation in the economy is usually measured by reference to the rate of change in the average prices of a basket of goods and services that is representative of typical consumption patterns. The most common measures of inflation are the retail prices index (RPI), and the consumer prices index (CPI).
- 12.28 The RPI is the most commonly used index to adjust payment flows to maintain their real value. For example, payments of interest and repayments of capital on certain government bonds (known as index-linked gilts) are indexed to RPI.
- 12.29 To the extent that a particular consumer faces higher or lower inflation, compared to RPI, because the average price of the basket of goods and services he or she consumes is rising or falling at a different rate compared to the RPI basket, there is a so-called relative price effect. The difference between the two reflects a change in the real cost of the goods and services consumed compared to the economy-wide average and is often referred to as input price inflation.
- 12.30 Each consumer can affect the particular inflation that he or she faces by the choices that they make in their selection of goods and services to buy and the way in which they buy these goods and services. The impact of inflation can therefore be managed to an extent.
- 12.31 As shown in Table 12.1, the biggest effect of inflation on Network Rail's revenue requirement is its effect on Network Rail's allowed return and amortisation. As explained in our December 2012 financial issues decisions document, the majority (approximately 70%) of Network Rail's revenue requirement is composed of income and expenditure assumptions that are not related to costs where we think there could be an issue with Network Rail's management of general inflation risk, i.e. amortisation, allowed return and Schedule 4 & 8 payments. This is because those costs either relate to: past decisions, e.g. amortisation; how we fund Network Rail for the general inflation element of its financing costs; or are compensation schemes, e.g. Schedule 4 & 8 payments, where indexing those payments by general inflation maintains their value in real terms.

**Table 12.1: Breakdown of Network Rail’s Great Britain final determination net revenue requirement**

Component of revenue requirement	Percentage of revenue requirement	Is the management of inflation risk an issue?
Support, operations, maintenance	35%	Yes: 30%
Traction electricity, Industry costs and rates	10%	
Other single till income	-15%	
Schedule 4 & 8	5%	No: 70%
Allowed return	20%	
Amortisation	45%	
<b>Total revenue requirement</b>	<b>100%</b>	<b>100%</b>

**Our decisions in our previous decision documents and in our draft determination, and our implementation consultation document**

12.32 In our December 2012 financial issues decisions document, we explained that in CP5 we had decided to retain the key elements of our PR08 approach to incentivising Network Rail’s management of inflation risk. Our approach reflects our view that general inflation risk is not efficiently controllable by Network Rail and that the more specific risk of input price changes is efficiently controllable by the company and is taken into account in our expenditure assessment<sup>233</sup>. This is consistent with conventional regulatory practice. It also reflects the view of respondents to our August 2012 consultation on detailed financial issues.

12.33 Reflecting the difference between Network Rail’s inability to manage general inflation risk and its ability to manage more specific risks associated with changes to its input prices, we set out in our draft determination that we intended to incentivise Network Rail to efficiently manage inflation risk in CP5 using the following approach:

- (a) we included ex-ante forward looking assumptions<sup>234</sup> for both general inflation and input price inflation for CP5<sup>235</sup>;
- (b) we included our input price inflation assumptions in our efficiency challenge (for CP5 this is zero for all expenditure). This means Network Rail will gain if it delivers on that challenge and lose if it does not deliver the challenge;

<sup>233</sup> Based on the evidence, for CP5 we decided to make no explicit adjustments to our efficiency assumptions for input price inflation. This is explained in more detail in the overview of efficient expenditure chapter (chapter 4).

<sup>234</sup> This means that we will forecast our view of both general and input price inflation for CP5 and not just assume that the current level of general and input price inflation continues for CP5.

<sup>235</sup> Including input price inflation in our efficiency assumption has a similar effect, in terms of efficiency, as adjusting our inflation assumptions for an estimate of input price inflation.

- (c) we reflected in our efficiency challenge, the findings of a study by Credo<sup>236</sup> who have carried out a study for us to identify how efficiently Network Rail manages inflation risk<sup>237</sup>;
- (d) to be consistent with the allocation of input price risk to Network Rail, we said that we will not adjust Network Rail's renewals expenditure for movements in a specific inflation index; and
- (e) as we did not think that general inflation risk is efficiently controllable by Network Rail, we decided not to expose Network Rail to variances in general inflation between our assumptions and the actual outturns by continuing to<sup>238</sup>:
  - (i) index allowed revenue by general inflation (i.e. RPI), which will provide stability for the industry through CP5; and
  - (ii) adjust Network Rail's RAB by the actual movements in general inflation (i.e. RPI) to retain the real value of its asset base (against which it raises finance).

12.34 For PR08, we used RPI as the measure of general inflation to index allowed revenue and the RAB. However, there are other general inflation measures<sup>239</sup> that could be used instead of RPI, for example, RPIX<sup>240</sup>, CPI<sup>241</sup> and the GDP deflator<sup>242</sup>, and we could use specific indices that include the effect of input price inflation such as IOPI or COPI<sup>243</sup>.

12.35 These other measures of inflation may or may not provide a more accurate index of the effect of inflation on Network Rail. However, any assessment of the effect of inflation on Network Rail would also need to consider the effect of inflation on Network Rail's financing costs and at the moment most financial instruments are normally

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<sup>236</sup> We summarise the findings of the Credo inflation management study in the overview of efficient expenditure chapter (chapter 4).

<sup>237</sup> The study considered total inflation risk because in practice it is difficult to separately identify general inflation risk and input inflation risk.

<sup>238</sup> This means that Network Rail will neither gain nor lose from the effects of general inflation.

<sup>239</sup> These measures of general inflation include productivity improvements in the wider economy. Therefore, when considering our efficiency and inflation assumptions (and in particular our frontier shift efficiency assumptions) we need to take this into account. Further information can be found at <http://www.ons.gov.uk/ons/rel/cpi/consumer-price-indices/may-2012/stb---consumer-price-indices---may-2012.html#tab-background-notes>.

<sup>240</sup> RPIX is RPI excluding mortgage interest payments.

<sup>241</sup> The Consumer Prices Index (CPI) measures the prices of goods and services purchased for the purpose of consumption by households in the UK and is similar to RPI but excludes mortgage interest payments and other costs and is calculated differently.

<sup>242</sup> The GDP deflator is a much broader price index than RPI, RPIX or CPI (which only measure consumer prices) as it reflects the prices of all domestically produced goods and services in the economy. Hence, the GDP deflator also includes the prices of investment goods, government services and exports, and subtracts the price of UK imports.

<sup>243</sup> The Construction Output Price Index (COPI) represents the movement in the cost of construction work carried out in the UK. The Infrastructure Output Price Index (IOPI) is a subset of COPI for infrastructure projects.



indexed by RPI. Approximately 50% of Network Rail's gross debt (£15bn) is index-linked<sup>244</sup> and the index used to adjust the value of that debt for inflation is RPI.

- 12.36 Respondents to our May 2011 first consultation document generally favoured retaining RPI for indexation of the RAB. The use of RPI to index Network Rail's RAB is also consistent with regulatory precedent.
- 12.37 Given the above factors and in particular that financial instruments are indexed in the markets by RPI and approximately 50% of Network Rail's debt is indexed by RPI, we decided in our draft determination to continue to use RPI to index Network Rail's RAB for inflation in CP5.
- 12.38 For CP4, the formula that was used to index access charges was based on the average RPI from January to December for freight contracts and the RPI in November for passenger contracts.
- 12.39 The formula that we proposed to use to index access charges was included in our consultation on changes to access contracts and the network licence to implement PR13, which we published on 12 July 2013<sup>245</sup>. In that document, we proposed two changes to the way we index charges in CP5:
- (a) use a consistent indexation approach based on an annual average change in the Retail Prices Index (RPI) for all operators (passenger and freight); and
  - (b) introduce a 'true-up' mechanism<sup>246</sup> to more accurately take account of the general inflation risk that Network Rail faces.

### Responses to our draft determination

- 12.40 Network Rail stated that it does not agree with our efficiency overlay of 0.2% (per annum) for the management of inflation and thinks it is unconventional and unprecedented in economic regulation. We have included Network Rail's response on this issue in our overview of efficient expenditure chapter (chapter 4).
- 12.41 RIA responded that it is yet to be convinced of the substitutability that Network Rail may be able to achieve to be able to offset external pressures on input prices.
- 12.42 Network Rail supported our proposals on the indexation of access charges but it set out the following issues that it wanted clarification on:
- (a) that indexation based on the change in the calendar year average RPI will apply to Network Grant income received in lieu of the FTAC;

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<sup>244</sup> Index-linked debt is debt where the value of the debt is adjusted for movements in inflation, instead of the assumed level of inflation being included in an interest payment.

<sup>245</sup> See the access charges chapter (chapter 16) for further details.

<sup>246</sup> A 'true-up' mechanism adjusts forecast financial assumptions for the actual financial effect that has been experienced.

- (b) how the true-up for the last year of a control period will be reflected in the next control period;
- (c) the methodology for uplifting the price base used in our final determination to year 1 of the control period;
- (d) the December 2013 RPI value will not be available in time for the publication of the CP5 price list; and
- (e) it thinks that for both passenger and freight TACs, all adjustment factors should be rounded up to three decimal places.

12.43 Network Rail also noted that we should not use forecast December 2013 RPI values. Instead Network Rail has suggested that the actual December RPI values (published in mid-January 2014) be used.

12.44 Train operating companies opposed changes to the indexation of access charges. Franchised operators noted that they would not be protected from the financial impact of this change through the financial adjustment mechanism in schedule 9 of their franchise agreement. This would transfer the risk of variances in general inflation from Network Rail to them.

12.45 GB Railfreight noted that Network Rail should manage inflation with good contract management and encourage efficiencies from its suppliers to reduce costs. It added that simply passing increased costs through to the customer is not an acceptable way to improve its efficiencies.

12.46 The train and freight operating companies largely considered that the indexation approach that has operated since privatisation is both transparent and implementable, especially in the context of any changes to the franchising process and the potential exposure of franchised operators to changes in charges at future periodic reviews. They suggested that an RPI approach based on a specific month before the start of the financial year in question, was more appropriate than our proposed approach, particularly given the current franchising timetable that DfT has published.

### **Our comments on the responses to our draft determination**

12.47 It is normal for regulators to consider the effect of inflation (both general inflation and input price inflation) on a regulated company and to make adjustments for the effect of input price inflation. The adjustment we have made to our expenditure assumptions is similar in nature to an input price adjustment, in that we are assessing how Network Rail's costs are likely to change relative to general inflation and then adjusting for that difference. Our views on this issue are explained further in the overview of efficient expenditure chapter (chapter 4).

12.48 GB Railfreight's comments about Network Rail being able to manage inflation support the approach we have adopted to the management of inflation.

- 12.49 Network Rail supported our proposed approach to the indexation of access charges. However, the train operating companies did not support us and they have some concerns about the effects of our proposal on their accounts, e.g. the volatility of their profits.
- 12.50 As a result we considered an alternative to our proposal, where we would log up the differences between actual inflation and our PR13 inflation assumptions to Network Rail's opex memorandum account<sup>247</sup>. This would have meant that we could have retained the same approach to access charges as in PR08 but still ensured that Network Rail did not unduly gain/lose as a result of how we index its revenues for inflation. However, Network Rail was concerned with the effects of this proposal on its accounts.
- 12.51 Given the complexity of the effects on the industry of our proposed 'true-up' mechanism, we consider that it is better not to use our proposed approach in CP5. However, this is an important issue and we will consider it in our PR18 development work.

### **Our determination**

- 12.52 As we have not seen any representations or further evidence to persuade us to change the decisions set out in our draft determination and for the reasons set out above, we consider that the decisions set out in 12.33 and 12.37 remain appropriate for CP5. We therefore confirm our overall approach as set out in our draft determination.
- 12.53 However, for the reasons set out above, we have decided to retain the existing CP4 approach to the way we index access contracts, except that we will use the actual RPI for November 2013 instead of an estimate. This is set out in the access charges chapter (chapter 16).
- 12.54 For the avoidance of doubt, this means that we have decided that we will not implement the proposed 'true-up' mechanism for CP5 that we set out in our consultation on changes to access contracts and the network licence to implement PR13 and we will continue to use the average RPI from January to December for freight contracts and the RPI in November for passenger contracts.

### **Traction electricity, industry costs and business rates**

- 12.55 The key issue for us in determining the treatment of traction electricity costs, industry costs and business rates is to ensure that Network Rail is incentivised to efficiently manage these costs where appropriate. Our decisions were set out in our December

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<sup>247</sup> This is an account where monies due to Network Rail, e.g. incentive payments, are held.

2012 financial issues decisions document and our treatment of each cost category is set out below<sup>248</sup>.

### **Traction electricity (£238m in 2013-14)**

#### ***Background, our decisions in previous decision documents and our draft determination***

- 12.56 We determined the efficient level of traction electricity costs and set an ex-ante allowance for each year of CP5. For those elements of traction electricity costs that we consider are controllable by Network Rail, we decided that it is at risk for the outturn being different to our ex-ante assumption. These are:
- (a) transmission losses; and
  - (b) Network Rail's own use of traction electricity, e.g. power supplies for signals and stations.
- 12.57 We also decided that the elements of traction electricity costs that we deem not to be sufficiently controllable by Network Rail (i.e. all traction electricity costs except for transmission losses and Network Rail's own use of traction electricity) will be passed through to train operators. This will be implemented in CP5 through the four-weekly billing process and end of year reconciliations that the industry already uses to charge for traction electricity. This is explained further in the access charges chapter (chapter 16).

#### ***Responses to our draft determination***

- 12.58 Network Rail recognised that it is at risk for any difference between actual and forecast rates for electricity consumption paid for by Network Rail and in relation to a share of the volume discrepancy related to transmission losses.
- 12.59 Go-Ahead said that Network Rail should take responsibility for areas of electricity supply and usage within its control.

#### ***Our determination***

- 12.60 We note that Go-Ahead agreed with our approach to traction electricity costs. We confirm the decisions set out in our draft determination.

### **British Transport Police (£71m in 2013-14)**

#### ***Background, our decisions in previous decision documents and our draft determination***

- 12.61 We determined an efficient level for Network Rail's share of British Transport Police (BTP) costs and we set an ex-ante allowance for CP5. We decided that these costs are sufficiently controllable by Network Rail<sup>249</sup> and so the risk of the actual cost being

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<sup>248</sup> Our assumptions on traction electricity, industry costs and business rates are set out in the traction electricity, industry costs and rates chapter (chapter 6).

<sup>249</sup> Network Rail is a Police Service Agreement (PSA) holder of the BTPA. One of Network Rail's directors is also a member of the BTPA, but he is not representing Network Rail. Network Rail is the

different from our assumptions will be borne by Network Rail. We think that this treatment is important as some of the benefits that are provided by BTP (such as reductions in delay minutes) relate to cost and performance issues that Network Rail is incentivised to deliver. BTP costs will also be included in financial performance reporting in CP5.

### ***Responses to our draft determination***

- 12.62 Network Rail noted that the assessment of its share of BTP costs underpinning its CP5 SBP was based on a thorough and detailed process by BTPA. Network Rail also noted that it recognises that better overall policing will deliver lower levels of crime, which is of benefit to Network Rail.
- 12.63 Network Rail thinks that the most significant economic effect of crime is on train performance (due to reduced cable theft), which had been reflected in its CP5 SBP, though it is difficult to value the impact of lower crime on costs and outputs. Network Rail therefore disagreed with our efficiency assumption on these costs.
- 12.64 Although Network Rail's preferred approach is for BTP costs to be treated in the same way as the ORR licence fee, Network Rail suggested that we could apply a risk sharing mechanism to these costs. For example, 25% of any difference between actual and assumed costs could be included in an assessment of financial performance.
- 12.65 BTPA's response stated that it is not within Network Rail's power to control BTP's policing costs, since the policing costs are decided by BTPA. BTPA noted that each year a budget is set which is taut, realistic and is reviewed by members of the authority who have considerable commercial and financial experience. BTPA argued that a reduction to Network Rail's contribution would need to be offset by increased contributions from freight and train operating companies to deliver the required level of policing. BTPA also note that policing costs have fallen per passenger kilometre.

### ***Our comments on the responses to our draft determination***

- 12.66 We have assessed these responses and consider that:
- (a) we agree that it is for the BTPA to decide how much Network Rail should pay for the BTP;
  - (b) it is our responsibility to determine Network Rail's total efficient costs for the whole company. This involves making assumptions on every type of cost that the company incurs and our assessment needs to be based on evidence;
  - (c) Network Rail is the largest funder of the BTP and is capable of exercising industry leadership when commenting on the BTPA's proposed budgets for BTP.

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largest funder of the BTP and is capable of exercising industry leadership. We consider that it therefore has sufficient influence over its share of BTP costs for us to treat these costs in the same way as we treat support costs.

It also chairs the Rail Delivery Group Policing and Security sub group, which also has representation from TOC MDs, the BTPA Chief Executive and the BTP Deputy Chief Constable; and

- (d) the Winsor report and the RVfM study identified a number of initiatives for reducing costs and Network Rail has not adequately explained why these initiatives are not appropriate.

### ***Our determination***

12.67 As we have not seen any representations or further evidence to persuade us to change the decision set out in our draft determination and for the reasons set out above, we consider that this decision remains appropriate for CP5. We therefore confirm the decision set out in our draft determination.

12.68 Given that we consider that BTP costs are sufficiently controllable by Network Rail, we do not consider that a risk sharing mechanism for BTP costs is necessary.

### **RSSB costs (£9m in 2013-14)**

#### ***Background, our decisions in previous decision documents and our draft determination***

12.69 We determined an efficient level for Network Rail's share of RSSB costs and set an ex-ante allowance for CP5. We decided that these costs are sufficiently controllable by Network Rail<sup>250</sup> and so the risk of the outturn costs being different from our assumptions should be borne by Network Rail. RSSB costs will be included in the reporting of financial performance in CP5.

#### ***Responses to our draft determination***

12.70 Although Network Rail's preferred approach is for RSSB costs to be treated in the same way as the ORR licence fee, Network Rail suggested that we could apply a risk sharing mechanism to these costs. For example, 25% of any difference between actual and assumed costs could be included in an assessment of financial performance.

#### ***Our comments on the responses to our draft determination***

12.71 Given that Network Rail is the largest industry funder of RSSB and can exercise leadership in discussing the RSSB budget, we consider that these costs are sufficiently controllable by Network Rail.

12.72 As we consider that RSSB costs are sufficiently controllable by Network Rail, we do not think that a risk sharing mechanism for RSSB costs is necessary.

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<sup>250</sup> Network Rail is a member of the RSSB, and two of its directors are also on the RSSB Board. It is the largest funder of RSSB and can exercise industry leadership. We consider that it has sufficient influence over these costs for us to treat them in the same way as support costs.

### ***Our determination***

12.73 As we have not seen any representations or further evidence to persuade us to change the decision set out in our draft determination, we consider that this decision remains appropriate for CP5. We therefore confirm the decision set out in our draft determination.

### **ORR Licence fee and safety levy (£17m in 2013-14)**

#### ***Background, our decisions in previous decision documents and our draft determination***

12.74 We decided that the ORR licence fee and railway safety levy are not sufficiently controllable by Network Rail and so we will log-up/down any variances in these costs between the actual costs and the assumptions in our determination to the opex memorandum account and if appropriate adjust Network Rail's CP6 revenue requirement. These costs will be excluded from the reporting of financial performance in CP5.

#### ***Responses to our draft determination***

12.75 Network Rail supported our policy not to expose it to variances in the ORR licence fee and railway safety levy. Network Rail agreed that these costs are not controllable by Network Rail and that any variance between actual costs and our forecast of the costs should be logged up/down in the next control period.

### ***Our determination***

12.76 We confirm the decision set out in our draft determination.

### **Business (cumulo) rates (£151m in 2013-14)**

#### ***Background, our decisions in previous decision documents and our draft determination***

12.77 We decided in our draft determination to include an ex-ante forecast of business rates in Network Rail's CP5 allowed revenue. As long as Network Rail can satisfy us that it has negotiated efficiently with the Valuation Offices, we decided that we will log-up/down any variations from the level of these costs assumed in our determination and adjust Network Rail's CP6 revenue requirement through the opex memorandum account. If we determine that Network Rail has negotiated these costs efficiently, they will be excluded from the reporting of financial performance in CP5, otherwise we will include them.

#### ***Responses to our draft determination***

12.78 Network Rail supported our proposal not to expose it to changes to business rates subject to Network Rail demonstrating that it has negotiated efficiently. Network Rail has asked us to define 'negotiated efficiently' so that it is clear about what is required prior to the negotiation process. Network Rail also requested that the assessment should be done ex-post by an independent reporter.



### ***Our comments on the responses to our draft determination***

12.79 We set out in our December 2012 financial issues decisions document that in assessing whether Network Rail had negotiated efficiently with the Valuation Offices we would consider whether Network Rail has raised the right issues, at the right time and in the right way. As an independent regulator, we should use independent reporters where they can add value to our work and where this is the most cost efficient approach. We do not currently consider that using an independent reporter to assess this issue would add value.

### ***Our determination***

12.80 As we have not seen any representations or further evidence to persuade us to change the decision set out in our draft determination, we consider that this decision remains appropriate for CP5. We therefore confirm the decision set out in our draft determination.

### **Reporters' fees (£3m in 2013-14)**

#### ***Background and our draft determination***

12.81 We commission independent reporters<sup>251</sup> to provide assurance in relation to different areas of Network Rail's regulated activities, for example, the sustainability of its asset policies and asset information quality. The volume of work that we commission from independent reporters reflects the level of confidence that we have in Network Rail's information and processes. Network Rail therefore has significant control over the costs arising from the use of independent reporters. However, we also have some influence over the level of work that is required and we will work with Network Rail to help it to develop more effective and efficient processes for providing assurance to us.

12.82 As a result, in our draft determination we proposed that we would determine an efficient level of independent reporters' fees for CP5. If at the end of CP5, Network Rail can show that any material under/over spend is the result of our actions instead of being driven by an issue at Network Rail, then we will log-up/down the costs of our actions and adjust Network Rail's CP6 revenue requirement through the opex memorandum account. Independent reporter fees will be included in the reporting of financial performance in CP5 but we will adjust for variances caused by our own actions.

#### ***Responses to our draft determination***

12.83 Network Rail considered that our policy on independent reporters fees could result in a disproportionate amount of discussion/negotiation in relation to whether a review is required, who is best placed to carry out the review and the budget for that work.

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<sup>251</sup> Independent reporters are firms who provide independent expert advice and are used by us to review some aspects of Network Rail's performance, plans and activities, e.g. its financial reporting. They owe a duty of care to both ORR and Network Rail but Network Rail pays for their costs.

Network Rail was concerned that there could be an incentive for us to commission independent reporters rather than review Network Rail's analysis internally.

- 12.84 Network Rail noted that there are some examples of where this occurred during CP4 and that it considers that independent reporters' fees can be more effectively controlled by us rather than Network Rail and that we should be incentivised to consider the overall costs of regulation rather than just our direct costs. Network Rail's main concern was about independent reporters' fees being higher than forecast if the driver for this higher cost is a lack of 'in-house' capability for us to effectively regulate Network Rail.
- 12.85 Network Rail requested that we clarify our definition of what we consider to be a "material under/over spend" and how we would assess whether our actions have resulted in an overspend.
- 12.86 Network Rail suggested an alternative incentive rate approach for independent reporters' fees whereby it would retain part of the benefit/cost of independent reporters' fees being lower/higher than assumed. Network Rail considered that this has a significant advantage of not requiring an ex-post assessment of each report on a case-by-case basis.

#### ***Our comments on the responses to our draft determination and our determination***

- 12.87 We recognise that the approach that we set out in our draft determination could be overly bureaucratic. Therefore, we have decided to introduce a risk sharing mechanism for reporters' fees in CP5, whereby Network Rail will be able to retain 25% of the underspend but will bear 25% of the overspend. This means we will log-up/down any variances in these costs between the actual costs and the assumptions in our determination to the opex memorandum account (after adjusting for the 25% incentive rate) and if appropriate adjust Network Rail's CP6 revenue requirement.

## **Incentive strengths**

### **Background, our decisions in previous decision documents and our draft determination**

- 12.88 By incentive strengths, we mean by how much Network Rail financially gains or loses if it outperforms or underperforms our determination. For example, if we assumed in our determination that Network Rail would spend £300 on maintenance and it efficiently spends £200 then it retains the £100 of outperformance, i.e. the incentive strength is 100%. The incentive strengths for capital expenditure are largely 25%, i.e. if Network Rail efficiently underspends by £100, it retains £25.
- 12.89 In our May 2012 document we decided to retain the PR08 incentive strengths for PR13. This will avoid unnecessary changes to our regulatory approach and should help to make the incentives easier to understand.

## Responses to our draft determination

12.90 We did not receive any material responses on the decision set out in the draft determination.

## Our determination

12.91 We confirm the decision set out in our draft determination.

## Risk buffers

### Background, our decisions in previous decision documents and our draft determination

12.92 In PR08, we established an 'in-year risk buffer' for Network Rail. This was the amount we thought that Network Rail needed to manage business risk and normal fluctuations in cash flow. In PR08, the in-year risk buffer was £226m for England & Wales and £28m for Scotland per annum (in 2012-13 prices).

12.93 We decided in December 2012 that we will not provide Network Rail with an in-year risk buffer in CP5. This is because we considered that, for a number of reasons, the benefits of an in-year risk buffer may not be achieved in practice and that circumstances have changed since PR08. These reasons include:

- (a) given it is not likely that Network Rail will issue unsupported debt in CP4 or CP5 and as it has the FIM, it is likely that it will be able to continue to deliver our determination irrespective of whether an efficiency initiative has failed;
- (b) as Network Rail is not planning to issue unsupported debt in CP5, this means that everything else being equal, we expect the consequences of Network Rail experiencing an unexpected increase in costs will be less severe than we thought in PR08. This is because as Network Rail is still using the FIM, it should still be able to access financial markets on reasonable terms even if it is underperforming. Therefore, the benefit an in-year risk buffer provides in relation to this issue is not significant for CP5;
- (c) in our PR08 determination, our base case assumption was that Network Rail would perform in line with our determination and would not require the use of the in-year risk buffer. Therefore, in PR08 we assumed that the annual in-year risk buffer in CP4 would be used to reduce debt and not used to fund overspends. If we did provide Network Rail with an in-year risk buffer for CP5, it is likely that we would have taken the same approach. In practice this would just increase the balance sheet buffer, which means that the real issue is whether the size of the balance sheet buffer is appropriate;
- (d) the adjusted interest cover ratio (AICR) was a very important financial indicator for us to consider in PR08, when we assessed Network Rail's financial sustainability. This was because credit rating agencies use the AICR to assess the financial position of a company. Without an in-year risk buffer, Network Rail's AICR would have been significantly lower. This could have made it more difficult

for Network Rail to issue unsupported debt in CP4. As we do not expect Network Rail to issue unsupported debt in CP5 it is not necessary to provide Network Rail with an in-year risk buffer for financial sustainability reasons;

- (e) providing funding for Network Rail in advance of it being needed could be perceived as being an unnecessary cost at a time of constrained government funding and current overall pressures on public finances, and it could weaken incentives. This is particularly the case given that we confirmed in our May 2012 document that we would be using the adjusted WACC approach to determine Network Rail's allowed return and that we did not expect Network Rail to issue unsupported debt in CP5; and
- (f) Network Rail publishes statutory accounts, we require Network Rail to publish regulatory financial statements and we report on its efficiency in our annual efficiency and finance assessment. The overspend (everything else being equal) caused by the failure of an efficiency initiative would still be included in our monitoring in our annual efficiency and finance assessment, as our reporting needs to be balanced. Therefore, the financial consequences of the failure of an efficiency initiative would still be clear.

12.94 Prior to the publication of our draft determination, Network Rail had expressed concerns about the potential impact on its profitability of our approach to risk and the adjusted WACC approach. We explored these concerns with Network Rail and as a result we slightly re-profiled the financial sustainability adjustment, so that profits are more constant over CP5 than they otherwise would have been.

12.95 We agree with Network Rail that it is important to retain the flexibility to change Network Rail's financing structure. Although there are no current plans to introduce risk capital, either through concessions or other means, if a situation arises in CP5 that requires a different approach to Network Rail's cost of capital we could deal with that situation as we discuss below in the level of financial indebtedness section.

12.96 Also, as in CP4, Network Rail has a balance sheet buffer that can be used to manage risk. We noted in our draft determination that, as Network Rail's financial indebtedness limits are 75.0% for each year of CP5, the balance sheet buffer would be on average during CP5 £2,440m for Great Britain, £2,092m for England & Wales and £349m for Scotland (2012-13 prices). The balance sheet buffer in this example is the difference between a debt/RAB ratio of 72.5% and our forecast of Network Rail's debt/RAB ratio in our determination for each year of CP5.

### **Responses to our draft determination**

12.97 We did not receive any material responses on the decision set out in our draft determination.

## **Our determination**

12.98 We confirm the decision that we will not provide Network Rail with an in-year risk buffer in CP5 as set out in our draft determination. Given Network Rail's financial indebtedness limit is 75.0% for Great Britain as explained below, then our forecast of the balance sheet buffer for Great Britain is on average during CP5 £2.9bn (2012-13 prices).

## **Financial ring-fence**

### **Background, our draft determination and our implementation document**

12.99 The financial ring-fence protects Network Rail's customers and funders from the company being exposed to financial risks, e.g. it limits Network Rail from taking part in activities that are not part of its core business as the operator of the majority of Great Britain's rail infrastructure.

### ***Network Rail's activities***

12.100 As part of PR08, we reviewed some aspects of the financial ring-fence but deferred a review of other financial ring-fence issues. The work we deferred included a review of the activities that Network Rail is permitted to carry out under the provisions of its network licence. We consulted on this issue in March 2010 but deferred taking a decision as the structure of the industry was being reviewed, which could have impacted on our decisions.

12.101 The current de-minimis provisions in Network Rail's network licence already provide a reasonable approach to this issue. But, Network Rail has said in the past that there should be more flexibility to expand the scope of its operations where that improves value for money.

12.102 We have started to discuss with Network Rail, DfT and Transport Scotland and other stakeholders their views of the activities that Network Rail should be permitted to carry out under the provisions of its network licence. However, our discussions with stakeholders are still at an early stage.

12.103 If following the conclusion of the discussions with stakeholders the outcome is that we think it is appropriate to propose a review of the activities that Network Rail is permitted to carry out under the provisions of its network licence, we will commence the review after PR13.

### ***Other issues***

12.104 In our consultation on the changes to contractual and licensing provisions to implement PR13 that we published on 12 July 2013, we identified areas where the financial ring-fence licence condition needed updating. In particular, to ensure that we kept the financial ring-fence up to date with regulatory best practice, we considered whether there had been changes to other economic regulators' financial ring-fences, which were relevant to Network Rail's financial ring-fence.

- 12.105 In our July 2013 document, we also identified areas where the financial ring-fence could be improved. The two main areas covered were the payment of dividends and the repayment of outperformance to governments (rebates). The policy issues on rebates are discussed in the use of outperformance section below.
- 12.106 The financial ring-fence issue is simply about making the conditions of the licence condition clearer as we set out in our implementation document, where we proposed to:
- (a) revise the section on the payment of dividends, to make it clear that the licence holder shall not declare or recommend a dividend or make any other distribution or redeem or repurchase any share capital of the licence holder unless it has both issued a certificate to us and we have consented to it; and
  - (b) revise the section on the payment of rebates, to make it clear that the licence holder shall not make a rebate payment unless we have consented to it.

### **Responses to our draft determination and implementation document**

- 12.107 Network Rail supported our commitment to keeping the financial ring-fence up to date with regulatory best practice. However, it considered that its current regulatory obligations concerning its 'de-minimis' activities are unduly prescriptive, difficult to understand and give us unnecessary powers of veto. Network Rail commented that the regulatory regime must be open to evolution as Network Rail demonstrates greater responsibility, transparency and accountability. Network Rail also considered that certain 'core' activities should be reclassified.
- 12.108 Network Rail has made a number of detailed points on our proposed drafting of the dividend and rebate parts from our July 2013 document.

### **Our comments on the responses to our draft determination and our determination**

- 12.109 We will continue to discuss with Network Rail, DfT and Transport Scotland and other stakeholders their views of the activities that Network Rail should be permitted to carry out under the provisions of its network licence and we will then decide whether we need to review Network Rail's network licence for these issues.
- 12.110 Network Rail has made a number of detailed points on our update to the licence condition on the payment of dividends and rebates and its policy issues are covered in the use of outperformance section of this chapter.
- 12.111 We have considered these points, given the intention of the licence condition is simply to make it clear that the payments of dividends and rebates by Network Rail is subject to our consent. We have decided that we can simplify that section of the licence condition, so it just says that Network Rail cannot pay any dividend or rebate without our consent as this is consistent with our decision on the use of outperformance as set out below. This avoids the need to identify a number of subsidiary conditions relating to these payments that do not need to be in the licence condition.



- 12.112 The statutory consultation on the drafting necessary to amend Network Rail's network licence condition, in relation to the payment of dividends as discussed above, will be published in November 2013, as discussed in the implementation of our determination chapter (chapter 22).
- 12.113 We will use the linked licence process to implement the changes to the network licence condition in relation to rebates as discussed above. This will be done through the review notices we expect to issue on 20 December 2013, as discussed in the implementation of our determination chapter (chapter 22).

## **Level of financial indebtedness**

### **Background, our decisions in previous decision documents and our draft determination**

- 12.114 Unless we have consented otherwise, Network Rail could be in breach of its network licence if it does not use reasonable endeavours to ensure that its total financial indebtedness does not exceed the limits specified in its network licence. This restriction has an important effect as it incentivises Network Rail to control its costs. The difference between Network Rail's limit on financial indebtedness and its actual debt/RAB ratio provides Network Rail with a balance sheet buffer that is fully available for it to use to manage risk and hence fund unexpected increases in costs, which should allow it to deliver its required outputs.
- 12.115 For these reasons we decided in December 2012 to retain the licence condition that restricts the level of Network Rail's financial indebtedness, and consistent with our aim of improving the disaggregation of Network Rail's price control, we said we will include separate limits for Network Rail's activities in England & Wales and in Scotland.
- 12.116 We noted in our draft determination that we would finalise the specific levels of Network Rail's maximum level of financial indebtedness in each year of CP5 in our final determination, as the levels need to reflect the entire PR13 package. In the draft determination we stated, based on our financial modelling, that the level of financial indebtedness in each year of CP5, should at no point exceed a limit set between 70-75% for England & Wales and for Scotland.
- 12.117 We consulted on these proposed changes to Network Rail's network licence in our July 2013 document.

### **Responses to our draft determination**

- 12.118 Network Rail noted that as it will not be provided with an ex-ante or 'in year' risk buffer, the balance sheet buffer limit set in the debt/RAB limit will become particularly important. Network Rail considered that it requires five percentage points headroom above the debt/RAB ratio forecast in its draft delivery plan to be able to manage the potential additional costs of business risks 'crystallising' during CP5.



- 12.119 Network Rail noted that where the regulatory framework provides for efficient spend to be added to the RAB (for example to achieve longer term benefits), there should not be an additional requirement to avoid breaching the debt to RAB limit as this might result in perverse incentives. This means that Network Rail want us to exclude some types of spend from the calculation of financial indebtedness and RAB, for the purposes of licence condition 3.
- 12.120 In addition, Network Rail disagreed with our proposal to include separate terms in Network Rail's licence which restrict the maximum level of financial indebtedness (debt/RAB) in CP5 for England & Wales and Scotland as it considers it is unnecessary and inappropriate. Network Rail thinks that it should be regulated as a single entity in line with the corporate structure and network licence. However, Network Rail recognised in its response to our draft determination that England & Wales and Scotland are subject to separate price controls.
- 12.121 Network Rail also said that our proposal is inconsistent with the fact that it raises debt at a corporate level, and it is the gearing of the company as a whole which is important to debt and potential equity holders, rather than the notional gearing levels at a route level (as the individual routes cannot raise debt independently).
- 12.122 Network Rail expressed concern that this change in the licence condition would constrain its ability to raise finance and have no significant benefits. It also said that it could still report notional England & Wales and Scotland gearing levels, without there being separate limits on its financial indebtedness.
- 12.123 Railfuture stated that it was not clear whether any modelling had been done to determine the sensitivity of the funding requirement and the level of debt to variations in usage growth. Railfuture noted the rate of passenger growth is slowing, potentially indicating that the RPI + X% fare increases are reaching the limit of what the market can bear and could have an adverse impact on Network Rail's financial position.

### **Our comments on the responses to our draft determination**

- 12.124 We do not agree with Network Rail's proposal that the limit on financial indebtedness should be based on the debt/RAB ratio in Network Rail's draft delivery plan. This is inappropriate as it would not be consistent with the rest of our determination and our view of risk.
- 12.125 With regard to Network Rail's comment about the treatment of additional efficient spend, whatever the purpose of a project, once the expenditure on the project has been incurred, then it is an historic event that has affected Network Rail's financial position, so we do not think that we should distinguish between different types of expenditure. Network Rail's suggestion would also worsen transparency and be complex, i.e. how would we decide on 'good' debt versus 'bad' debt.
- 12.126 Network Rail's concern about having separate limits on the level of financial indebtedness for England & Wales and Scotland largely relates to how it raises debt

rather than the incentive effects of the limit on the level of financial indebtedness and downplays the fact that the price controls for England & Wales and Scotland are separate.

- 12.127 The two key incentive effects that a limit on financial indebtedness provides are an incentive on Network Rail to control its costs and it also provides it with a balance sheet buffer to manage risk. Ultimately, it is important that Network Rail clearly considers the financial consequences of its decisions for Scotland on Scottish funders and customers, as it is Scottish funders and customers that will pay for any overspend in relation to Scotland. This is especially the case for capital projects.
- 12.128 When Network Rail modelled its risks, in order to provide us with a view on what it thought the limit on the level of financial indebtedness should be, its conclusion was based on a relative comparison to its forecast of the debt/RAB ratio in CP5. If the same logic is applied to a debt/RAB limit for Scotland, the limit on financial indebtedness would be around 70% as its forecast debt/RAB ratio in CP5 for Scotland is around 65%. However, Transport Scotland would prefer the same limit on the level of financial indebtedness as in England & Wales, i.e. around 75%.
- 12.129 Whether we set the limit for Scotland at around 70% or 75%, would largely depend on whether we place more weight on the incentive to:
- (a) control Network Rail's costs, in which case a 70% limit would be better; or
  - (b) manage risk, in which case a 75% limit would be better.
- 12.130 Balancing the effect of these two incentive effects is difficult given the difference in the debt/RAB ratios in England & Wales and Scotland in CP5. This is especially the case given that we did not identify this as an issue before the CP5 HLOSs and SoFAs were developed.
- 12.131 We therefore consider that it would be better to signal our views on this issue to Network Rail, DfT and Transport Scotland in advance of the CP6 HLOSs and SoFAs, which will give DfT and Transport Scotland time to consider the consequences of separate limits on the level of financial indebtedness, when they are preparing their CP6 HLOSs and SoFAs. It will also give Network Rail time to consider this issue for its CP6 SBP. Therefore, we will consider these issues in our PR18 development work.
- 12.132 Also, in practice we consider that our monitoring of Network Rail will mean that we will be aware of the effect of higher expenditure or other cost shocks on Network Rail in advance of it coming close to its limit on financial indebtedness, which would provide sufficient time for a recovery plan to be developed. Network Rail will also continue to report on its debt/RAB ratios for both England & Wales and Scotland separately in its regulatory accounts. We will also report on the debt/RAB ratios for both England & Wales and Scotland separately in our annual efficiency and finance assessment.
- 12.133 Transport Scotland has previously raised a concern that without a separate limit on financial indebtedness in Scotland, Network Rail could in some situations be unable

to go ahead with a project in Scotland, even though the debt/RAB ratio for Scotland was below the limit on financial indebtedness for Great Britain. In principle, Transport Scotland is correct. However, in practice in CP5, this is unlikely to be an issue, given the size of the balance sheet buffer for Great Britain.

12.134 For both our draft and final determinations we have tested the sensitivity of the financial indicators to changes in our regulatory assumptions and used Monte Carlo analysis<sup>252</sup> to help identify the robustness of Network Rail's financial position in the face of cost and revenue uncertainty and hence our approach to financial sustainability.

### **Our determination**

12.135 After considering the views of respondents, for the reasons set out above, we have decided that we will only include a limit on financial indebtedness for Great Britain, not for England & Wales and Scotland separately.

12.136 After consideration of our own and Network Rail's financial modelling we have decided that the level of financial indebtedness in each year of CP5 should at no point exceed 75% for Great Britain.

### **Re-openers**

#### **Background, our decisions in previous decision documents and our draft determination**

12.137 We use the term re-openers to refer to mechanisms that can be used to re-open a price control in certain situations to allow changes to be made to the revenues that Network Rail is allowed to recover through access charges, for example, where material events have happened that are beyond reasonable management control or could not have reasonably been foreseen. Hence, the financial consequences of some elements of the risks that Network Rail faces are transferred to customers and funders.

12.138 In our May 2012 document, we decided that we would continue to use re-openers as part of our approach to risk and uncertainty. An enduring settlement across the control period is very important both for the incentives that Network Rail faces and to provide certainty to the industry and its investors. So, in our view, it is likely that re-openers will only be sparingly used as they are generally intended to only cover exceptional events that have a material effect on Network Rail.

12.139 We decided in December 2012, that for PR13 we would retain two of the re-openers that we used in PR08, and we consulted on the exact wording of these re-openers in

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<sup>252</sup> Monte Carlo analysis is a technique used to analyse complex issues by simulating the various outcomes a large number of times.

our consultation on changes to access contracts and the network licence to implement PR13<sup>253</sup>, which we published on 12 July 2013. The two re-openers are:

- (a) if there is a material change in the circumstances of Network Rail or in relevant financial markets. This re-opener applies to events in England & Wales and Scotland; and
- (b) for Scotland, if Network Rail's expenditure in Scotland is forecast to be more than 15% higher than our determination for Scotland over a forward looking period of three years.

12.140 In each case, to decide whether to re-open a price control, we would need to determine whether the terms of the relevant re-opener had been met and, if so, we would then consider whether there is a compelling case for an interim review in the light of our Section 4 duties.

12.141 In our July 2013 document, we also:

- (a) consulted on whether the material change in circumstances re-opener should apply to material changes in Network Rail's circumstances or in relevant financial markets that may be likely in the future; and
- (b) set out the procedure that we expect to follow in the circumstances that one or more of the criteria for initiating an access charges review prior to 1 April 2019 (i.e. an interim review) may have been triggered. We have developed this procedure on the assumption that any such interim review would need to be conducted as quickly as possible.

### **Responses to our draft determination**

12.142 Network Rail was content with our proposals on re-openers and it supported the amendment to the contractual drafting on re-openers, so that it covers material changes in Network Rail's circumstances or in the relevant financial markets that may be likely in the future, in addition to material changes that have already occurred.

12.143 TSSA considered that a more flexible approach to re-openers should be used considering some of the uncertainties which could result in increased costs. This is particularly in areas where there are no contingency plans for proposed efficiencies (e.g. technological solutions such as the implementation of the national operating strategy) or there is a risk of outside influences (e.g. climate and specific political demands) requiring increased investment in certain areas. TSSA considered that without this, Network Rail may be forced to make too hasty cuts to achieve the efficiencies we are seeking.

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<sup>253</sup> These re-openers will be implemented by being included in access contracts between Network Rail and TOCs.

## Our comments on the responses to our draft determination

12.144 TSSA identified a number of risks that Network Rail faces and we consider that our risk and uncertainty framework covers them through a combination of specific provisions, e.g. the treatment of traction electricity, the indexation of revenue, the balance sheet buffer and re-openers.

## Our determination

12.145 We confirm the decision in our draft determination.

12.146 We also confirm that we have decided to make the material change in circumstances re-opener apply to changes that may be likely in the future as well as to events that have already happened.

## Investment framework/spend to save

### Background and our draft determination

12.147 In CP4, the 'internal/Network Rail' part of the investment framework allows Network Rail, in certain situations, to spend money on capital schemes that were not funded as part of PR08<sup>254</sup>. This policy was aimed at helping to reduce the disincentive on Network Rail to make savings towards the end of a control period. There is also an 'external' part of the investment framework that deals with third party investments. As we are not making any changes to the 'external' part of the investment framework, we do not discuss this any further in this document<sup>255</sup>.

12.148 In practice, our approach in CP4 has not been clear as it means that when we assess Network Rail's proposed expenditure in an access charges review we exclude some elements of Network Rail's potential revenue generating schemes (e.g. refurbishment of arches) and some elements of its cost saving schemes. It also duplicates some elements of our RAB roll forward policy and is inconsistent with other parts of our approach.

12.149 For example, although some types of Network Rail's information management (IM) spend are uncertain, they are similar in nature to the types of expenditure that go through the 'internal/Network Rail' part of the investment framework in CP4.

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<sup>254</sup> The 'internal/Network Rail' part of the investment framework deals with schemes promoted by Network Rail that either generate additional income or reduce costs. The external part of the investment framework deals with schemes promoted by third parties, franchised operators and the governments (non-HLOS) during a control period.

<sup>255</sup> In October 2010, we published our 'Investment framework consolidated policy & guidelines', which focused on the external part of the investment framework. This document can be accessed at: <http://www.rail-reg.gov.uk/server/show/ConWebDoc.10081>.

12.150 In our draft determination, we outlined two main options for improving our CP4 approach:

- (a) refine the 'internal/Network Rail' part of the investment framework to improve incentives; or
- (b) remove the 'internal/Network Rail' investment framework and apply our normal RAB roll forward process, but amend the RAB roll forward process as described below, e.g. use different incentive strengths.

12.151 Our CP4 approach to 'internal/Network Rail' investment framework schemes does not financially incentivise Network Rail to invest in schemes that could reduce the cost of the network or generate additional income because:

- (a) when we calculate the amount to be added to the RAB in the control period that the investment is made in, all of the savings and additional income in that control period are netted off the capital expenditure;
- (b) we include all of the savings that the investment will generate for future control periods in our efficiency assumptions for those future control periods and include the additional income in our calculation of the revenue requirement; and
- (c) it does not provide an incentive to make investments later in the control period. For example, if Network Rail invests £100 more on income generating schemes in year 5 of the control period, compared to our determination then using our normal RAB roll forward rules, it would bear (i.e. not receive funding for) £25 of the cost. Therefore, in order for Network Rail to be financially incentivised to go ahead with the scheme, the scheme would need to generate savings of more than £25 in one year, which may not be likely.

12.152 In order to improve transparency and provide clearer incentives on Network Rail, without overly complicating the financial framework, in our draft determination we proposed to:

- (a) remove the 'internal/Network Rail' investment framework and apply our normal RAB roll forward process to deal with spend to save<sup>256</sup> schemes; and
- (b) amend the RAB roll forward process to use different incentive strengths.

12.153 We proposed to change the incentives on spend to save schemes so that the incentive is 25% in year 1 of the control period, 20% in year 2 of the control period, 15% in year 3 of the control period, 10% in year 4 of the control period and 5% in year 5 of the control period. This means that, for example, if Network Rail overspends/underspends in year 1 by £100, it will bear/retain £25 of the cost of that overspend/underspend but if it overspends/underspends in year 5, it will bear/retain

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<sup>256</sup> For the avoidance of doubt, when we say spend to save schemes, we are including income generating schemes.



5% of the overspend/underspend. This compares to our normal RAB roll forward approach where, in simple terms, Network Rail retains 25% of any underspend and bears 25% of any overspend in each year of the control period.

- 12.154 Adopting this approach should not only improve the incentive on Network Rail to invest in spend to save schemes but also encourage Network Rail to invest in these schemes early in CP5 because it will have longer to benefit from these investments.
- 12.155 In our draft determination, we said that we would discuss these issues further with Network Rail during the summer of 2013. In particular we said that we would consider our proposals in terms of: Network Rail's incentives; the calibration of the incentives; what types of expenditure should be included in the mechanism; and how we keep the mechanism as simple as possible.
- 12.156 In our draft determination, we proposed that our spend to save mechanism should cover the following types of expenditure:
- (a) information management schemes that improve the business, i.e. excluding schemes that just replace/update an existing capability; and
  - (b) income generating schemes.
- 12.157 Given our proposals we included in our draft determination an estimate of the total expenditure on information management schemes and income generating schemes in CP5 (including an estimate of income generating schemes that were not identified at time of the SBP) and the associated benefits.

## Responses to our draft determination

- 12.158 Network Rail proposed that the scope of the investment framework should be extended to cover all investments that improve the cost of operating, maintaining, renewing and enhancing the railway. It argued that the policy should also include wheeled plant and other NDS schemes, corporate offices, depots and information management.
- 12.159 Network Rail has analysed a number of NDS, property and IM schemes undertaken during CP4. It notes that the analysis showed that the overall payback period achieved or it is expecting to achieve varies from a little under 5 years to around 15 years. Its analysis also noted that, for most schemes, there is a lag between when the investment was undertaken and the commencement of the financial savings. The lag between the investment taking place and savings being made may not allow good schemes to achieve the required efficiency targets by the end of the control period.
- 12.160 Network Rail therefore suggested we change our proposed incentive rates, so that our incentive rates are moved back by 1 year, i.e. we use our year 2 incentive rate for year 1. This means the incentive rate in year 1 would be 20% instead of 25% and the incentive rate in year 5 would be 0% instead of 5%.



- 12.161 Network Rail suggested that we should clarify how income and expenditure will be treated in the assessment of overall financial performance. It also thought that income and expenditure should be treated only as determination assumptions for the purposes of determining the revenue requirement, rather than specific targets.
- 12.162 Network Rail requested that if more 'good' schemes are identified, then the expenditure should be added to the RAB through the RAB roll forward process.
- 12.163 ATOC considered that our proposal reflected a desire to simplify the funding and financial framework for Network Rail.
- 12.164 Railfuture thought that the incentives on spend to save schemes should be consistent throughout the control period. It noted that because savings will continue into future control periods, Network Rail should not be disincentivised from spending late in the control period, where this investment would generate savings in the following control period.

## **Our comments on the responses to our draft determination**

- 12.165 The spend to save mechanism helps to improve the incentives on Network Rail to invest late in the control period because it allows more expenditure to be added to the RAB in recognition of the shorter period of time that is available for Network Rail to achieve savings. For example, under the current RAB roll forward rules, in simple terms, if Network Rail spends £100 on an investment in year 3 of the control period, £75 is added to the RAB (incentive rate of 25%). If the investment generates savings of £15 by the end of the control period<sup>257</sup>, then Network Rail would be worse off by £10 ( $£15 + £75 - £100 = -£10$ ) and so it will not be incentivised to make the investment.
- 12.166 By changing the incentive on the RAB, so that £90 is added to the RAB (incentive rate of 10% as proposed by Network Rail), then the net benefit to Network Rail in CP5 is £5 ( $£15 + £90 - £100 = £5$ ) and Network Rail will have stronger incentives to make this investment.
- 12.167 In the section below, we have included our comments on Network Rail's response, where we explain the reasons for our determination. Our comments on Network Rail's response about how we should treat spend to save schemes in our assessment of financial performance are included in the financial monitoring chapter (chapter 23).

## **Our determination**

### **Overview**

- 12.168 After considering the responses to our draft determination, and after further discussions with Network Rail, we have decided to revise our approach to spend to

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<sup>257</sup> Note: the rest of the investment in the project and the return on the project is paid back in later control periods, so that the investment has a positive effect on the railway.

save schemes in CP5. As we note above this section does not cover the external part of the investment framework.

- 12.169 Our revised approach should not only improve the incentives on Network Rail to invest in spend to save schemes but also encourage Network Rail to invest in these schemes early in CP5 because it will have longer to benefit from these investments. It will also address the disincentive on Network Rail to make investments later in the control period because under our revised approach, the amount of money added to the RAB will be higher than using either the 'internal/Network Rail' part of the investment framework or the normal RAB roll forward rules.
- 12.170 To help improve transparency and provide clearer incentives on Network Rail, without overly complicating the financial framework, we will remove the 'internal/Network Rail' investment framework and apply our normal RAB roll forward process to deal with spend to save schemes but amend the RAB roll forward process for spend to save schemes and income generating schemes as we describe below, e.g. use different incentive strengths.
- 12.171 For the avoidance of doubt, this policy replaces our previous policy on the Internal/Network Rail' part of the investment framework that is contained in various historic investment framework documents<sup>258</sup>.

### **Scope of the spend to save framework**

12.172 In order for a scheme to be included in the spend to save framework, the scheme must:

- (a) generate future cost savings for Network Rail or generate additional income;
- (b) add to the economic value of the rail network, i.e. it must have a positive net present value (using the regulatory cost of capital);
- (c) be capable of being efficiently financed and delivered; and
- (d) for very large schemes, Network Rail can afford to finance the planned expenditure and hence the scheme would not unduly affect Network Rail's financial sustainability.

12.173 The types of schemes that we have decided to include in the spend to save framework are:

- (a) information management schemes. This is a wider category than in our draft determination, where we had proposed to just include in the spend to save framework information management schemes that improve the business, i.e. those schemes that do not just replace/update an existing capability. We have

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<sup>258</sup> A list of the historic investment framework documents is available at: <http://www.rail-reg.gov.uk/server/show/nav.190>.

widened the definition of information management because we are trying to keep the spend to save framework as simple as possible and following discussions with Network Rail on this issue, we recognise that it is difficult to distinguish between information management schemes that improve the business and those that replace/update an existing capability;

- (b) plant and machinery (including wheeled plant). For individual projects with a total cost in excess of £5m (2012-13 prices), that provide incremental benefits to our determination, i.e. generate efficiency savings over and above the efficiencies specified in our determination. We have included these schemes in the spend to save mechanism as it is more transparent to include them in a separate category rather than including them in 'other', as this one of the main areas where spend to save schemes could go ahead;
- (c) income generating schemes that provide additional property income; and
- (d) other cost saving or income generating schemes. For individual projects with a total cost in excess of £5m (2012-13 prices), that were not included in Network Rail's SBP or our determination.

12.174 We are including other cost saving and income generating schemes in the spend to save framework because we do not want to limit the areas that Network Rail can invest in within its permitted business to information management, plant and machinery and property schemes. This will give the company more scope to generate additional savings or additional income, compared to the forecast in our determination.

12.175 However, other cost saving or income generating schemes would only be included in the spend to save framework in exceptional circumstances and where Network Rail could explain to our reasonable satisfaction, why the scheme was not included in its PR13 SBP or other PR13 submissions and discussions with us. This is because our determination already provides an appropriate level of funding for Network Rail to efficiently deliver its required outputs in CP5 in a safe and sustainable way.

12.176 Schemes that provide additional benefits such as safety schemes are not included in the spend to save framework as they are covered by the RAB roll forward policy for additional outputs.

### **Financial treatment of spend to save expenditure**

12.177 After considering the responses to our draft determination and further discussions with Network Rail, we will adopt the following approach to cost saving schemes and to income generating schemes.

12.178 Firstly, we have decided to change the incentive rates on these schemes so that the incentive is 20% in year 1 of the control period, 15% in year 2 of the control period, 10% in year 3 of the control period, 5% in year 4 of the control period and 0% in year 5 of the control period.

12.179 To give effect to these incentive rates we will:

- (a) add the efficient capital expenditure to the RAB in CP5 in the year it is incurred;
- (b) for the avoidance of doubt, not deduct incremental efficiency savings or incremental income achieved during CP5 from the value of the expenditure that will be added to the RAB;
- (c) add capitalised financing (to the end of the control period) to the cost of the scheme in accordance with the normal RAB roll forward rules; and
- (d) deduct the relevant incentive rate from the RAB addition.

12.180 As an example, if Network Rail spends £100 (including capitalised financing costs) on a spend to save scheme in year 3, that generates £15 of income/savings by the end of the control period, this scheme would produce a net benefit to Network Rail of £5 ( $£15 + £90 - £100 = £5$ ), as it would:

- (a) keep the £15 of income/savings generated by the scheme;
- (b) the RAB would increase by £90. This reflects the addition of the efficient capital expenditure and capitalised financing costs to the end of the control period (£100) less 10% of the RAB addition (given the incentive rate of 10% in year 3 of the spend to save framework); and
- (c) incur £100 of debt.

12.181 For information management schemes, this treatment will apply to all expenditure in this category, which comprises expenditure included in the determination and additional expenditure through the spend to save framework, i.e. for the avoidance of doubt this treatment replaces the normal RAB roll forward rules for the capital expenditure required for these schemes. This treatment would be applied to aggregate overspend or underspend compared to the assumption in the final determination. This is because we recognise that our expenditure assumption does not relate to particular schemes but instead it is a general assumption of the amount of expenditure that could be incurred on these schemes in CP5 and the income/additional savings that those schemes could generate.

12.182 For income generating schemes, this treatment will apply to all expenditure in this category, which comprises expenditure included in the determination and additional expenditure through the spend to save framework, i.e. for the avoidance of doubt this treatment replaces the normal RAB roll forward rules and current investment framework rules for these schemes. This treatment would be applied to aggregate overspend or underspend compared to the assumption in the final determination. This is because we recognise that our expenditure assumption does not relate to particular schemes but instead it is a general assumption of the amount of expenditure that could be incurred on these schemes in CP5 and the income that those schemes could generate.

12.183 For plant and machinery and other cost saving schemes the treatment set out above only applies to the expenditure above the level assumed in the determination, as we will only fund individual projects above £5m. For spend below the level assumed in the determination for these categories of expenditure, the normal RAB roll forward rules would apply. For the avoidance of doubt, for the purposes of this policy the determination does not assume any spend on other cost saving schemes and does not cover the ORBIS project.

12.184 Currently, we carry out an ex-post review of 'internal/Network Rail' investment framework schemes and we will carry out a similar review of spend to save schemes in CP5 to ensure that the efficient expenditure, on those schemes that meet the spend to save criteria, is added to the RAB.

## Cost of capital

### Introduction

12.185 Since PR08, there have been a number of changes that have prompted us to reconsider how we apply the cost of capital to the calculation of Network Rail's revenue requirement and in particular the approach that we take to Network Rail's financing costs. These changes include:

- (a) uncertainty in financial markets, which could make it harder for Network Rail to issue unsupported debt in CP5;
- (b) a worse economic climate that has put greater pressure on the governments' finances; and
- (c) industry reforms. There are a number of initiatives that are currently in progress or being considered, e.g. Network Rail devolution, alliancing, concessions and REBS.

12.186 In determining our approach to how we apply the cost of capital to the calculation of Network Rail's revenue requirement in CP5, we have considered these changes.

### Adjusted WACC approach

#### Background, our decisions in previous decision documents and our draft determination

12.187 In our May 2012 document, we confirmed that we will use the adjusted WACC approach<sup>259</sup> to determine Network Rail's allowed revenue in CP5. Using the adjusted WACC approach is consistent with Network Rail being unlikely to issue unsupported debt in CP5. Also, given that Network Rail is financed entirely by debt, and its debt is

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<sup>259</sup> This approach identifies the cost of capital for Network Rail but recognises that Network Rail's debt is government backed and that it does not pay dividends. Therefore, we adjust the cost of capital by deducting the equity surplus (i.e. the potential dividend payment) and on a net basis we fund our forecast of Network Rail's efficient financing costs.

indemnified by the UK Government through the FIM, i.e. the UK Government takes the risk of default, the adjusted WACC approach is consistent with Network Rail's efficient financing costs being significantly lower than its cost of capital<sup>260</sup>.

12.188 In the adjusted WACC approach we:

- (a) first, identify Network Rail's cost of capital reflecting all the risks that it faces before some of them are ultimately transferred to funders, and hence its full funding requirement. Therefore, the cost of capital will still be clearly visible in our determination. It will still be the cost of capital that will be used in the investment framework for calculating the financing costs of non-HLOS investment schemes as it is important that investment decisions are made using Network Rail's cost of capital. In the interests of transparency, the cost of capital will still provide the basis for a calculation of what Network Rail's charges would have been if we allowed it to recover the cost of capital rather than our forecast of its efficient financing costs;
- (b) second, identify Network Rail's efficient financing costs<sup>261</sup> including any additional financing costs that need to be provided for financial sustainability purposes, e.g. for the difference between efficient financing costs (in real prices) and efficient financing costs that include implied inflation on nominal debt;
- (c) third, recognise that Network Rail's efficient financing costs are lower than its cost of capital, due to the existence and use by Network Rail of the FIM. The difference between Network Rail's cost of capital and its efficient financing costs is called the equity surplus;
- (d) fourth, the equity surplus is recycled before the revenue requirement is determined, i.e. the equity surplus is netted off Network Rail's bottom-line revenue requirement. We do this by including in the calculation of Network Rail's revenue requirement Network Rail's cost of capital in the calculation of the allowed return, then we deduct the equity surplus; and
- (e) we then recognise that this approach, everything else being equal, significantly reduces Network Rail's revenue. This reduction in revenue could cause additional financial sustainability issues. So we address this issue by increasing the amortisation charge<sup>262</sup>.

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<sup>260</sup> Network Rail pays a fee to DfT for the credit enhancement it gains from the FIM (the FIM fee). By credit enhancement, we mean that effectively Network Rail can borrow at cheaper rates than if it did not have the FIM. This is equivalent to having a higher credit rating.

<sup>261</sup> Efficient financing costs are calculated on a cash basis, i.e. they exclude inflation accretion on index-linked debt. Accretion is the amount of inflation added to the value of index-linked debt to compensate debt holders for inflation.

<sup>262</sup> In the calculation of the revenue requirements this is called – 'Amortisation financial sustainability adjustment'.



12.189 As a general principle, we support the introduction of risk capital and unsupported debt into Network Rail because of the incentives that this would bring to bear on Network Rail's management and through this, the behaviour of the company, making it a more 'conventional' company. We therefore want to retain the option for this to happen in CP5. The adoption of the adjusted WACC approach does not preclude the introduction of unsupported debt in later control periods as discussed below.

12.190 In order to improve transparency we have also published in Annex F (further detail on the effect of the financial framework on the level of access charges) what our determination of Network Rail's revenue requirement and access charges would be if we had used its cost of capital without making the adjusted WACC adjustments or using the PR08 ring-fenced approach.

### **Responses to our draft determination**

12.191 Arriva said there is no realistic prospect of the use of private funds in Network Rail in CP5 and hence it is inappropriate to continue to employ the higher cost of capital allowed under previous periodic reviews to permit this eventuality.

12.192 All the other material comments on the responses about cost of capital are included in the impact of financial framework on financial parameters chapter (chapter 13).

### **Our comments on the responses to our draft determination**

12.193 Our comments on the calculation of the cost of capital are included in chapter 13.

### **Our determination**

12.194 We confirm the decision to use the adjusted WACC approach that we set out in our draft determination.

### **Other cost of capital considerations**

12.195 We have reviewed the other cost of capital considerations in light of our decision to use the adjusted WACC approach for CP5 and these issues are addressed below.

### **Treatment of financing costs**

#### ***Background, our decisions in previous documents and our draft determination***

12.196 Network Rail's financing costs in CP5 will include interest costs on financial instruments that it has already issued, i.e. part of its interest costs in CP5 are already fixed. These costs are referred to as embedded debt costs. As we are using the adjusted WACC approach and we have removed the in-year risk buffer, we decided in December 2012 to take Network Rail's embedded debt costs into account in our determination of Network Rail's financing costs in CP5.

12.197 It is important that Network Rail efficiently manages its financing costs, so we have reviewed Network Rail's embedded debt costs as part of our periodic review process.



We have included Network Rail's embedded debt costs in this determination, where we consider that these costs were incurred efficiently<sup>263</sup>.

### **Responses to our draft determination**

12.198 Apart from Network Rail's comments about the embedded debt assumptions which are discussed in chapter 13, we did not receive any material comments on the decision set out in our draft determination.

### **Our determination**

12.199 We confirm the decision set out in our draft determination.

### **Industry reform initiatives**

#### **Background, our decisions in previous decision documents and our draft determination**

12.200 As explained above, the adoption of the adjusted WACC approach does not preclude the introduction of risk capital and unsupported debt directly into Network Rail. It should also not obstruct the development of further alliances or a concession.

12.201 In the event of future industry reforms or other significant changes, e.g. a concession, we would need to decide how we would handle the effects of these changes on Network Rail's price control, e.g. we may need to turn off the equity surplus adjustment.

12.202 However, a policy of turning off the equity surplus adjustment is difficult to put in place ex-ante, as we do not know with enough clarity which industry reform initiatives could happen and how they could affect Network Rail, e.g. how material they could be. Therefore, it would not be clear how much of the equity surplus adjustment should be turned off. There are also other financial effects of the adjusted WACC approach, such as additional amortisation, which would need to be considered as they may no longer be appropriate.

12.203 In an extreme case, where all of Network Rail's business was sold to another party that is conventionally funded by unsupported debt and equity, we would unwind the effects of the adjusted WACC approach, e.g. turn off the equity surplus adjustment. Different industry reforms, such as alliances or operating concessions, may not raise the same issues and may not therefore require an unwinding of the adjusted WACC approach.

12.204 In our August 2012 consultation we said that we would handle these issues on a case by case basis, i.e. material changes would lead us to consider re-opening the price control, whereas immaterial changes would be logged-up to CP6. Network Rail proposed that instead we should develop an automatic mechanism for adjusting the

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<sup>263</sup> Our assessment is in the round rather than an examination of every treasury instrument Network Rail has taken out.

price control but did not explain how this could work. So, we provided further time for Network Rail to develop an automatic mechanism.

12.205 Prior to the draft determination, Network Rail provided us with details of its proposal but we thought that it was not adequate. For example, there are many different types of concession that Network Rail could enter into and they will have a variety of financial effects, which cannot be predicted in advance. Network Rail's proposal did not address this matter.

12.206 Therefore, in our draft determination we decided to adopt the approach that we set out in our December 2012 document. This means that in CP5, we will consider any adjustments to the price control that may be needed following an industry reform initiative, on a case-by-case basis. Material changes will lead us to consider re-opening the price control, whereas immaterial changes will be logged-up to CP6.

### ***Responses to our draft determination***

12.207 We did not receive any material comments on the decision set out in our draft determination

### ***Our determination***

12.208 We confirm the decision set out in our draft determination.

### **Calculation of the FIM fee**

#### ***Background, our decisions in previous decision documents and our draft determination***

12.209 We decided in our December 2012 document to calculate the FIM fee for CP5 by reference to the long-run value of the credit enhancement that the FIM provides. This is because it is consistent with the way that the cost of capital is calculated as it takes a long-term view of the cost of debt, it is cost reflective and sends the right price signals. A cost of capital study carried out by CEPA has helped to inform our decision on the level of the FIM fee. This study is discussed in chapter 13.

### ***Responses to our draft determination***

12.210 We did not receive any material comments on the decision set out in our draft determination.

### ***Our determination***

12.211 We confirm the decision to calculate the FIM fee for CP5 by reference to the long-run value of the credit enhancement that the FIM provides as set out in our draft determination.

## Use of a semi-annual rate for calculating allowed revenue

### **Background, our decisions in previous decision documents and our draft determination**

12.212 In calculating Network Rail's allowed revenue we converted our full cost of capital, which is normally presented on an annual basis (i.e. 4.75% in PR08<sup>264</sup>), into a semi-annual rate (i.e. 4.64% in PR08) because we assume that Network Rail's cash flows are spread evenly through the year<sup>265</sup>.

12.213 We decided to use the semi-annual rate in the calculation of allowed revenues because a regulated utility should be able to re-invest any cash surplus that it has available during the year at its cost of capital, as that is the discount rate that is appropriate to use to assess investment opportunities and is similar to the approach used by other regulators.

### **Response to our draft determination**

12.214 We did not receive any material comments on the decision set out in our draft determination.

### **Our determination**

12.215 We confirm the decision to use the semi-annual rate in the calculation of allowed revenues as set out in our draft determination.

## Roll forward of Network Rail's debt into CP5 and CP6

### **Background, our decisions in previous decision documents and our draft determination**

12.216 We decided to maintain our PR08 policy of rolling forward the debt assumptions used in our PR08 determination for CP4 for efficient movements in debt in CP4, as we need to maintain appropriate incentives on Network Rail to manage expenditure efficiently. We will also use this approach to roll forward our debt assumptions from CP5 to CP6.

12.217 For our draft determination, we reviewed Network Rail's SBP forecast of CP4 closing debt and considered that it was appropriate to use its forecast as our opening balance for CP5 as the underlying assumptions making up the forecast are consistent with the income and expenditure assumptions used elsewhere in our draft determination.

### **Responses to our draft determination**

12.218 Network Rail has updated its forecast of its closing debt at the end of CP4 for our final determination. Network Rail's updated forecast corrected for errors identified in its

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<sup>264</sup> This is on a real vanilla basis. A 'vanilla' return is based on a pre-tax cost of debt and post-tax cost of equity.

<sup>265</sup> Therefore, as Network Rail's cash flows are largely spread evenly through the year using an annual cost of capital would over compensate the company as not all the balances that the cost of capital is applied to will have been in existence for the full year.

SBP forecast and included updated assumptions on the amount of renewal and enhancement expenditure in the final year of CP4.

12.219 We did not receive any further material comments on the decision set out in our draft determination.

### ***Our comments on the response to our draft determination***

12.220 We have reviewed Network Rail's updated forecast of CP4 closing debt for our final determination. We have adjusted our assumptions for errors in the SBP forecast and the known actual outturn at 31 March 2013. However, to ensure that the assumptions that we use in our forecast of closing debt for the final year of CP4 are consistent with our income and expenditure assumptions for CP5 we have decided to continue to use the underlying levels of expenditure in Network Rail's SBP forecast.

12.221 If the level of debt at the end of CP4 is lower or higher than our forecast (e.g. if Network Rail does spend its most recent forecast of additional expenditure on renewals and enhancements which will increase debt), any efficiently incurred or avoided interest costs will be adjusted for in CP6, after considering the effect of the expenditure in the final year of CP4 on our assumptions for CP5.

### ***Our determination***

12.222 We confirm the decision to roll forward the debt assumptions used in our PR08 determination for CP4 for efficient movements in debt in CP4 and to roll forward the debt assumptions used in our PR13 determination for CP5 for efficient movements in debt in CP5.

12.223 Our analysis of the calculation of Network Rail's closing CP4 debt/opening CP5 debt is shown in detail in chapter 13.

## **The effect of inflation on financing costs in the adjusted WACC approach**

### ***Background, our decisions in previous decision documents and our draft determination***

12.224 In our advice to ministers and in our August 2012 consultation we presented our calculation of Network Rail's efficient financing costs for the allowed revenue requirement including the inflation element<sup>266</sup> of nominal financing costs as that is a cash cost, and the adjusted WACC approach funds cash efficient financing costs, and we did not include inflation accretion<sup>267</sup> on index-linked debt as that is not a cash cost.

12.225 We did this because we decided to keep the introduction of the adjusted WACC approach as simple and transparent as possible. Therefore, we decided to:

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<sup>266</sup> The interest rate on nominal debt includes compensation for the use of the money that has been borrowed for the life of the debt, e.g. if the real interest rate was 2% and the expected inflation rate was 3%, then the nominal rate would be approximately 5%.

<sup>267</sup> The amount of inflation added to the value of index-linked debt to compensate debt holders for inflation.

- (a) calculate real efficient financing costs on a cash basis (i.e. using the conventional regulatory approach to the calculation of allowed revenue, except that it is based on financing costs instead of a cost of capital) and to adjust for financial sustainability. This is consistent with our approach to amortisation where we first calculate the amortisation assumption using our conventional approach and then we adjust for financial sustainability taking account of the adjusted WACC approach; and
- (b) index the whole of the RAB by RPI, i.e. use the conventional regulatory approach to the indexation of the RAB.

### **Responses to our draft determination**

12.226 We did not receive any material comments on the decision set out in our draft determination.

### **Our determination**

12.227 We confirm the decision set out in our draft determination.

## **The use of financial indicators to assess financial sustainability**

### **Background, our decisions in previous decision documents and our draft determination**

12.228 In our December 2012 decisions document we decided that we would use the same set of financial indicators to assess financial sustainability for PR13 as we used in PR08. However, depending on the circumstances, the different financial indicators can have different levels of importance. In PR08, the adjusted interest cover ratio (AICR) and debt/RAB ratio were the key financial indicators that we used to assess Network Rail's financial sustainability.

12.229 However, the AICR does not provide us with useful information for CP5. This is because, by definition, under the adjusted WACC approach, the AICR is close to one and amortisation does not directly affect the AICR. Also, the use of the AICR is not as important for CP5 as Network Rail is not expecting to issue unsupported debt in CP5 and one of the main reasons for focusing on the AICR for CP4 was that the AICR is a key financial indicator used by credit rating agencies.

12.230 This means that our PR13 analysis has focused on the debt/RAB financial indicator. This is because it is an important financial indicator in its own right but also because the limit on Network Rail's financial indebtedness is set with reference to the debt/RAB limit.

12.231 Table 12.2 sets out the financial indicators and their definitions.

**Table 12.2: Financial indicators**

Indicator	Definition
Adjusted interest cover ratio (AICR)	FFO <sup>1</sup> less capital expenditure to maintain the network in steady state divided by net interest <sup>2</sup>
FFO / Interest	FFO divided by net interest
Debt <sup>3</sup> / RAB (Gearing)	Net debt divided by RAB
FFO / Debt	FFO divided by net debt
RCF <sup>4</sup> / Debt	FFO less net interest divided by net debt

Notes:

1. Funds from operations (FFO) is defined as gross revenue requirement less support costs, less traction electricity, industry cost and rates, less maintenance, less Schedule 4 & 8 costs and less cash taxes paid.
2. Net interest is the total interest cost including the FIM fee, but excluding the principal accretion on index-linked debt.
3. Debt is as defined in the Regulatory Accounting Guidelines<sup>268</sup>.
4. Retained cash flow (RCF) is defined as FFO less net interest.

## Responses to our determination

12.232 Network Rail's response about the use of additional financial indicators is included in the impact of financial framework on financial parameters chapter (chapter 13). We did not receive any other material comments on our use of financial indicators to assess financial sustainability.

## Our determination

12.233 As we have not seen any representations or further evidence to persuade us to change the approach set out in our draft determination, we consider that this approach remains appropriate for CP5. We therefore confirm the approach in our draft determination to continue to use the financial indicators from PR08 but to focus on the debt to RAB ratio.

# Amortisation and RAB

## Amortisation

### ***Background, our decisions in previous decision documents and our draft determination***

12.234 Amortisation is the remuneration of past investment that has been previously added to Network Rail's RAB. It forms a major part of Network Rail's revenue requirement as Network Rail is a capital intensive business<sup>269</sup>.

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<sup>268</sup> This document is available at <http://www.rail-reg.gov.uk/upload/pdf/regulatory-accounting-guidelines-2012.pdf>.

<sup>269</sup> Amortisation is an accounting term that is largely equivalent to depreciation. In our context it relates to the RAB: whilst our RAB policy is now based on only adding actual capital expenditure to the RAB,

12.235 As we confirmed in our advice to ministers, our high-level approach to amortisation in CP5 is that it will be based on the long-run efficient annual average capital expenditure required to maintain the network in steady state (i.e. average long-run steady state renewals) subject to financial sustainability considerations. This means that the total allowance for amortisation in any year should be broadly equivalent to the long-run efficient annual average investment expenditure that is required in order to maintain the overall capability, age, condition, and serviceability of the network in steady state (i.e. the network would be neither getting better or worse if that level of capital expenditure is sustained over the long-run).

12.236 Our calculation of long-run steady state renewals is described in the asset management: maintenance and renewals expenditure chapter (chapter 8). The two main issues that affect the calculation (in addition to the underlying level of renewals) are that we:

- (a) use the 35 year period from 2014-15 as the period for our assessment of Network Rail's long-run efficient annual average capital expenditure; and
- (b) take account of the scope for future efficiency improvement after CP5 (the control period we are assessing in PR13) in our calculation of long-run efficient annual average capital expenditure and we have included an estimate of frontier shift over our thirty-five year assessment period in our calculation of the efficiency adjustment. This is because both current and future customers and funders should be sharing the cost burden of Network Rail's inefficiency.

12.237 In addition, as we decided in PR08, we will be amortising the non-capex RAB (around £4bn in 2012-13 prices) on a straight-line basis over thirty years.

12.238 In our May 2012 document, we confirmed that we would use the adjusted WACC approach to calculate Network Rail's allowed return in CP5. In order to address the financial sustainability issues that the adjusted WACC approach may cause, we also said that we would increase amortisation. After considering the effect of the adjusted WACC approach on all aspects of our draft determination, we assumed that for the purpose of our draft determination, total amortisation should be equal to our forecast of Network Rail's renewals spend in CP5. We have updated our assessment for our final determination. This is outlined in chapter 13.

### ***Response to our draft determination***

12.239 We did not receive any material comments on the approach set out in our draft determination.

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the initial RAB was based on a value of the infrastructure assets and there were various non-physical asset based additions to the RAB prior to the current policy starting in CP4.



## ***Our determination***

12.240 We confirm the decision about how we calculate amortisation as set out in our draft determination.

## **RAB roll forward**

12.241 This section of the chapter outlines our approach to the roll forward of the RAB in CP5 and covers the following issues:

- (a) high-level principles;
- (b) improvements to our approach in CP4;
- (c) main features of our RAB roll forward policy in CP5;
  - (i) process for rolling forward the RAB in CP5;
  - (ii) our general policy for the RAB roll forward in CP5;
  - (iii) treatment of underspend on renewals and enhancements expenditure;
  - (iv) treatment of overspend on renewals and enhancements expenditure;
  - (v) non-delivery of outputs; and
  - (vi) exceptions to our general RAB roll forward policy,
- (d) civils adjustment mechanism;
- (e) enhancements cost adjustment mechanism for early GRIP projects;
- (f) projects with specific protocols/arrangements;
- (g) investment framework/spend to save; and
- (h) key changes from CP4 to CP5.

## **High-level principles**

### ***Background, our decisions in previous decision documents and our draft determination***

12.242 In our 2003 access charges review (ACR2003), we established a set of high-level principles for valuing the RAB, which were also used in PR08. These principles are:

- (a) transparency: we will publish our assumptions and calculations in full. Network Rail's current and future lenders will have a clear and transparent basis on which to value the company. Looking ahead to the future, this should assist Network Rail if it raises additional debt without a government guarantee;
- (b) consistency: our methodology must be consistent with the policy statements made previously. This is because predictability and consistency over time in our approach serves to improve confidence in the regulatory regime and will enhance Network Rail's ability to finance its business in future; and

- (c) simplicity: we will strive, where possible, to ensure that the calculation of the RAB remains as straightforward as possible.

12.243 In December 2012, we decided to retain these principles for CP5.

### **Responses to our draft determination**

12.244 We did not receive any material comments on the approach set out in our draft determination.

### **Our determination**

12.245 We confirm the decision set out in our draft determination.

## **Improvements to our approach in CP4**

### **Background, our decisions in previous decision documents and our draft determination**

12.246 In our August 2012 consultation, we set out the key features of the RAB roll forward policy in CP4. We also explained that because we are keeping the current operating expenditure and capital expenditure incentive strengths for CP5 the same as in CP4, we intended to retain the same overall approach to the RAB roll forward in CP5 as it has appropriate incentive properties. We did, however, set out some areas where our RAB roll forward approach could be improved for CP5. These areas include:

- (a) not indexing our renewals assumptions for changes in input prices<sup>270</sup>;
- (b) being consistent, where possible, between the treatment of renewals and enhancements to minimise any perverse incentives for Network Rail to favour one form of expenditure over the other;
- (c) treating an overspend on enhancements in England & Wales in the same way as in Scotland (although we need to take account of the two price controls being separate);
- (d) considering where our policies should distinguish between volume and unit cost based variances and how net underspend/overspends should be treated;
- (e) whether to set out in our PR13 determination our criteria for determining when a non-delivery of outputs or Network Rail not maintaining the serviceability and sustainability of the network, would require a RAB adjustment and possibly an adjustment to efficiency;
- (f) considering whether it would be useful to set out in our PR13 determination guidance on how we would adjust for a non-delivery of outputs or Network Rail not maintaining the serviceability and sustainability of the network in the short, medium and long-term;

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<sup>270</sup> In PR08 we included a RAB adjustment to renewals expenditure for movements in input prices. The adjustment was based on movements in the infrastructure output price index (IOPI).

- (g) whether we should treat all renewals underspends in the same way, given the difficulty we have in confirming that some types of renewals underspends are efficient, e.g. volume related underspends; and
- (h) considering how the lack of clarity (due to a significant part of Network Rail's network being composed of long life assets) over the links between inputs, outputs and the serviceability and sustainability of the network in the short, medium or long-term could affect our RAB roll forward policy.

12.247 In our December 2012 financial issues decisions document, we decided not to index our renewals assumptions for changes in input prices, in order to be consistent with our decision to allocate input price risk to Network Rail<sup>271</sup>. This will improve the incentives on Network Rail to manage inflation risk related to its costs by including an upfront estimate of input price inflation in our efficiency assumptions in CP5 (for CP5 this is zero for all expenditure).

12.248 Apart from our treatment of input prices, we did not decide on the other issues in December 2012, as we wanted to discuss them further with Network Rail prior to the draft determination.

12.249 We had those discussions with Network Rail before our draft determination and in our draft determination we set out the following decisions:

- (a) we decided that where possible, the RAB roll forward policy should not distinguish between renewals and enhancements expenditure to minimise any perverse incentives for Network Rail to favour one form of expenditure over the other, and to simplify the policy. In PR08, our enhancements expenditure assumptions for CP4 included contingency. For CP5, our enhancement expenditure assumptions do not include contingency, therefore we no longer need the £50m per annum deadband for enhancement overspend in England & Wales that we used in CP4, as Network Rail has not already been funded for that amount of money<sup>272</sup>.
- (b) in PR08 there are differences between the RAB roll forward treatment of enhancements expenditure in England & Wales and the treatment of enhancements expenditure in Scotland. There are advantages in having a consistent approach in England & Wales and in Scotland. However, as the two price controls are separate we have decided to retain the current differences in our approach between England & Wales and Scotland, i.e. for Scotland we will undertake a specific ex-post efficiency assessment;

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<sup>271</sup> Therefore, to be clear, we have decided that we will not adjust Network Rail's renewals additions to the RAB in CP5 for movements in IOPI (or another specific inflation index).

<sup>272</sup> For the early stage GRIP schemes, our initial estimates in this document include contingency but when we assess these schemes through the enhancement costs adjustment mechanism, we will not allow contingency.

- (c) in PR08 there are differences in the RAB roll forward treatment of volume and unit cost variances in renewals expenditure. We have decided that as it is the aggregate variance that is more important these variances should be treated equally to simplify the RAB roll forward policy. This should make the incentives on Network Rail more effective. The most appropriate way of implementing this change is to apply our approach for enhancements in England & Wales for renewals in England & Wales and in Scotland (i.e. overspend relating to additional volumes of work or unit costs for renewals in England & Wales and Scotland will be added to the RAB) unless the overspend is manifestly inefficient. This provides sufficient incentives against inefficient spend and is more practical than the complicated efficiency test that we used for renewals in England & Wales and Scotland in CP4. It would also maintain a consistent approach to renewals in England & Wales and Scotland;
- (d) as in PR08 the burden of proof will be on Network Rail to show that it has met its required outputs. Where Network Rail has been funded to deliver an output that has not been delivered this may require a RAB adjustment. Due to the wide range of circumstances that can lead to Network Rail not delivering required outputs or maintaining the serviceability and sustainability of the network, we do not think that it is practicable for us to set out detailed prescriptive criteria for determining when and by how much a non-delivery of outputs would require a RAB adjustment. However, as our PR13 output specifications are more granular than those in PR08 we consider that it should be clearer whether Network Rail is meeting its requirements, e.g. using the new asset management indicators;
- (e) we will decide in our RAGs, which will be published prior to the start of CP5, whether to provide more guidance on how an output adjustment should be calculated<sup>273</sup>. In particular, we will work with Network Rail to see if we can determine a methodology for calculating an adjustment for the non-delivery of performance outputs in CP5 (e.g. PPM) that can be included in the RAGs; and
- (f) before we allow Network Rail to retain the benefit of an efficient underspend, consistent with our approach for assessing financial performance, we proposed in our draft determination to require Network Rail to<sup>274</sup>:
  - (i) have successfully implemented a package of improvements on asset management, e.g. capability, asset policies, asset register, data quality, condition reporting and unit cost information;

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<sup>273</sup> For example, how Network Rail should adjust for circumstances similar to its non-delivery of PPM and CaSL targets in CP4, which resulted in a £436m (in 2012-13 prices) adjustment to our assessment of Network Rail's financial performance for 2012-13.

<sup>274</sup> We discussed with Network Rail how this will work in practice, e.g. what the minimum confidence grade on its efficiency reporting should be, during the summer of 2013.

- (ii) achieve a minimum confidence grade on its efficiency reporting, e.g. track volumes and unit costs;
- (iii) justify its efficiencies by identifying the positive management actions that generated the efficiencies; and
- (iv) explain how its expenditure is consistent with the delivery of its required outputs (including safety), is sustainable in the short, medium and long-term and is consistent with whole-life cost minimisation.

### ***Responses to our draft determination***

- 12.250 Network Rail largely supported the changes in our approach to the RAB roll forward from CP4 and the additional clarification except for the proposal that before we allow Network Rail to retain the benefit of an efficient underspend, it will need to show that it has successfully implemented a package of improvements on asset management and improved its reporting systems and processes. Network Rail's response on this issue is covered in detail in the monitoring, enforcement and reporting chapter (chapter 23), where we also discuss its views on how we decide whether an output has been delivered and how we value a non-delivery of outputs.
- 12.251 ATOC supported our proposal that Network Rail should only be able to retain the benefit of an efficient underspend if it has successfully implemented a package of improvements on asset management and improved its reporting systems and processes. ATOC considered this is an appropriate requirement to improve assurance to stakeholders as operators continue to work more closely with Network Rail. Also, train and freight operators have supported ORR's commitment to improve Network Rail's asset management and information.
- 12.252 In relation to the calculation of an output adjustment, a number of TOCs consider that, although a value based approach has significant theoretical merit, this should only be adopted if the incentive properties can be demonstrated and are transparent to operators. Some TOCs considered that the changes to the regulatory regime for CP5 are already significant and would not wish to see increased complexity unless there is a clear business case.
- 12.253 Train operators noted that the amount retained by Network Rail for any renewals underspend should be limited to instances where the work has been carried out and delivered more efficiently. Train operators considered that Network Rail should not benefit from not doing a renewal in the first place.

### ***Our comments on the responses to our draft determination***

- 12.254 In chapter 23 we say that we are continuing to discuss with Network Rail whether, before we allow Network Rail to retain the benefit of an efficient underspend, it will need to show that it has successfully implemented a package of improvements on asset management and to its reporting systems and processes.

12.255 We are also discussing with Network Rail its views on how we decide whether an output has been delivered and how the adjustments for the non-delivery of outputs will be calculated. We will publish our decisions in our RAGs prior to the start of CP5.

### ***Our determination***

12.256 With the exception of the proposals on:

- (a) how we decide whether an output has been delivered; and
- (b) whether, before we allow Network Rail to retain the benefit of an efficient underspend, it will need to show that it has successfully implemented a package of improvements on asset management and improved its reporting systems and processes as described above,

we have not seen any representations or further evidence to persuade us to change the decisions set out in our draft determination.

12.257 We consider that the remaining decisions remain appropriate for CP5. We therefore confirm the decisions in our draft determination.

## **Main features of our RAB roll forward policy in CP5**

### ***Background and our draft determination***

12.258 The main features of our RAB roll forward policy for CP5 that we set out in our draft determination are set out below.

#### ***Process for the RAB roll forward in CP5***

12.259 The process for rolling forward the RAB in each year of CP5 will be to:

- (a) adjust the CP5 opening RAB per our PR13 determination into the price base of the relevant year;
- (b) add the renewals and enhancements RAB additions (after adjusting for the effect of the RAB roll forward policy as described below);
- (c) adjust as appropriate for the non-delivery of outputs or not maintaining the serviceability and sustainability of the network in the short, medium or long-term; and
- (d) deduct our PR13 amortisation assumption.

#### ***Our general RAB roll forward policy for CP5***

12.260 As our determination for England & Wales is separate to our determination for Scotland, renewals and enhancements will be rolled forward separately for England & Wales and for Scotland in accordance with our PR13 determination. We will also separately roll forward the indicative RABs for each of the nine England & Wales operating routes.

12.261 As we do not think that general inflation risk is efficiently controllable by Network Rail, we have decided to adjust Network Rail's RAB by the actual movements in general



inflation in CP5. Otherwise the real value of Network Rail's asset base (against which it raises finance) could be eroded, which could ultimately reduce the company's ability to access financial markets and finance the renewal and enhancement of the network. This approach means that Network Rail will neither gain nor lose from the effects of general inflation.

- 12.262 We will retain our PR08 approach and make yearly RAB adjustments for variances between our general inflation assumptions (i.e. RPI) and the actual outturns rather than unnecessarily waiting for the end of the control period. This approach has no effect on Network Rail's revenues.
- 12.263 To encourage Network Rail to improve efficiency throughout CP5, the incentives that Network Rail faces are equalised across the five years of the control period. For example, Network Rail faces the same incentive to outperform in the last year of CP4 as it does in the first year of CP5 and will bear the same cost of efficient overspend in year 5 of CP5 as in year 1 of CP5.
- 12.264 In order to simplify the calculations of the financial effect of a five year retention in our PR13 determination we have set the incentive rate at 25%, which is approximately the same as five years allowed return at 4.31% (the PR13 cost of capital). This is also called the 25% pain/gain sharing mechanism, which provides an appropriate incentive on Network Rail to manage renewals and enhancements efficiently but does not expose it too much to risk. Also, in order to simplify the calculation we make the relevant RAB additions/deductions in the year when they occur.
- 12.265 Network Rail will not be penalised for, or benefit from, rescheduling its renewals and enhancements programme (deferring work or bringing work forward) within CP5 where outputs are met<sup>275</sup>. By not penalising or rewarding Network Rail we mean that (subject to Network Rail showing that the required outputs in CP5 have been delivered and there is no adverse effect on the serviceability and sustainability of the network in the short, medium or long-term), we will not treat the variance in expenditure as an efficiency or inefficiency.
- 12.266 This means that we will adjust the RAB for the financial effect of rescheduling activity, so that Network Rail does not retain/bear the financing benefit/cost of the rescheduling, i.e. if there is a deferral of work from year 1 to year 2, in our PR13 determination Network Rail will have received an allowed return on that work for year 1. In order to make the effect of rescheduling within CP5 neutral, we will deduct from the RAB the amount of financing that Network Rail received for that work for the period until the work is completed in year 2. For the avoidance of doubt, these adjustments are not subject to the 25% pain/gain sharing mechanism.

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<sup>275</sup> This should help to smooth the investment cycle – providing greater certainty and predictability for the supply chain. Also, it avoids incentivising Network Rail to inappropriately defer work or bring work forward.



- 12.267 As the actual outturn for renewals and enhancements expenditure in 2013-14 will not be available until the publication of the 2013-14 regulatory accounts in July 2014 we intend, where appropriate, to make an adjustment as part of the next access charges review, to the CP6 opening RAB at 1 April 2019. The adjustment, including where relevant the associated capitalised financing, will take account, where appropriate, of the difference between the final outturn figures for CP4 shown in the 2013-14 regulatory accounts and the forecast 2013-14 RAB movements included in our PR13 final determination.
- 12.268 For CP5, we have largely used Network Rail's statutory accounting policies as the basis for defining what can be added to the RAB as renewals and enhancements. This was because it is a transparent approach and one that is easy to understand. To ensure that our RAB roll forward policy is complied with, the audits of the regulatory accounts in CP5 will confirm that the boundaries between renewals and enhancements, and between maintenance and renewals/enhancements are the same as used in our PR13 determination and the capitalisation of overheads is on the same basis as in our PR13 determination.
- 12.269 Given that CP5 is a five year price control, the assessment of the RAB is a cumulative assessment for CP5, i.e. an overspend in year 1 could be offset by underspend in year 2. This means that it will only be possible to finalise the value of the RAB once CP5 is completed. All annual calculations of the RAB during CP5 in Network Rail's regulatory accounts will therefore be provisional.
- 12.270 To avoid undue complexity, agreed deferrals of expenditure from CP4 to CP5 (e.g. for elements of the electrification programme) will be treated under the CP5 RAB roll forward policy unless agreed otherwise.

#### *Treatment of underspend on renewals and enhancements expenditure*

- 12.271 Network Rail will retain 25% of an efficient underspend irrespective of whether the underspend is due to a variance in volumes or unit costs.
- 12.272 Given the information asymmetry between Network Rail and us, it is for Network Rail to show that a reduction in work volumes is efficient and does not inappropriately affect the serviceability and sustainability of the network in the short, medium or long-term. Where Network Rail cannot show that a reduction in volumes is efficient, any cost savings related to the deviation from the current agreed asset policies will be deemed inefficient and the related cost savings will be deducted from the RAB without Network Rail retaining 25% of the benefit. As in PR08 the burden of proof will be on Network Rail to show that it has delivered its required outputs.

#### *Treatment of overspend on renewals and enhancements expenditure*

- 12.273 If an efficient overspend is eligible for a RAB addition, Network Rail will generally bear 25% of the overspend (including when an overspend is offset against an efficient underspend). If the overspend is not eligible for a RAB addition, Network Rail will bear 100% of the cost of the overspend.

- 12.274 Overspend relating to additional renewals work in England & Wales and in Scotland will be added to the RAB unless the overspend is manifestly inefficient.
- 12.275 Manifestly inefficient enhancement expenditure will not be added to the RAB. Therefore, Network Rail will have to provide an explanation to us as to why additional investment is justified. This will ensure overspend that is either:
- (a) outside of the scope of the HLOS requirements (if relevant);
  - (b) not meeting a customer reasonable requirement;
  - (c) not related to railway activity; or
  - (d) not adding economic value to the railway,
- would not be eligible to be added to the RAB. We would expect a key element of Network Rail's justification would be evidence that internal project management and investment authorisation controls had been properly applied.
- 12.276 In order to ensure the price control is sufficiently flexible to cope with planning uncertainty, where the governments or other funders agree with Network Rail that Network Rail will deliver additional outputs during the control period, we can where appropriate log-up the efficient cost (including capitalised financing costs) of delivering these additional outputs for inclusion in the RAB at the beginning of the next control period.

#### *Non-delivery of outputs*

- 12.277 As PR13 is an output based determination, Network Rail should not benefit from a non-delivery of its required outputs irrespective of whether it is under/over spending. We will therefore ensure that if Network Rail does not deliver its required outputs in CP5 or maintain the serviceability and sustainability of the network in the short, medium or long-term, then it will not retain the associated financial benefit. We will also make an adjustment for capitalised financing on the logged down amount and Network Rail will not retain 25% of an underspend.
- 12.278 We will do this by either making an appropriate deduction from the RAB or not funding the company for any deferred work that it will not be doing in CP5 as appropriate. We will make this adjustment regardless of whether there has been an underspend or overspend. Our adjustment will be calculated with reference to our PR13 determination and RAGs.
- 12.279 In PR08 our adjustments for the non-delivery of outputs were based on the amounts of expenditure that Network Rail avoided by not delivering its outputs or failing to maintain the serviceability and sustainability of the network in the short, medium or long-term. For PR13, we are continuing to discuss with Network Rail whether a value based adjustment would be more appropriate and we will publish our decision in relation to this matter in the RAGs prior to the start of CP5.

### *Exceptions to our general RAB roll forward policy*

12.280 In our draft determination we identified four exceptions to our general RAB roll forward policy for the civils adjustment mechanism, enhancements cost adjustment mechanism, projects with specific protocols/arrangements and spend to save schemes. These exceptions are described later in this chapter.

### **Responses to our draft determination**

12.281 Network Rail disagreed that a reduction in expenditure should be deemed to be inefficient unless Network Rail can show that it was efficient. Network Rail noted there is an established means of assessing the sustainability of its asset policies and it thinks that the same approach should be taken when we or the reporter assess sustainability for financial performance purposes. Network Rail considered that some of the recent statements from Arup and us have indicated a different approach to sustainability, which Network Rail considers is subjective.

12.282 Network Rail emphasises that we considered that there is only a 45% confidence in Network Rail meeting its CP5 PPM target. Given this, Network Rail considered that there is little prospect of it being able to demonstrate that any cost saving is efficient. Network Rail claimed that the mechanism therefore provides an incentive to overspend rather than to strive for savings. Network Rail considered that there should be a presumption that underspend is efficient and it should be the aggregate variance that is important in order to avoid detailed reconciliations and bureaucracy.

12.283 Network Rail would like us to clarify in our final determination in what circumstances the cost of capital approach should be used when rolling forward its RAB and when the adjusted WACC approach should be used. It suggested that the rates to apply should be as follows:

- (a) rescheduling of capital expenditure within CP5 whilst still meeting outputs. It thinks that Network Rail should be held neutral to this and hence the capitalised financing should be based on the cost of financing that it received in the revenue requirement (i.e. the adjusted WACC);
- (b) deferral of work from CP5 to CP6: It thinks that this would result in a RAB reduction that should include an adjustment for the financing costs it has received on the logged down amount and so in these situations the adjustment should be calculated using the adjusted WACC rate; and
- (c) additional investments requested by governments and other funders in CP5, or additional Network Rail promoted investments (income generating and spend to save schemes). As these are additional investments over and above those funded through the PR13 determination, the normal real cost of capital should apply for the capitalised financing costs (i.e. 4.31%).

### ***Our comments on the responses to our draft determination***

12.284 We note in chapter 23 that we continue to consider that the burden of proof should be on Network Rail to show that any underspend is efficient, so we do not think that underspends should be deemed to be efficient, this is particularly because of the need for us to hold Network Rail to account, given its corporate structure and financing.

12.285 Network Rail's comment that because we are using the adjusted WACC approach, we should not use the cost of capital for calculating the effect of capitalised financing through the RAB roll forward policy, has some merit. However, the adjusted WACC approach is, as far as possible, to be solely used for calculating Network Rail's revenue requirement as we think that it is better that financial decisions should be made with reference to Network Rail's cost of capital, which reflects the risks it faces. Therefore, for RAB capitalised financing adjustments, we have decided to use Network Rail's cost of capital to calculate the adjustment.

### ***Our determination***

12.286 As we have not seen any representations or further evidence to persuade us to change the approach set out in our draft determination, we consider that this approach remains appropriate for CP5. We therefore confirm the approach in our draft determination.

## **Civils adjustment mechanism**

### ***Background and our draft determination***

12.287 As explained in the asset management: maintenance and renewals expenditure chapter (chapter 8), Network Rail thinks that a significant backlog of work has developed in civils. However, Network Rail's SBP did not fully demonstrate this which prevented us from concluding on the level of efficient civils expenditure in our draft determination. Because of this we are having to take the unusual step of implementing a civils adjustment mechanism for the RAB in CP5 as follows:

- (a) in years 1 and 2 of the control period, Network Rail will be expected to deliver the volumes of civils work that it proposed to deliver in its PR13 SBP. If Network Rail under delivers on its planned volumes it will have to catch up, so Network Rail will not benefit from an under-delivery including the capitalised financing effect. Over-delivery of volumes will be subject to the normal RAB roll forward policy (in simple terms, the RAB roll forward policy allows Network Rail to retain 25% of efficient underspend but requires it to bear 25% of overspend). Any under or over spend on unit costs will be subject to our normal RAB roll forward policy; and
- (b) the actual volumes and unit costs to be applied in years 3, 4 and 5 of the control period are not yet known. Our view on the level of efficient civils expenditure in these years will therefore depend on the outcome of our assessment of the plan of work that we will require Network Rail to publish by 31 March 2015. These

volumes and unit costs could be under or over those assumed in our determination. If Network Rail under-delivers on its planned volumes it will have to catch up, so Network Rail will not benefit from an under-delivery including the capitalised financing effect. Over-delivery of volumes will be subject to the normal RAB roll forward policy. Any under or over spend compared to our revised determination for unit costs will be subject to the normal RAB roll forward policy as described above.

12.288 Any adjustments to Network Rail's RAB and revenue requirement that are needed following our adjustments to the civils assumptions, will be logged up/down to Network Rail's RAB and/or the opex memorandum account for CP6.

### ***Responses to our draft determination***

12.289 Network Rail supported the principle of the civils adjustment mechanism and agreed that it is an appropriate way of recognising the current level of uncertainty about the efficient level of activity and expenditure for renewal of these assets.

12.290 Passenger Focus also agreed that the civils adjustment mechanism is appropriate given the current uncertainty over the work required.

12.291 No further material consultation comments were received about the RAB treatment of the civils adjustment mechanism.

### ***Our comments on the responses to our draft determination***

12.292 We did not receive any comments that did not support the approach set out in our draft determination.

### ***Our determination***

12.293 We confirm the approach set out in our draft determination.

## **Enhancements cost adjustment mechanism for early GRIP projects**

### ***Background and our draft determination***

12.294 The RAB roll forward policy for early GRIP projects will operate normally and, for the avoidance of doubt, an incentive payment that Network Rail makes to a TOC to help in delivering an efficient project can be included in the efficient cost of the project. However, as discussed in the enhancements expenditure chapter (chapter 9), our PR13 determination for efficiently incurred enhancement costs will be adjusted at the end of 2014-15 following our review of the costs of the early GRIP projects. Any adjustments to Network Rail's RAB and revenue requirement that are needed following this review will be logged up/down to Network Rail's RAB and/or the opex memorandum account for CP6.

### ***Response to our draft determination***

12.295 We did not receive any material comments on the approach set out in our draft determination.

### ***Our determination***

12.296 We confirm the approach set out in our draft determination.

### **Projects with specific protocols/arrangements**

#### ***Background and our draft determination***

12.297 In our draft determination we set our approach to projects with specific protocols/arrangements.

#### ***Responses to our draft determination***

12.298 We did not receive any material comments on the approach to projects with specific protocols/arrangements set out in our draft determination.

### ***Our determination***

12.299 Our approach to projects with specific protocols/arrangements is as set out below.

#### ***Introduction***

12.300 The following enhancement projects have either an established separate protocol, other arrangements or are subject to a target price arrangement that identifies a target price and a pain/gain share mechanism, which will apply if outturn costs vary from the target price. The RAB would then be adjusted at the start of CP6 to reflect these arrangements. This approach should ensure that Network Rail is incentivised to manage the financial risk of the project but is not exposed to open ended financial risk. We are continuing to discuss with the Welsh Government and DfT the specific arrangements for the Welsh Valley Lines project.

#### ***Thameslink***

12.301 In CP5, Network Rail will complete the final stage of the Thameslink programme giving a further improved train service of up to 24 trains per hour between St Pancras and Blackfriars stations, at a total cost of about £1.6bn (2012-13 prices). This phase also provides the required infrastructure to allow operation through London Bridge. There is a protocol in place between Network Rail and DfT under which a target price and a pain/gain mechanism has been agreed and Network Rail's obligations are defined.

#### ***Crossrail***

12.302 The Crossrail project involves work outside of the central tunnel section with a total cost of about £1.5bn (2012-13 prices). These works will facilitate new train services from Maidenhead and Heathrow in the west to Shenfield and Abbey Wood in the east. A protocol is in place between Network Rail, Crossrail Limited and the DfT that details Network Rail's obligations. Under the terms of this protocol a target price and a pain /gain share mechanism have been agreed.

#### ***Edinburgh to Glasgow Improvement Programme (EGIP)***

12.303 The Edinburgh to Glasgow Improvement Programme (EGIP) programme will deliver more frequent and faster rail services between Scotland's two principal cities at a total



cost in CP5 of around £500m (2012-13 prices). Network Rail and Transport Scotland are finalising the commercial arrangements, which will incorporate a pain/gain mechanism. Network Rail's obligations will be established in the enhancements delivery plan, which we will hold it to account for.

### ***Borders***

12.304 The Borders project comprises a new railway line linking the Midlothian and Scottish Borders areas to central Edinburgh and the existing national network at a total cost in CP5 of about £174m (2012-13 prices). Like EGIP, Network Rail and Transport Scotland are finalising the commercial arrangements, which will incorporate a target price and a pain/gain mechanism.

### ***ETCS***

12.305 In our draft determination, we included £194m (2012-13 prices) of ETCS cab-fitment expenditure in renewals. This has now been re-allocated to enhancements. As we discussed in the enhancements expenditure chapter (chapter 9), the expenditure on ETCS will be treated on an emerging efficient cost basis. This means that the normal RAB roll forward approach will not be used for this expenditure and instead efficient expenditure will be added to the RAB following an ex-post review.

### ***Additional HLOS depots and stabling enhancements***

12.306 As we discussed in chapter 9, the £312m (2012-13 prices) of expenditure on additional HLOS depots and stabling enhancements will be treated on an emerging efficient cost basis. This means that the normal RAB roll forward approach will not be used for this expenditure and instead efficient expenditure will be added to the RAB following an ex-post review.

### ***Ring-fenced funds***

12.307 For ring-fenced funds, expenditure above the level of the funds will not be added to the RAB and Network Rail will not benefit from an underspend, including the effect of capitalised financing. We will carry out an ex-post review of Network Rail's expenditure on a sample basis. One of Network Rail's regulated outputs for CP5 is to deliver a plan to maximise the reduction in the risk of accidents at level crossings. Our draft determination included £67m (in 2012-13 prices) of enhancement expenditure to support this work. In our final determination, following the receipt of new evidence from Network Rail, we have decided to increase this funding by £32m to £99m (in 2012-13 prices). The level of this fund is capped (i.e. the maximum RAB addition is £99m, even if Network Rail spends more than that) and if Network Rail spends less than £99m, it will not be able to rollover any unused CP5 level crossing safety fund into CP6, i.e. the unused amount (including capitalised financing) will not be included on the RAB.



## **Development fund**

### *Introduction*

12.308 As set out in the financial incentives chapter (chapter 19), we have signalled our support for R&D and innovation as a means of improving Network Rail's productivity and reducing its costs in the medium to long-term.

### *Funding in our determination*

12.309 In our determination, we have provided £144m (2012-13 prices) of HLOS funding for the development fund, this includes R&D (including innovation), work to develop the link between High Speed 2 and the existing network and project development work for CP6. The R&D part of this funding (£52m in 2012-13 prices) is ring-fenced for R&D projects only.

12.310 In addition, we have assumed that Network Rail spends £50m (in 2012-13 prices) more than the HLOS funding through the matched funding process as described below, so our determination includes a total RAB addition of £194m in 2012-13 prices (£144m + £50m) for R&D, work to develop the link between High Speed 2 and the existing network and project development work for CP6.

### *Treatment of actual expenditure in CP5 on R&D*

12.311 For R&D, due to the unique nature of the expenditure on R&D (in terms of risk and uncertainty), if certain conditions are met, such as the agreement of the governance process and robust evidence being provided that the expenditure will increase the value of the railway, this spend can be added to the RAB in CP5 up to a cap of £52m (2012-13 prices). This is discussed in more detail in chapter 19.

12.312 For R&D, work to develop High Speed 2 and project development work, efficient expenditure up to a maximum of £92m (£144m - £52m) can be added to the RAB, subject to an ex-post review of the efficiency of this expenditure.

12.313 For Network Rail's development fund expenditure, Network Rail will not benefit from any underspends (including the related capitalised financing).

### *Matched funding*

12.314 In the financial incentives chapter (chapter 19), we further signal our support for Network Rail's R&D expenditure by introducing the matched funding mechanism. Subject to a well justified proposal from Network Rail (which we will assess on an ex-ante basis) for a portfolio of projects which it is either using its financial outperformance to fund or using third party funding, we will match each additional pound which Network Rail (or a third party) spends on R&D up to £50m over CP5. For the avoidance of doubt, the amount Network Rail spends on matched funding projects will not be added to the RAB but our part of the funding will be.

12.315 For example, if Network Rail spends £20m on a matched funding project (including third party funding), then our funding will be £10m and in total £10m will be added to the RAB. In order to incentivise Network Rail, we have assumed these projects go

ahead in CP5 and we have added £50m (2012-13 prices) to the RAB in our determination.

12.316 If the £50m of matched funding is not used in CP5, we will adjust Network Rail's RAB, so that it does not benefit from an underspend in relation to matched funding projects (including the related capitalised financing).

### ***Rollover of CP4 ring fenced funds***

12.317 Our general rule is that underspend on specific funds cannot be rolled forward from one control period to the next. However, due to the exceptional circumstances discussed in the enhancements expenditure chapter (chapter 9), we are allowing some unused CP4 funds to be rolled forward into CP5. Therefore £40m (2012-13 prices) of unused CP4 strategic freight network funding will be included in the CP5 strategic freight network fund, and £29m (2012-13 prices) of unused CP4 access for all funding and £7m (2012-13 prices) of unused CP4 national stations improvements programme funding will be added to the CP5 Stations Improvements Programme fund.

12.318 In CP5, Network Rail will not benefit from an underspend on these funds and no additional expenditure on these projects above the levels set out above will be added to the RAB. We will adjust Network Rail's RAB at the end of CP4, so that Network Rail does not benefit (including capitalised financing) from the unused CP4 funds.

## **Spend to save**

### ***Background and our determination***

12.319 Our approach to spend to save schemes is set out above in the spend to save policy section of this chapter.

### **Key changes from CP4 to CP5**

12.320 The decisions that we have set out in this document will mean that the approach to the RAB roll forward will be different in CP5. In summary, the main differences between our RAB roll forward policy in CP5 compared to CP4 are:

- (a) we will not adjust our renewals assumptions for movements in the IOPI index (as outlined in our December 2012 decisions document);
- (b) overspend relating to additional volumes of work or unit costs for renewals in England & Wales and Scotland will be added to the RAB, unless the overspend is manifestly inefficient. This is instead of having a complicated efficiency test;
- (c) there will be no enhancement deadband; and
- (d) as we are using the adjusted WACC approach to Network Rail's cost of capital there is no ring-fenced fund in CP5. This means that there will be no adjustment for the element of renewals and enhancements that are funded by a ring-fenced fund in CP4.

## **Non-capex additions to the RAB and the opex memorandum account**

### **Background, our decisions in previous documents and our draft determination**

- 12.321 We decided in PR08 that only capital expenditure will be added to the RAB. Incentive payments, which before CP4 were added to the RAB at the start of the next control period, are now remunerated via the opex memorandum account. This works by 'logging up' the payment to the account during a control period and then releasing any monies from this account over an appropriate period of time, which is generally across the next control period.
- 12.322 In our December 2012 decisions document, we explained that we had decided to retain the use of the opex memorandum account for CP5. This is because it:
- (a) avoids distorting the RAB;
  - (b) is more transparent;
  - (c) formalises the way these issues are resolved, which reduces regulatory risk; and
  - (d) allows us to smooth the effect of the release of monies in this account to Network Rail on Network Rail's income and charges.

### **Responses to our draft determination**

- 12.323 Network Rail supported the retention of the opex memorandum account and agreed that it should continue to cover the same items as in CP4.

### **Our comments on the responses to our draft determination**

- 12.324 We did not receive any comments that did not support the approach set out in our draft determination.

### **Our determination**

- 12.325 We confirm the decisions that only capital expenditure will be added to the RAB and to retain the use of the opex memorandum account for CP5 as set out in our draft determination.

## **Reactive maintenance**

### **Background and our draft determination**

- 12.326 In our August 2012 consultation, we explained that we were considering whether Network Rail's reactive maintenance costs should be remunerated in the year these costs are incurred, (i.e. for the purpose of calculating the revenue requirement, treat them in the same way as operating and other maintenance costs).
- 12.327 This would improve transparency, as Network Rail currently accounts for reactive maintenance costs, as operating costs in its statutory accounts, but as capital expenditure (renewals) in its regulatory accounts (to be consistent with our PR08 determination). This means that at the moment Network Rail needs to provide in its regulatory accounts a reconciliation of maintenance and renewals costs between its statutory accounts and its regulatory accounts.

- 12.328 Everything else being equal, the increase in maintenance costs from treating reactive costs as maintenance costs (and hence the revenue requirement) would largely be offset by a reduction in amortisation (and hence the revenue requirement), as we would expect the average long-run steady state renewals to be lower by an equivalent amount<sup>276</sup>. This means that a change in this policy should not have a material impact on Network Rail's revenue requirement.
- 12.329 Most respondents to our August 2012 consultation on financial issues thought that we should remunerate reactive maintenance costs in the year that these costs are incurred, largely because they thought that this is more transparent.
- 12.330 Network Rail did not support remunerating reactive maintenance costs in the year that these costs are incurred because:
- (a) there could be an increase in preventative maintenance in CP5;
  - (b) there will still be other differences between the regulatory and financial accounts; and
  - (c) the current regulatory treatment reflects how it manages civils expenditure.
- 12.331 However, Network Rail's SBP assumed that its operational property inspections (CEFA) contract costs (approximately £50m per year), which are part of reactive maintenance, would all be remunerated in the year incurred. For our draft determination we further discussed this issue with Network Rail and it thought that it could identify reactive maintenance costs.
- 12.332 Given these factors, in order to improve transparency, we proposed in our draft determination that Network Rail's reactive maintenance costs should be treated as maintenance costs and remunerated in the year that they are incurred.

### Responses to our draft determination

- 12.333 Network Rail did not support treating reactive maintenance costs as maintenance costs in CP5 as it manages its activities to renew and maintain civils and buildings on an integrated basis. Network Rail also noted that that this would be inconsistent with our proposal for a specific civils regime during CP5. Network Rail was also concerned that not including reactive maintenance in renewals may result in incentives for Network Rail to transfer activities between operating and capital costs in a manner that may be sub optimal.
- 12.334 Network Rail argued that there is considerable uncertainty about the amount of civils and buildings expenditure that would be classified as reactive maintenance in the statutory accounts. Network Rail said that a mechanism is needed to enable the

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<sup>276</sup> Although there could be an effect, as our calculation of efficiency for maintenance in CP5 is based on the five years of that control period, whereas the calculation of efficiency for average long-run steady state renewals in CP5, is over thirty-five years.

baseline to be adjusted to reflect the actual balance between reactive renewals and maintenance in CP5.

### **Our comments on the responses to our draft determination**

- 12.335 As explained below, Network Rail's comment that if we treat reactive maintenance costs as maintenance costs, there will be different regulatory regimes in place given the civils renewals mechanism, confuses the issue. Our policy on reactive maintenance should not be driven by the civils renewals mechanism, as that is a short term solution to a problem.
- 12.336 The issue we are discussing here is how reactive maintenance costs should be funded in our determination and reported in Network Rail's regulatory accounts and as we set out in the asset management: maintenance and renewals expenditure chapter (chapter 8), reactive maintenance costs are not part of the civils renewals mechanism.
- 12.337 The issue of sub optimal incentives applies to the whole of maintenance and capital expenditure, where there are different treatments of under/over spends in maintenance compared to capital expenditure. These different incentives strengths for maintenance and capital expenditure have been in place since PR08 and as explained above, we will continue to use them in CP5. However, it is for Network Rail to manage its business so that it does not make sub optimal decisions.
- 12.338 The more important issue in relation to incentives is how variances in reactive maintenance are treated in our assessment of Network Rail's financial performance<sup>277</sup>. The introduction of the civils renewals mechanism has already complicated this issue because we will need to have a different treatment of civils renewals volumes compared to civils unit costs.
- 12.339 Therefore, we will resolve how reactive maintenance should be treated in our assessment of Network Rail's financial performance in the RAGs that will be published prior to the start of CP5.

### **Our determination**

- 12.340 We have received no new evidence from Network Rail or any other representations or further evidence to persuade us to change the proposal set out in our draft determination.
- 12.341 For the reasons set out above we have decided that Network Rail's reactive maintenance costs should be treated as maintenance costs and remunerated in the year that they are incurred.

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<sup>277</sup> This is covered in the financial monitoring chapter (chapter 23).

## Funding of enhancements

### Background and our draft determination

- 12.342 In our August 2012 consultation, we consulted further on our approach to amortisation, and in particular whether enhancements should be amortised immediately after they come into use. We raised this issue because amortisation based on average long-run steady state renewals does not fund the original construction cost of an enhancement, just the renewals needed to maintain the asset in a suitable condition<sup>278</sup>.
- 12.343 This approach can be appropriate for an enhancement that adds economic value to the network for a very long time period (e.g. some rail bridges are over 100 years old and are still in regular use). However, if enhancements proposed in the HLOSs have lower economic contributions over the long-term than their costs, we need to consider how these enhancements should be funded.
- 12.344 In our August 2012 consultation, we set out three options for funding HLOS enhancement expenditure where the economic contribution that an enhancement provides to the network over the long-term is lower than its cost<sup>279</sup>. The three broad options were:
- (a) as our amortisation policy takes into consideration long-term financial sustainability issues, we could increase amortisation to reduce Network Rail's debt;
  - (b) these enhancements could be funded on a pay-as-you-go basis, i.e. they are remunerated like maintenance costs; or
  - (c) amortised over a fixed period of time that reflects their useful economic life.
- 12.345 All of these options can resolve the funding issue. However, we consider that it is more transparent to fund these enhancements, on a pay-as-you-go basis (i.e. option (b)), or to amortise them over a fixed period of time reflecting their useful economic life (i.e. option (c)), instead of increasing amortisation for financial sustainability reasons (i.e. option (a)).
- 12.346 At a high-level we consider that enhancements that can be added to Network Rail's RAB should be projects that are broadly consistent with our investment framework criteria for a RAB addition<sup>280</sup>. However, we recognise that the investment framework

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<sup>278</sup> The operating, maintenance and financing costs of the asset would be funded in future periodic reviews.

<sup>279</sup> When the wider social benefit that the enhancement provides is included, the total contribution provided by the enhancement should be greater than its cost.

<sup>280</sup> The criteria are included in our investment framework consolidated policy & guidelines document, which was published in October 2010 and is available at: <http://www.rail-reg.gov.uk/server/show/ConWebDoc.10081>.

is not designed for HLOS funded schemes and therefore some of the investment framework criteria are not relevant, e.g. the reference to other funders.

- 12.347 In our draft determination, we noted that in our final determination, as part of our review of financial sustainability, we would consider whether, if there is an overall surplus above the level of funding contained in the SoFAs, we could treat some enhancements that do not provide a commercial return as pay-as-you-go projects, i.e. not add them to the RAB.
- 12.348 This would improve financial sustainability and could be a more appropriate way of funding enhancements. In our draft determination, we said we would take this decision in consultation with Network Rail and the governments, having regard to our statutory duties.

### **Responses to our draft determination**

- 12.349 Railfuture was concerned that with Network Rail's RAB getting ever higher to fund continued enhancements and electrification, the burden of interest charges and debt repayments will require increasing support.
- 12.350 DfT understood the rationale for our proposal that if there was a surplus, that we could treat some enhancements that do not provide a commercial return as pay-as-you-go projects and wanted to be involved in the process.

### **Our comments on the responses to our determination**

- 12.351 As we set out in our long-term regulatory statement<sup>281</sup>, we have started to think about how the issue that Railfuture has raised can be addressed in the future. This will be one of the issues that our PR18 development work will also consider.
- 12.352 In view of the position on the affordability of the HLOSs as shown in the affordability of the HLOSs chapter (chapter 21), that the overall position depending on how inflation is treated is quite tight, we do not think that it would be appropriate for CP5 to treat some enhancements that do not provide a commercial return as pay-as-you-go projects. However, we will consider this issue for CP6 in our PR18 development work.

## **Tax**

### **Introduction**

- 12.353 Corporation tax is a normal business cost and as such is one of the building blocks of Network Rail's revenue requirement. As a result of Network Rail's brought forward corporation tax losses and the effect of the adjusted WACC approach, our decision on the treatment of Network Rail's corporation tax costs is unlikely to have significant financial implications for Network Rail in CP5.

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<sup>281</sup> Our document - Opportunities and challenges for the railway, ORR's long-term regulatory statement, is available at: <http://www.rail-reg.gov.uk/upload/pdf/long-term-regulatory-statement.pdf>.



12.354 Because Network Rail is unlikely to make significant corporation tax payments in CP5 the incentive effect of our corporation tax policy in CP5 on Network Rail could be significantly diluted as the effects of our incentives on corporation tax are largely realised in later control periods. However, it is nonetheless important that we clearly set out our approach to corporation tax as income and expenditure decisions in CP5 will affect corporation tax payments in future control periods and could affect efficiency reporting in CP5.

## The 'corporation tax double-count'

### Background and our draft determination

12.355 In PR08, we determined that Network Rail had been overfunded for corporation tax in CP3 and we decided that we would adjust for this overfunding<sup>282</sup>. This adjustment is called the corporation tax double-count. The amount of the double-count (£1.3bn) has been held on account<sup>283</sup> and in CP4 we reduced the balance by the amount of corporation tax that we estimated would be payable by Network Rail in each year of CP4.

12.356 Under this approach, we would do this until the balance on the account reaches zero. Once the balance reaches zero, we will fund Network Rail's efficient corporation tax payments through the regulatory corporation tax allowance.

12.357 As part of PR13 we reviewed our approach to the corporation tax double-count. As a result of this review, we decided to change our approach so that the value of the double-count is deducted from Network Rail's opening RAB at the start of CP5. We thought that this was more appropriate because it is more transparent than our PR08 approach. The adjustment to Network Rail's RAB for this issue is set out in the impact of financial framework on financial parameters chapter (chapter 13).

### Responses to our draft determination

12.358 Network Rail noted that it and its consultants Oxera have previously stated that they do not agree with our quantification of the corporation tax 'double-count'. However, Network Rail accepted that we have concluded on this matter and it noted that it welcomes the 'cleaning up' of the RAB to resolve this issue once and for all and it agreed that our proposed revised approach is more transparent than the approach used in PR08.

### Our determination

12.359 We confirm our decision that the value of the corporation tax double-count is deducted from Network Rail's opening RAB at the start of CP5 as set out in our draft determination.

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<sup>282</sup> Network Rail's debt is lower as a result of this overfunding.

<sup>283</sup> This is a regulatory balance that we use to adjust Network Rail's revenue requirement for this overfunding.

## Corporation tax incentive strengths

### Background and our draft determination

- 12.360 In PR08, when we determined our overall approach to the financial incentives on Network Rail, we determined that the overall incentive strengths on income and expenditure on a net of tax basis, i.e. if the company outperforms by, say, £100 then the company will retain an overall net benefit of £78 (this assumes a corporation tax rate of 22%)<sup>284</sup>. In our May 2012 document, we decided to retain the incentive strengths on income and expenditure.
- 12.361 The way the incentive strengths are given effect is through our decisions on the roll forward of corporation tax balances from CP4 into CP5 and from CP5 into CP6. In PR08, we said that our approach to rolling forward corporation tax balances was that:
- (a) we will not adjust the roll forward of corporation tax balances from CP4 into CP5 for variances in income, support costs, operations costs, BTP costs, RSSB costs, maintenance costs, financing costs and corporation tax<sup>285</sup>;
  - (b) we will take account of the changes in future income, costs and hence potentially capital allowances as a result of our policies on rolling forward the RAB, when rolling forward the corporation tax balances for variances in these elements of renewals and enhancements expenditure;
  - (c) we will take account of the changes in future revenue as a result of our policies on traction electricity and the ORR licence fee and the railway safety levy, when rolling forward the corporation tax balances for variances in those costs, to ensure that Network Rail is appropriately compensated for changes in these costs on a net of tax basis;
  - (d) where appropriate, we will adjust the roll forward of corporation tax balances in CP5 for any additional allowances that Network Rail has gained during CP4<sup>286</sup>; and

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<sup>284</sup> A more detailed example of this issue is if the company outperforms by, say, £100 and an ex-ante approach has been adopted to the opening corporation tax CP5 balances, then the corporation tax the company will pay on the outperformance will not be reimbursed by us, so the net benefit is £78 (this assumes a corporation tax rate of 22%). If the company underperforms by £100 and an ex-ante approach has been adopted then the reduction in corporation tax, as a result of the underperformance, will not be captured by us, so the net cost is £78. Using an ex-ante approach therefore reduces the net incentive to outperform as the financial consequences of outperforming (e.g. costs being lower than expected) are reduced but is less risky as the company's downside is also lower. If we adjusted the corporation tax opening balances at the next control period for actual income and expenditure, then in the above example the taxation effects of the outperformance or underperformance would be adjusted for, so the company would retain £100 of the outperformance and bear £100 of the underperformance. Therefore, the incentive is increased but the financial consequences of underperforming (e.g. costs being higher than expected) are also increased.

<sup>285</sup> This means changes in corporation tax excluding the underlying differences in income, expenditure and financing costs, e.g. if a capital allowance rate changed.

- (e) we will consider whether changes in the treatment of some of its costs during CP4 should affect the CP5 opening corporation tax balances.

- 12.362 In our December 2012 financial decisions document, we said that we were discussing with Network Rail whether we should retain the above approach or whether we should amend our PR08 approach to take more account of Network Rail's actual corporation tax position in CP4, as that may be a simpler and more transparent way of rolling forward Network Rail's corporation tax position from CP4 into CP5 without unduly affecting customers and funders and without having an effect on Network Rail's incentives.
- 12.363 This is because the corporation tax issues in CP4 relate to events that have largely already happened and as explained above the incentive effect of our decisions is diluted anyway, as Network Rail is unlikely to make significant corporation tax payments in CP4 or CP5. This approach is consistent with the views of respondents to our August 2012 financial framework issues consultation who generally wanted us to take as simple an approach to the treatment of corporation tax as possible.
- 12.364 For our draft determination, we decided to take our view of Network Rail's latest forecast of CP5 opening tax balances based on our view of Network Rail's forecast efficient position at 31 March 2014 (i.e. the end of CP4), rather than use the PR08 approach. Network Rail agrees with this approach.
- 12.365 Although this is a change in policy that affects Network Rail's position in CP4, we think that this is the most simple and pragmatic approach, given the relatively low levels of corporation tax paid by Network Rail and given Network Rail's current low levels of corporation tax, we think that the impact on its incentives will be minimal.

### ***Responses to our draft determination***

- 12.366 We did not receive any material comments on the decision set out in the draft determination.

### ***Our determination***

- 12.367 We confirm the approach set out in our draft determination.

## **Value added tax and other issues**

### ***Background and our draft determination***

- 12.368 Network Rail has identified some potential claims in relation to outstanding historic value added tax (VAT) issues. Some of these claims are material but they are uncertain and Network Rail did not forecast in its SBP that it will receive any benefit from these claims in CP5.

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<sup>286</sup> In PR08, some aspects of the calculation of Network Rail's corporation tax payments where Network Rail could possibly claim enhanced allowances (e.g. for research and development expenditure or expenditure on energy saving or environmentally beneficial equipment) were uncertain and in PR08 Network Rail did not provide an estimate of the impact of these issues. Given this uncertainty, we assumed that Network Rail would not receive any benefit from these schemes.

12.369 For our draft determination, we reviewed how VAT issues could affect Network Rail in CP5. This was informed by a study by our consultants, Alvarez & Marsal, who thought that Network Rail's assumptions were too cautious, i.e. Network Rail could gain more than it forecast in its SBP.

12.370 However, given the uncertainty of these claims, we assumed in our draft determination that Network Rail does not receive any benefit from these potential VAT issues in CP5. We also proposed to adjust CP6 for any benefit that Network Rail receives in CP5 from these VAT issues and we proposed that we would not include any of these VAT gains in financial performance in CP6.

### ***Responses to our draft determination***

12.371 Network Rail did not agree with our proposal to adjust, in CP6, for any financial benefits that it receives in CP5 from VAT policy challenges, and to exclude any such gains from its financial performance in CP5. Network Rail noted that our proposed approach would remove the current financial incentive to pursue VAT rebates.

12.372 Network Rail considered that this is inconsistent with the established principles of incentive based regulation and that the regulatory framework should incentivise Network Rail to behave like a 'conventional' company, which would include pursuing VAT rebates.

12.373 Network Rail noted that any potential future rebates are highly uncertain and so, whilst being transparent with us about its potential future opportunities, it did not include an estimate in its SBP for the 'expected value' of such rebates (which it estimates to be around £1m).

12.374 Network Rail stated that we had not clearly articulated the benefits of our removing the incentive to pursue VAT rebates. Network Rail noted that it wants to act commercially, including with regards to possible VAT rebates, and that any such rebates should also contribute to its financial performance. Network Rail suggested that one way to incentivise it to act commercially whilst addressing our concerns would be to introduce a mechanism that would let Network Rail keep a share of any such rebates.

### ***Our comments on the responses to our draft determination***

12.375 Network Rail's SBP assumed it would receive no VAT rebates in CP5 which means that it would have retained 100% of any VAT rebates it does receive in CP5. Given that Alvarez & Marsal thought that Network Rail's estimates were too cautious, we did not think that this was appropriate as it could provide Network Rail with windfall gains. However, we also thought that it was too uncertain to forecast a value for VAT rebates that could be included in our calculation of Network Rail's revenue requirement.

### ***Our determination***

12.376 We recognise that the approach that we set out in our draft determination does not provide Network Rail with a financial incentive to act commercially. Therefore, in order

to improve the incentives on Network Rail, we have decided that we will not include an assumption for VAT rebates in our calculation of Network Rail's revenue requirement, but we will introduce a risk sharing mechanism for VAT rebates in CP5, whereby Network Rail will be able to retain 25% of any VAT rebates that it receives. We will also include VAT rebates in the calculation of Network Rail's financial performance in CP5.

- 12.377 The issues involved with VAT rebates are similar to those with corporation tax credits on R&D expenditure and enhanced capital allowances on environmental expenditure, so we have decided that where Network Rail receives a cash benefit from these other sources in CP5, Network Rail will be able to retain 25% of the benefit.
- 12.378 The potential benefits from corporation tax credits on R&D expenditure and enhanced capital allowances on environmental expenditure are uncertain, so we have decided not to include an estimate of them in our calculation of Network Rail's revenue requirement. We will also include corporation tax credits on R&D expenditure and enhanced capital allowances on environmental expenditure in the calculation of Network Rail's financial performance.
- 12.379 For the avoidance of doubt, given the nature of these issues and that our approach to setting a baseline for VAT rebates, corporation tax credits on R&D expenditure and enhanced capital allowances on environmental expenditure was cautious (i.e. we have assumed zero income in CP5), we consider it appropriate that Network Rail would bear 100% of any downside.

## Network grant

### Background, our decisions in previous decision documents and our draft determination

- 12.380 While we recognise the case for public subsidy of the railway, we would like to see much more of Network Rail's funding coming from train operators paying access charges and from other customers, with greater clarity over what public money is buying. This is in line with our preference for transparency and cost-reflective charges, which will in turn send signals for the efficient usage and provision of the network. It would also help avoid blurring the roles and responsibilities of Network Rail and the governments.
- 12.381 The provision of network grants by the governments, and the lack of clarity over exactly what the governments are buying, can undermine Network Rail's accountability to its customers, which is not consistent with the more commercial relationships we would like to see drive behaviour in the industry. However, we see these changes happening over time.
- 12.382 We recognise the governments' reporting issues and that in their budgets, they classify spend according to whether it is capital or operating (operating spend is also referred to as current or resource) and network grant is treated as a capital cost, so

our decision on the level of network grant affects the split between their capital and operating budgets, which could affect affordability.

- 12.383 In determining our PR13 policies, we are required to take into account all of our statutory duties. In relation to this issue we consider that two of our duties are particularly relevant: our duty to have regard to the funds available to the Secretary of State and our duty that requires us, in summary, when having regard to guidance from the Scottish Ministers, to have regard to the expenditure that is to be incurred by them.
- 12.384 Taking these duties into account, we decided to allow part of Network Rail's income to be provided directly from the governments through network grants, which will be set ex-ante for each year of CP5.
- 12.385 In the network grant chapter (chapter 17) we set our assessment of the level of network grant payments in CP5.

### **Responses to our draft determination**

- 12.386 Train and freight operating companies generally do not think that there is a problem with network grants being paid to Network Rail in lieu of access charges. One of their reasons for this view is that if access charges increased to replace network grant there would be a structural imbalance with road, it may also make it more difficult for train and freight operating companies to raise capital and may increase the regulatory burden.
- 12.387 However, Chiltern Railways supported our view that replacing network grants with charges from train operators would help to reinforce the message that train operating companies are the customers of Network Rail.
- 12.388 Railfuture in its response to our draft determination notes that provided that the equivalent subsidy is provided to TOCs and freight operators, so that their net costs remain consistent with present funding arrangements and total funding to Network Rail is unchanged, it agrees that more of Network Rail's funding should come from access charges and that the network grant should be phased out over time. It supports the move to cost-reflective charges so that Network Rail is encouraged to act like a commercial business.
- 12.389 The DfT and Transport Scotland agreed that we should allow part of Network Rail's income to be provided directly from the governments through network grants.

### **Our determination**

- 12.390 We have not seen any representations or further evidence to persuade us to change the decision to allow part of Network Rail's income to be provided directly from the governments through network grants, which will be set ex-ante for each year of CP5. Hence we consider that this decision remains appropriate for CP5. We therefore confirm the decision in relation to network grants in our draft determination.



## Grant dilution

### Background, our decisions in previous decision documents and our draft determination

- 12.391 Current track access contracts include a grant dilution provision that provides for increases in track access charges if for any reason the governments do not pay network grants according to the agreed schedule of payments.
- 12.392 In the unlikely situation that the governments did not meet their funding obligations, we decided in December 2012 to retain the grant dilution provision in track access contracts for CP5 to ensure that Network Rail recovers its required revenue and can finance its activities.

### Responses to our draft determination

- 12.393 We did not receive any material comments on the approach set out in the draft determination.

### Our determination

- 12.394 We confirm the approach set out in our draft determination and we will include provisions in Schedule 7 of franchised operator track access contracts to ensure that Network Rail's financial position is protected. The precise nature of any such provisions will depend upon the circumstances relating to the payment of network grant by each government at that time but such provision would need to ensure that Network Rail did not face any shortfall in funding from 1 April 2014. We anticipate that any such provision would provide for an adjustment to be made to fixed charges in the event that anticipated grant income was not received by Network Rail.
- 12.395 At the date of our determination, Network Rail has not entered into new grant arrangements with either DfT or Transport Scotland for CP5. We expect clear arrangements consistent with our determination and otherwise satisfactory to us, to have been entered into and become effective by the date on which we issue our review notices. We will engage with Network Rail, DfT and Transport Scotland on this issue.

## Outperformance

### Background and our draft determination

- 12.396 In our August 2012 consultation, we explained that we had considered whether our approach to incentive strengths for Network Rail's operating expenditure and capital expenditure needed refining to encourage Network Rail to materially outperform our determination and to avoid materially failing to deliver our determination. We also considered whether efficiency initiatives that are genuine 'game-changers' should be more heavily incentivised than normal efficiency savings as they are important in identifying ways to meet Network Rail's long-term efficiency challenge.



12.397 Given it is difficult to distinguish between ‘game-changers’ and normal efficiency initiatives and it is also difficult to identify which efficiency initiative takes Network Rail beyond the target level and into the outperformance area, and that we are trying to keep the calculation of efficiency as simple as possible, we have decided that it is not appropriate to more heavily incentivise ‘game-changers’ than normal efficiency savings in CP5.

### Responses to our draft determination

12.398 We did not receive any material comments on the decision set out in our draft determination.

### Our determination

12.399 We confirm the approach set out in our draft determination.

## Use of financial outperformance

### Background and our draft determination

12.400 Financial outperformance can happen when Network Rail spends less or earns more income in CP5 than we assumed in our determination as the efficient cost of delivering its required outputs and maintaining the sustainably and serviceability of the network in the short, medium and long-term.

12.401 We consider that our determination is challenging but achievable. This means that Network Rail is incentivised to financially outperform our determination. Therefore, there needs to be a policy in place to decide how any financial outperformance is used.

12.402 Our current policy for deciding how financial outperformance is used is set out in a policy statement that we issued in 2006<sup>287</sup>.

12.403 In line with this policy, in our draft determination we set out that if Network Rail has financially outperformed in CP4, it can choose, after first consulting with stakeholders, how to use that financial outperformance. The main options are that the financial outperformance can be used to:

- (a) pay down debt;
- (b) fund investments that reduce the future cost or improve the outputs of the railway; or
- (c) pay a rebate to DfT and Transport Scotland.

12.404 We closely monitor Network Rail’s performance and report on it in our annual efficiency and finance assessment but the process for deciding whether Network Rail has financially outperformed for the purpose of deciding how to use financial

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<sup>287</sup> *Monitoring and treatment of Network Rail’s underspend and efficiency: policy statement*, ORR, January 2006, available at <http://www.rail-reg.gov.uk/upload/pdf/273.pdf>.

outperformance is not as clear as it could be. One particular issue we considered in our draft determination was how uncertainty about financial performance in the early years of a five year control period is reflected in a decision about using financial outperformance.

- 12.405 We thought that this process could be improved and in particular that Network Rail should base its decisions on using outperformance on our assessment of its financial performance as that is more consistent with the view that we will take on Network Rail's financial position in the next access charges review.
- 12.406 In relation to our decision on how financial outperformance is used, in our draft determination we set out that the two main options are that we could:
- (a) require that outperformance can only be used to pay down debt or fund R&D projects<sup>288</sup>; or
  - (b) allow Network Rail to decide how to use any financial outperformance, after having consulted with the governments and us about the best use of any financial outperformance. This would be a continuation of the approach used in CP4.
- 12.407 In our draft determination, we proposed that given the importance that we place on Network Rail's financial sustainability, we thought that any financial outperformance should be used to pay down debt or fund R&D projects up to a maximum value that would be decided in our final determination (option (a) above).
- 12.408 In particular, given our views on network grant and that grant payments should be fixed ex-ante as part of our determination, we did not think that financial outperformance should be used to make rebate payments to the governments in CP5, unless we are satisfied that there are exceptional circumstances. We noted in our draft determination that Network Rail said that it would publish an update of its policy on the use of outperformance by the end of March 2014.
- 12.409 We consulted on the proposed changes to Network Rail's network licence condition 4 necessary to implement this policy, in our consultation on changes to access contracts and the network licence to implement PR13, which we published on the 12 July 2013.

### **Response to our draft determination**

- 12.410 Network Rail strongly disagreed with our proposed restriction on how outperformance can be used and considered our approach to be disproportionate. Network Rail noted that other uses of outperformance should not be excluded as a matter of principle at this stage and that it is inappropriate to constrain the use of any financial outperformance in the way that we proposed. Network Rail considered that this is

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<sup>288</sup> We said that the maximum value of R&D projects that can be funded in this way will be decided in our final determination as discussed in the financial incentives chapter (chapter 19).

consistent with its overall network stewardship obligation as set out in its network licence.

- 12.411 Network Rail noted that it published its Business Planning Criteria, which set out the principles for how to use financial outperformance in October 2007. It is also committed to publishing an updated version of its policy on how financial outperformance should be used in CP5, by the end of March 2014.
- 12.412 Network Rail provided examples of potential uses of outperformance including expenditure on civils, level crossings or the delivery of unfunded enhancements.
- 12.413 DfT supported our proposal to use financial outperformance to pay down debt whilst also providing flexibility for Network Rail to be able to make rebate payments to government in exceptional circumstances.
- 12.414 Network Rail also provided some detailed comments on our proposed drafting for these issues, which are discussed above in the financial ring-fence section of this chapter.

### **Our comments on the responses to our draft determination**

- 12.415 We have carefully considered the responses to our draft determination and consider that if Network Rail can show that using outperformance to invest in investments would reduce the future cost or improve the outputs of the railway in a way that provides value for money, i.e. the project has a positive net present value using Network Rail's cost of capital, then it can use outperformance in that way.

### **Our determination**

- 12.416 For the reasons set out above we have decided that outperformance can only be used to pay down debt, fund R&D projects (up to a maximum of £50m for CP5 in 2012-13 prices) or fund other investments that reduce the future cost or improve the outputs of the railway in a way that provides value for money, i.e. the project has a positive net present value using Network Rail's cost of capital. Outperformance can only be used to pay a rebate to DfT and Transport Scotland in exceptional circumstances.

# 13. Impact of financial framework on financial parameters

## Key messages in this chapter

- This chapter sets out the impact of our financial framework on the financial parameters in our determination.
- Our consultants have assessed Network Rail's cost of capital and financing costs by considering market data and regulatory precedent.
- Although we are using the adjusted WACC approach to set Network Rail's revenue requirement it is still important to identify Network Rail's WACC, which we have determined as 4.31% for Great Britain, England & Wales and Scotland.
- Our assumption for Network Rail's embedded debt costs is an average of 3.72% nominal and an average of 1.40% index-linked across CP5 for Great Britain, England & Wales and Scotland.
- Our assumption for Network Rail's new debt costs is an average of 2.99% nominal and an average of 1.33% index-linked across CP5 for Great Britain, England & Wales and Scotland.
- Our FIM fee assumption is 1.10% for Great Britain, England & Wales and Scotland.
- Network Rail's debt is expected to grow from £31.7bn at the start of CP5 to £49.6bn at the end of CP5 (in nominal prices) and Network Rail's RAB is expected to grow from £49.3bn at the start of CP5 to £71.0bn at the end of CP5 (in nominal prices), mostly due to additional enhancements and inflation.
- Our amortisation assumption is £11.9bn for Great Britain, £10.6bn for England & Wales and £1.3bn for Scotland (in 2012-13 prices).

## Main changes since our draft determination

- We have changed our new debt cost assumptions from 2.53% to 2.99% for nominal debt and from 1.15% to 1.33% for index-linked debt, largely as a result of movements in market rates since our draft determination.
- Our assessment of Network Rail's opening debt at the start of CP5 has increased by £0.5bn (nominal prices) for Great Britain since our draft determination.
- Network Rail's closing debt at the end of CP5 for Great Britain has increased by £2.3bn (nominal prices) since our draft determination, largely due to higher opening debt (£0.8bn), higher enhancements costs (£0.7bn) and other changes (£0.8bn). These numbers include the effect of financing costs, so the effect of opening debt (£0.9bn) is higher than the difference in opening debt at the start of CP5 (£0.5bn).

## Key messages in this chapter (continued)

- Our assessment of Network Rail's opening RAB at the start of CP5 has decreased by £162m (in 2012-13 prices) for Great Britain since our draft determination. Network Rail's closing RAB for Great Britain has increased by £1.6bn (in nominal prices) since our draft determination, largely due to higher inflation (£0.9bn) and enhancements (£0.7bn).
- Our amortisation assumption has reduced by £0.3bn for Great Britain, £0.2bn for England & Wales and £55m for Scotland (in 2012-13 prices). This is largely due to a reduction in our financial sustainability adjustment, as we are not now assuming that all renewals are cash funded in CP5. Instead we have considered Network Rail's financial position by comparing it to other comparable companies.
- Network Rail's average CP5 debt/RAB ratio has increased by 1.6 percentage points to 69.8% for Great Britain. This position is consistent with an investment grade credit rating but we will consider longer term financial sustainability issues in our PR18 development work.

## Introduction

- 13.1 The financial framework chapter (chapter 12) sets out our determination of the financial framework for Network Rail in CP5. This chapter focuses on the impact of those financial framework decisions on our financial assumptions within our determination.
- 13.2 In this chapter we set out our assumptions on Network Rail's cost of capital, financing costs, tax, opening CP5 debt<sup>289</sup>, movements in CP5 debt, opening CP5 RAB, movements in CP5 RAB, amortisation, financial sustainability, long-term financial sustainability, opex memorandum account, inflation assumptions and other key financial information. These assumptions are used to calculate Network Rail's CP5 revenue requirement. Also, our PR13 financial model has been audited and we summarise in this chapter the auditor's views of our financial model.
- 13.3 Most of the responses to our draft determination concentrated on cross-cutting issues, so we have largely summarised those responses in one section.

## Cost of capital

### Background

- 13.4 As we mention in the financial framework chapter (chapter 12), Network Rail is a CLG and raises debt like a normal company but the debt is government guaranteed.

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<sup>289</sup>For the avoidance of doubt, where we refer to Network Rail's debt, unless stated we mean Network Rail's net debt (as defined in its Regulatory accounting guidelines).

However, it is still important to identify Network Rail's cost of capital to encourage Network Rail to invest efficiently, achieve the appropriate balance between maintenance and renewals, and ensure a level playing field (between Network Rail and potential competitors) for the delivery of enhancements.

- 13.5 In particular, Network Rail will use our cost of capital assumption as the basis for its decisions on investment framework schemes. Therefore, our assumptions on the cost of capital affect our income assumptions for investment framework projects as explained in the chapter on other single till income (chapter 18).
- 13.6 Given Network Rail does not have equity shareholders, our cost of capital<sup>290</sup> assumption is based on a hypothetical scenario in which Network Rail does not have access to the FIM and is also financed by equity as well as debt. This cost of capital is distinct from our forecast of efficient financing costs in CP5, which drives the allowed return in the adjusted WACC approach used to calculate Network Rail's revenue requirement in CP5.
- 13.7 Given the importance of Network Rail's cost of capital and in order to be transparent, in Annex F we have provided details of the revenue requirement on the basis that the allowed return is based on Network Rail's cost of capital and the adjusted WACC approach is not used.
- 13.8 Our consultants, a consortium led by CEPA in association with Lion's Head Global Partners and Indepen (hereafter referred to as 'CEPA'), have advised us on the appropriate cost of capital for Network Rail<sup>291</sup>. Table 13.1 provides a comparison of CEPA's cost of capital estimates with those provided by Network Rail and Oxera (Network Rail's consultants).

## Summary of our draft determination

- 13.9 In our draft determination we said that, given the changes in the financial markets from CP4 and in particular the cost of debt, we thought that the appropriate cost of capital is 4.31% (real, vanilla<sup>292</sup>) for Network Rail in CP5. On a pre-tax basis, we assumed this cost of capital was 4.91%.

## Responses to our draft determination

- 13.10 Most respondents on this area focused on the cost of capital assumption for the investment framework. A number of train operating companies welcomed our proposed reduction in the cost of capital for the investment framework as more

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<sup>290</sup>The cost of capital is the return required by debt and equity investors on their investment in a company. It therefore reflects the costs of financing the risks that the company faces.

<sup>291</sup> Both CEPA's original report, called "Advice on estimating Network Rail's cost of capital", and its updated report are available at: <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

<sup>292</sup> A 'vanilla' return is based on a pre-tax cost of debt and a post-tax cost of equity.

projects will now become viable. However, they would prefer the cost of capital for the investment framework to be lower.

- 13.11 A number of train operating companies noted that the final determination should reflect the trajectory of cost of capital through CP5. ATOC noted that although it recognises Network Rail's revenue requirement is based on an assumed rate of return, the cost of finance may be lower, even for third parties, and that therefore the level should reflect a realistic assessment of likely costs going forward. ATOC noted that it looks to us to ensure that the final determination reflects a realistic estimate of the cost of capital to ensure that the overall cost of the industry is optimised.
- 13.12 Railfuture noted that the use of the full cost of capital for investment appraisal of non-HLOS proposals puts the business case of non-HLOS rail development opportunities at a disadvantage when compared to road developments, which would benefit from the interest rate advantage of direct government borrowing. Railfuture thought all transport developments should be appraised on a level playing field.
- 13.13 Following our draft determination, Oxera, acting on behalf of Network Rail, revised its range for Network Rail's cost of capital to be 4.3% to 4.6% (real, vanilla) and noted that it thought that corporation tax should be included in the pre-tax cost of capital as a nominal adjustment. Overall, Oxera considered that the cost of capital for the investment framework should be around 5.00% - 5.25%.
- 13.14 Network Rail's latest view is that the vanilla cost of capital should lie within Oxera's range and based on its comments on the pre-tax cost of capital, it thought that the vanilla cost of capital should be marginally higher than 4.31%. Network Rail thought that the 4.91% pre-tax cost of capital figure included in our draft determination suggested a level of precision that was unrealistic and that a cost of capital of 5% (pre-tax) for the investment framework was more appropriate and simpler.
- 13.15 TfL wanted us to include a more detailed breakdown of how we have calculated the cost of capital in our final determination.

### **Our comments on the responses to our draft determination**

- 13.16 In summary, for our draft determination, CEPA's range for Network Rail's cost of capital was 3.80% to 4.40% (real, vanilla). CEPA has updated its analysis but it did not revise its estimated range to reflect changes to market rates since March 2013. This is because CEPA attached more weight to the long-term averages than to spot rates in reaching its cost of capital estimate and it considered that its initial estimates contained sufficient headroom to accommodate these changes in the market. CEPA's analysis compares to a range of 4.3% to 4.9% that Network Rail's consultants, Oxera, used to inform Network Rail's SBP (Network Rail assumed its CP5 cost of capital was 4.75% in its SBP). As we mention above, Oxera has also updated its analysis and its revised range is 4.3% to 4.6%.



13.17 We do not think it is appropriate to round the pre-tax cost of capital up to 5% for the investment framework. This is because, although we recognise that it would be simpler, it would also inappropriately increase costs to TOCs through higher facility charges.

13.18 In relation to Railfuture’s comment on the use of the cost of capital, we consider that it is important that investment decisions are made using Network Rail’s cost of capital, as that reflects the risks that it faces.

13.19 We have included a detailed breakdown of how we have calculated the cost of capital below.

### Our determination

13.20 In determining our PR13 cost of capital assumptions, we have considered a range of evidence including:

- (a) the views of respondents to our draft determination;
- (b) CEPA’s analysis;
- (c) Oxera’s analysis; and
- (d) recent decisions and analysis of other regulators, e.g. Ofgem and CAA<sup>293</sup>.

13.21 Given the changes in the financial markets from CP4, and in particular the cost of debt, we think it is appropriate to assume a cost of capital of 4.31% (real, vanilla) for Network Rail in CP5. On a pre-tax basis this is 4.93%. This is on an annual basis, when charges are calculated a semi-annual rate of 4.81% will be used.

**Table 13.1: Comparison of our cost of capital assumptions against Network Rail’s SBP and our PR08 assumptions**

	ORR	Oxera	CEPA estimate – narrow range <sup>1,2,3</sup>		ORR
	PR08	NR SBP	Low	High	PR13
Gearing	60.00%	61.25%	62.50%	62.50%	62.50%
Risk-free rate	1.80%	1.75%	1.50%	1.75%	1.75%
Equity risk premium	5.00%	5.13%	5.00%	5.00%	5.00%
Equity beta	1.00	0.98	0.90	1.00	0.95
Post-tax cost of equity	6.80%	6.75%	6.00%	6.75%	6.50%
Pre-tax cost of debt	3.38%	3.30%	2.50%	3.00%	3.00%
<b>Vanilla WACC</b>	<b>4.75%</b>	<b>4.65%</b>	<b>3.80%</b>	<b>4.40%</b>	<b>4.31%</b>
<b>Pre-tax WACC (t=20.2%)<sup>4</sup></b>	<b>5.43%</b>	<b>5.40%</b>	<b>4.38%</b>	<b>5.05%</b>	<b>4.93%</b>

Source: CEPA, Oxera and ORR.

<sup>293</sup> These are the regulators who have published recent analysis on cost of capital.

Notes:

1. For calculating the WACC, CEPA used a mid-point gearing assumption of 62.50% and its range was 60.00% to 65.00%.
2. Figures rounded to the nearest 0.05%. The corporation tax rate of 20.2% is an average across CP5 of 21% for 2014-15 then 20% thereafter.
3. CEPA's narrow range excludes the combination of low end parameters from its broad range, i.e. risk-free rate (1.0%), equity risk premium (4.5%) and equity beta (0.8), as combining these parameters together is likely to lead to an implausibly low cost of equity.
4. Our PR08 pre-tax WACC has been restated using a 20.2% corporation rate to be more comparable with PR13.

## Financing costs

### Background

- 13.22 In determining our financing cost assumptions, we took into consideration the type of financing strategy that an efficiently financed regulated utility could be expected to have in place based on historic, present and expected market conditions.
- 13.23 We commissioned CEPA to conduct an independent review of Network Rail's financing cost assumptions, which we have taken into account in deciding on our financing cost assumptions. Table 13.2 below summarises Network Rail and CEPA's views of Network Rail's financing costs, which have been updated since our draft determination.
- 13.24 In addition to modelling its financing costs, we along with CEPA, have considered Network Rail's treasury policy, for example, the timing of Network Rail's pre-hedging programme for CP5, the mix of debt such as nominal against index-linked and the maturity of its bonds.
- 13.25 Network Rail holds some index-linked debt at the moment and we are assuming that it issues more index-linked debt in CP5. Until this debt is redeemed, everything else being equal, Network Rail's index-linked debt pays out a lower amount of money than nominal debt as the debt increases with inflation annually instead of an assumption on inflation being included in the cash interest cost.

### Summary of our draft determination

- 13.26 In our draft determination we assumed that the average embedded nominal debt cost over CP5 was 3.74% and the average cost of embedded index-linked debt over CP5 was 1.40%. These assumptions were broadly consistent with Network Rail's SBP assumptions.
- 13.27 In relation to new nominal debt we assumed an average cost over CP5 of 2.53% and for new index-linked debt we assumed an average cost over CP5 of 1.15%. These assumptions were lower than Network Rail's SBP assumptions of 4.63% for new nominal debt and 1.40% for new index-linked.

## Responses to our draft determination

13.28 Network Rail stated that its financing costs in CP5 were likely to be less than it assumed in its SBP but higher than we assumed in our draft determination. The main issues that Network Rail raised were:

- (a) it thought that it was not efficient to hedge 100% of CP5 forecast debt issuance;
- (b) it has suggested that we should add 75 basis points to our new nominal debt interest cost assumption to provide, in its view, “a reasonable allowance for market volatility between the date of the final determination and eventual execution”;
- (c) it thought that the London Interbank Offered Rate (LIBOR) spread should be higher than our assumption in our draft determination as, in its view, “this was more reflective of the prevailing uncertainty over future market movements and the difficulty in obtaining meaningful LIBOR spread forecasts for this long time horizon”;
- (d) it recognised that market rates have increased since our draft determination;
- (e) it thought that its debt at the start of CP5 would be higher than it assumed in its PR13 SBP and that the quantum of debt issued in CP5 would be higher than we assumed in our draft determination because its expenditure forecasts were higher; and
- (f) it would normally have some cash on deposit, which means that its gross debt would be higher than its net debt.

13.29 No other material consultation comments were raised in relation to this issue.

## Our comments on the responses to our draft determination

13.30 We have had extensive discussions about these issues with Network Rail, Oxera and CEPA since January 2013. CEPA considers that Network Rail should have pre-hedged more of its forecast debt issuance in CP5 than it has done and that this hedging programme should have started earlier than it did.

13.31 Whilst pre-hedging is one way of managing interest rate risk we do not assume that Network Rail should pre-hedge 100% of its CP5 forecast debt issuance. Instead we have assumed in the calculation of Network Rail’s revenue requirement, our view of its efficient financing costs for CP5 and we have not provided a contingency for the risk that interest rates could change. This is because in PR13 we are not funding general provisions for contingency. Also, Network Rail’s justification for the contingency was not convincing.

13.32 We consider that providing a contingency in this way, could unnecessarily increase Network Rail’s revenue requirement and complicate the monitoring of Network Rail’s financial performance in CP5.

13.33 Instead, Network Rail could manage this risk through its balance sheet buffer or it could pre-hedge its CP5 exposure. This is a more appropriate way of dealing with interest rate risk than providing Network Rail with a contingency that it may not need.

13.34 However, we recognise that market rates are volatile, so basing our assumptions on market rates on a particular day may not be a reasonable approach. Therefore, we have based our interest cost assumptions for new debt (both nominal and index-linked) on average forward interest rates using market data from August and September 2013. This period of time is close to the time we took our decisions for our final determination and it also covers a relatively high part of the interest cost curve over the last year as shown in Figure 13.1 below.

**Figure 13.1: Recent experience of market rates**



Source: CEPA analysis of 10-year LIBOR 6-month swap rates between 1 June 2012 and 27 September 2013.

13.35 At any time during the period shown in Figure 13.1 (or even before this period), Network Rail could have pre-hedged some of its exposure to interest rates in CP5, as it was aware of its likely capital expenditure levels and its own requirements for re-financing its existing debt. The majority of Network Rail's pre-hedging took place from March 2013 to September 2013. The effect of this pre-hedging by Network Rail has been included in our interest cost assumptions.

13.36 We think that our determination methodology:

- (a) is a relatively cautious approach to calculating our interest rate assumptions for CP5;
- (b) reasonably reflects Network Rail's current position; and

(c) overall, is similar to the interest rate assumptions in Network Rail's response to our draft determination (excluding its suggested risk buffer for the LIBOR spread and its suggested 75 basis point risk buffer for market rates).

- 13.37 This should mean that overall our financing assumptions are challenging but achievable.
- 13.38 Network Rail's analysis included a range of views on the expected LIBOR spreads in CP5, provided by various banks. We think that this evidence supports our assumptions on the LIBOR spread as most of the banks views were similar to ours. Therefore, we do not think that we need to add contingency on to our LIBOR spread assumption to provide a buffer for risk, as our assumption is already reasonable and we are not providing a risk buffer for the risk that market rates might change. CEPA's detailed analysis also confirms that our assumption is reasonable.
- 13.39 We agree with Network Rail that forward market rates have increased since we made our assumptions for our draft determination and we have factored our view of these changes into our assumptions for our final determination.
- 13.40 We have adjusted our forecast of Network Rail's debt at the start of CP5 based on our view of Network Rail's analysis. The financing cost implications of our decisions elsewhere in our determination are also included in our forecast of financing costs. Given that our view of Network Rail's expenditure in CP5 is different to Network Rail's view, this also gives rise to differences in financing costs. Our view of Network Rail's debt at the start of CP5 is included in Table 13.3.
- 13.41 We agree with Network Rail that it needs to hold some cash on deposit for short term liquidity purposes and, if required, to finance collateral and bond redemptions on some financial instruments. We have assumed that Network Rail's average cash balance in CP5 is £1bn, based on Network Rail's forecast and its cash balance in CP4. We have included an appropriate amount of interest income on these cash deposits, which is netted off financing costs in the calculation of Network Rail's revenue requirement.

## **Our determination**

- 13.42 After taking account of the responses to our draft determination, market rates, Network Rail's treasury policy and the analysis provided by Oxera and CEPA, we have made our assumptions for financing costs as set out in Table 13.2. The main issues affecting our assumptions are summarised below.

## **Embedded debt**

- 13.43 CEPA has worked with Network Rail to model the interest payments on Network Rail's existing debt (both nominal and index-linked) in order to verify how much those payments will be and whether they were efficiently incurred. CEPA's view is that

Network Rail's existing debt<sup>294</sup> was raised at an efficient rate and that the financing costs on this debt have also been efficiently incurred.

- 13.44 We have concluded that there is no evidence that Network Rail's existing debt was inefficiently incurred and we have, therefore, included CEPA's estimate of Network Rail's embedded debt costs in our final determination. We have updated this assumption for our final determination to take account of additional debt issued in the period between our draft determination and our final determination.
- 13.45 Table 13.2 shows that there are some differences in our assumptions between our draft determination and final determination. The main reasons for these differences are that since our draft determination:
- (a) Network Rail has issued more debt;
  - (b) Network Rail has pre-hedged more of its CP5 debt issuance; and
  - (c) market rates have risen, which have been reflected in our assumptions.

### **New debt**

- 13.46 As discussed above, we recognise that market rates are volatile, so basing our assumptions on market rates on a particular day may not be a reasonable approach. Therefore, we have based our interest cost assumptions for new debt (both nominal and index-linked) on average forward interest rates using market data from August 2013 and September 2013.
- 13.47 Based on current interest rates and market information, CEPA thinks that an efficient financing strategy in CP5 would result in additional index-linked debt being taken out, which is consistent with Network Rail's treasury strategy. We agree with this, so we have assumed in our calculation of efficient financing costs that some of Network Rail's debt issuance in CP5 will be index-linked.

### **FIM fee**

- 13.48 Network Rail's SBP assumed a FIM fee of 1.25% based on the difference in CP4 between the cost of bonds issued by utility companies and the cost of Network Rail's issued bonds, which are supported by a government guarantee.
- 13.49 CEPA's analysis considered the difference in the cost between bonds issued by domestic utilities (A- and BBB+ rated)<sup>295</sup> and gilts (debt issued by the UK government) for the period from 1999 to present. This showed a difference of 1.40% - 1.60%. As a

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<sup>294</sup> Note: This is not a comment about the reasons for the debt being incurred, e.g. for capital expenditure but about the efficiency of Network Rail in raising the debt.

<sup>295</sup> A credit rating A- and BBB+ is consistent with an investment grade credit rating and the credit rating Network Rail might want to have if it did not have access to the FIM.

cross check, CEPA identified a similar difference (1.30% -1.40%) using the iBoxx<sup>296</sup> trailing average index (incorporating the discount for long dated debt) for utility bonds.

- 13.50 Network Rail has typically issued bonds at a lower rate of around 0.40% above the cost of gilts due to the FIM guarantee. By deducting the difference between the cost of borrowing for Network Rail and the cost of gilts (estimated at 0.40%), from the difference between the cost of borrowing for comparable companies and the cost of gilts (estimated at 1.30% to 1.60%), CEPA derived an estimate of the credit enhancement provided by the FIM relative to an A-/BBB+ rated company of 0.90% – 1.20%. CEPA thinks that the FIM fee should be towards the top end of that range, e.g. it notes that the FIM fee could be 1.10% based on a recent issuance by High Speed 1 Ltd.
- 13.51 In our draft determination, we assumed a FIM fee of 1.10%. Network Rail agreed that this assumption was appropriate.
- 13.52 Given the above factors, we have decided in our final determination that the fee payable to DfT for the provision of the FIM will be set at 1.10% on the outstanding FIM-backed debt during CP5. We think that this fee broadly reflects the long-run value of the credit enhancement that Network Rail benefits from as a result of the FIM.

### **Summary of changes from our draft determination**

- 13.53 Table 13.2 shows a comparison of the financing cost assumptions made in our draft determination compared to the assumptions made in our final determination.

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<sup>296</sup> iBoxx provide an index of the cost of bonds. The iBoxx index is also used by Ofgem for its indexation of energy companies' debt costs.



**Table 13.2: Comparison of Network Rail's financing costs assumptions (for Great Britain, England & Wales and Scotland<sup>297</sup>)**

Type of Debt	SBP	DD	NR DD response <sup>298</sup>	FD	FD – DD	FD – NR DD response
Nominal debt (embedded)	3.82%	3.74%	3.70%	3.72%	(0.02%)	0.02%
Index-linked debt (embedded)	1.41%	1.40%	1.39%	1.40%	0.00%	0.01%
Nominal debt (new) <sup>299</sup>	4.74%	2.53%	2.99%	2.99%	0.46%	0.00%
Index-linked debt (new)	1.41%	1.15%	1.46%	1.33%	0.18%	(0.13%)

13.54 For Network Rail's embedded debt, our final determination assumptions are similar to Network Rail's SBP, our draft determination and Network Rail's draft determination response. This is because these rates simply reflect the cost of Network Rail's existing debt. The slight reduction in rates on nominal embedded debt, compared to our draft determination, is because the embedded debt category now includes debt that Network Rail has issued since our draft determination was published.

13.55 For new debt, the changes compared to our draft determination, are more significant as these rates involve forecasting the cost of Network's future debt issuance:

- (a) for new nominal debt, the increase in rates (46 basis points) reflects the increase in underlying forward rates since we published our draft determination. Overall, our assumption is the same as Network Rail's draft determination response. Our assumptions were based on average forward interest rates using market data from August 2013 and September 2013, whereas Network Rail's assumptions were based on forward market interest rates on 21 August 2013; and
- (b) for new index-linked debt, the increase in rates (18 basis points) reflects the increase in underlying forward rates since we published our draft determination. Compared to Network Rail's draft determination response, our rates are lower (13 basis points), partly because the rates were based on a different time period

<sup>297</sup> The rates in Table 13.2 are annual rates. In our financial modelling we use semi-annual rates as discussed in the financial framework chapter (chapter 12).

<sup>298</sup> The rates for Network Rail's draft determination response in Table 13.2 have been restated by Network Rail to reflect the classification we are using for our final determination and also to take into account any additional debt issuance and pre-hedging up to 27 September 2013. These rates have also been restated on to an annual basis. The classification of debt between 'embedded' and 'new' has evolved during PR13 and has changed since our draft determination.

<sup>299</sup> Network Rail's forecast does not include its suggested contingency for risk (for the LIBOR spread and market rates), as discussed above.

as described above, and also because we have taken different approaches to calculating forward index-linked costs:

- (i) Network Rail calculated its view of the market's expected underlying real yield for issuance of index-linked bonds by observing the market-implied forward yield on 30-year nominal gilts for each year of CP5 and then adjusted this for expected inflation. The expected inflation used was the break-even inflation rate between 30-year nominal gilts and 30-year index-linked gilts and implicitly assumed that the break-even rate for 30-year issuance would be constant over CP5; and
- (ii) CEPA constructed a series of forward index-linked curves in the same way that the forward nominal curves are calculated. This approach assumes that the rates at which bonds can be borrowed reflect their underlying yields and means that CEPA's methodology incorporates both the impact of market expectations for real rates and inflation for the future. CEPA's methodology is similar to the methods used by the banks that Network Rail discussed this issue with, although some of them take a more short term approach, which results in lower rates than CEPA's.

## Tax

### Background and our draft determination

13.56 Our consultants, Alvarez & Marsal, have reviewed Network Rail's forecast corporation tax position and we have made some relatively small adjustments to Network Rail's corporation tax forecasts. As discussed in the financial framework chapter (chapter 12), we have assumed that Network Rail will not receive any benefit in CP5 from potential VAT rebate issues, corporation tax credits on R&D expenditure and enhanced capital allowances on environmental expenditure.

### Responses to our draft determination

13.57 Apart from Network Rail's comments on the treatment of VAT rebates, which are considered in the financial framework chapter (chapter 12), no material consultation comments were raised in relation to tax.

### Our determination

13.58 After taking account of these responses and also given that there has been no change to our views on Network Rail's tax position, we have not changed our assumptions on tax.

## Opening debt

13.59 Our assumption for Network Rail's opening debt at the start of CP5 is an important driver of the level of Network Rail's financing costs in CP5 and hence it is a significant factor in our determination of the revenue requirement for CP5. Therefore, it is important that our forecast is as accurate as possible and consistent with the rest of

our determination as our income and expenditure assumptions for CP5 are based on Network Rail delivering the last year of CP4, as set out in its SBP.

13.60 Given the importance of being consistent with both the SBP and our forecast of the RAB at 1 April 2014, we have used the SBP forecast but adjusted it for errors and other changes to Network Rail's forecast, such as the actual level of debt at the end of March 2013, revised income from changes in assumptions and updated working capital assumptions but we are still assuming the same underlying level of renewals and enhancements expenditure in 2013-14<sup>300</sup>. Our calculation of financing costs in 2013-14 has been updated to reflect these changes to the assumptions for 2013-14. This is broadly similar to the approach we took in calculating the level of the opening RAB at 1 April 2014, which is described below.

13.61 Further details of the changes in our forecast of the level of Network Rail's opening debt at 1 April 2014, from our draft determination to our final determination, are outlined in Table 13.3. Note all debt numbers are in nominal figures.

**Table 13.3: Summary of our forecast of Network Rail's opening debt at 1 April 2014, showing movements from our draft determination to our final determination**

£m (nominal prices)	Great Britain	England & Wales	Scotland
<b>Opening net debt per DD</b>	<b>31,149</b>	<b>28,141</b>	<b>3,008</b>
Changes in 2012-13 closing debt	415	382	33
Changes in assumptions on 2013-14 income	(86)	(60)	(26)
Changes in assumptions on 2013-14 expenditure (excluding renewals and enhancements)	(7)	7	(14)
Changes in assumptions on 2013-14 financing costs	74	71	3
Errors identified in Network Rail's SBP forecast	293	243	50
Updated assessment of the deferral of enhancement expenditure to CP5	(40)	-	(40)
Changes in working capital assumptions	(307)	(283)	(24)
Adjustment for potential rebates in 2013-14	145	110	35
Adjustment for a potential fine in 2013-14	33	33	-
<b>Opening net debt per FD</b>	<b>31,669</b>	<b>28,644</b>	<b>3,025</b>

<sup>300</sup> We have adjusted for the deferral of the Borders enhancement project in Scotland to CP5 which has been partially offset by electrification being bought forward into CP4 (a net deferral of approximately £40m). This is based on an updated assessment since the SBP.

13.62 Table 13.3 above starts with the opening net debt figure at 1 April 2014 in our draft determination and updates that net debt figure for the 2012-13 actual outturn as well as changes in the 2013-14 assumptions that we have accepted as part of Network Rail's latest forecasts. It is also been updated for errors in the SBP net debt forecast and our latest assumptions on potential rebates and financial penalties<sup>301</sup>.

## Movements in CP5 debt

13.63 The level of debt in CP5 is an important driver of the level of Network Rail's financing costs and hence it is a significant factor in our determination of the revenue requirement for CP5. It is also important that our assumptions on the level of debt during CP5 are transparent as it is one of the key issues that affect financial sustainability, e.g. it is one part of the calculation of the debt/RAB ratio and our determination of the limits on financial indebtedness and hence the balance sheet buffer. This means that it is important to understand the key movements in Network Rail's debt over CP5, for Great Britain, England & Wales and Scotland.

13.64 Our analysis of the forecast movements in Network Rail's net debt in CP5 for our final determination are summarised in Table 13.4.

**Table 13.4: Summary of the forecast movements in Network Rail's net debt from 1 April 2014 to 31 March 2019 for our final determination**

£m (nominal prices)	Great Britain	England & Wales	Scotland
<b>Opening CP5 net debt</b>	<b>(31,669)</b>	<b>(28,644)</b>	<b>(3,025)</b>
Revenue	35,851	32,237	3,614
Support costs	(2,381)	(2,144)	(237)
Traction electricity, industry costs and rates	(3,461)	(3,185)	(277)
Network operations	(2,212)	(2,008)	(203)
Network maintenance	(5,810)	(5,231)	(579)
Schedule 4 and 8 costs	(1,191)	(1,057)	(134)
Tax paid (in cash)	(7)	(7)	-
Renewals	(13,614)	(12,108)	(1,506)
Enhancements	(14,361)	(12,868)	(1,493)
Financing costs (excl. inflation accretion)	(7,153)	(6,424)	(729)
Other	(513)	(513)	-
Inflation accretion	(3,093)	(2,792)	(301)
<b>Closing CP5 net debt</b>	<b>(49,614)</b>	<b>(44,744)</b>	<b>(4,870)</b>

<sup>301</sup> Network Rail's SBP forecast also included an assumption for a financial penalty in 2013-14.

13.65 Table 13.5 below shows the high level reasons for the movement in debt in CP5. This is a simpler analysis than Table 13.4 because most of Network Rail's revenue/expenditure is fully funded in the year it is incurred, so the expenditure is offset by revenue. Table 13.5 shows that the main reason for the increase in debt in CP5 is enhancement expenditure. This is because the renewals expenditure in CP5 is largely offset by the long-run steady state amortisation charge (including amortisation of the non-capex RAB).

**Table 13.5: High level movements in our forecast of Network Rail's net debt from 1 April 2014 to 31 March 2019**

£m (nominal prices)	Great Britain	England & Wales	Scotland
<b>Opening CP5 net debt</b>	<b>(31,669)</b>	<b>(28,644)</b>	<b>(3,025)</b>
Renewals	(13,614)	(12,108)	(1,506)
Enhancements	(14,361)	(12,868)	(1,493)
Amortisation (long-run steady state)	11,166	9,951	1,215
Amortisation (financial sustainability adjustment)	2,274	2,047	227
Inflation accretion	(3,093)	(2,792)	(301)
Other	(317)	(330)	13
<b>Closing CP5 net debt</b>	<b>(49,614)</b>	<b>(44,744)</b>	<b>(4,870)</b>

13.66 Table 13.6 shows the key reasons for the movements in our forecast of Network Rail's closing CP5 net debt for Great Britain between our draft determination and our final determination. These reasons are explained further in the relevant chapters.

**Table 13.6: Movements in our forecast of Network Rail's closing CP5 debt for Great Britain from our draft determination to our final determination**

£m (nominal prices)	Great Britain	Reference
<b>Closing CP5 net debt per DD</b>	<b>(47,325)</b>	
Updated inflation accretion calculation	(147)	Chapter 13 – para 13.118
Updated inflation	(312)	Chapter 13 – para 13.113
Revised opening debt	(801)	Chapter 13 – para 13.59
Revised financing costs	(224)	Chapter 13 – para 13.22
Revised financial sustainability adjustment	(414)	Chapter 13 – para 13.87
Revised renewals expenditure	214	Chapter 8
Revised enhancement expenditure	(670)	Chapter 9
Revised opex memorandum account	65	Chapter 13 – para 13.106
<b>Closing CP5 net debt per FD</b>	<b>(49,614)</b>	

Note: The numbers for each line in this table also reflect the change in debt as a result of the additional financing costs caused by the increase in debt from the underlying change in expenditure.

## Opening RAB

- 13.67 As noted in the financial framework chapter (chapter 12), the RAB is a key building block in our methodology for determining access charges. The RAB also acts as a store of value that is released to Network Rail over time through the amortisation charge. It is also very important in calculating the financial indicators, especially the debt to RAB ratio. Therefore, accurately forecasting the opening CP5 RAB is important.
- 13.68 It is also important that our forecast is as accurate as possible and consistent with the rest of our determination as our income and expenditure assumptions for CP5 are based on Network Rail delivering the last year of CP4, as set out in its SBP.
- 13.69 Given the importance of being consistent with both the SBP and our forecast of the opening debt at 1 April 2014, we have used the SBP forecast but adjusted it for errors and other changes to Network Rail's forecast, such as the actual level of the RAB at the end of March 2013, but we are still assuming the same underlying level of renewals and enhancements expenditure in 2013-14<sup>302</sup>. This is broadly similar to the approach we took in calculating the level of opening debt at 1 April 2014, as described above.
- 13.70 We have also made some adjustments to reflect the non-delivery of outputs in CP4 and similar to our draft determination, our decision to reduce the RAB by the value of the corporation tax double-count adjustment (£1.3bn for Great Britain) as explained in the financial framework chapter (chapter 12).
- 13.71 Further details of the changes in our forecast of the level of Network Rail's opening RAB at 1 April 2014, from our draft determination to our final determination, are outlined in Table 13.7, which is in 2012-13 prices for ease of comparison to our draft determination.

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<sup>302</sup> We have adjusted for the re-phasing of the Borders enhancement project in Scotland, i.e. expenditure in relation to this project will reduce in CP4 but increase in CP5. The increase in expenditure in CP5 on the Borders project has been partially offset by electrification being bought forward into CP4 (a net effect of approximately £40m).

**Table 13.7: Summary of our forecast of Network Rail's opening RAB at 1 April 2014, showing movements from our draft determination to our final determination**

<b>£m (2012-13 prices)</b>	<b>Great Britain</b>	<b>England &amp; Wales</b>	<b>Scotland</b>
<b>Opening CP5 RAB per the DD</b>	<b>46,616</b>	<b>41,922</b>	<b>4,694</b>
Changes in the value of the 2012-13 closing RAB	(373)	(449)	76
Adjustment for non-delivery of outputs in CP4	266	275	(9)
Adjustment to forecast renewal expenditure in 2013-14	337	256	81
Adjustment to forecast enhancement expenditure in 2013-14	(197)	(227)	30
Deferral of enhancements on PR08 schemes to CP5	(98)	(93)	(5)
Deferral of enhancements on non-PR08 schemes to CP5	(39)	-	(39)
Indexation adjustment	(58)	(57)	(1)
<b>Opening CP5 RAB per the FD</b>	<b>46,454</b>	<b>41,627</b>	<b>4,827</b>

13.72 Table 13.7 above starts with our opening RAB assumption in our draft determination and we make the adjustments described below.

13.73 Our forecast of the RAB at 1 April 2014 has been updated for:

- (a) the effect of a different closing RAB at the end of 2012-13;
- (b) adjustment to the non-delivery of outputs as explained below (adjusting Network Rail's estimate for our current forecast of our assessment);
- (c) adjustments to forecast renewal expenditure in 2013-14 for errors, reclassifications from enhancements and an updated forecast of the IOPI adjustment;
- (d) adjustment to forecast enhancement expenditure in 2013-14, for the deferral of PR08 and non-PR08 schemes to CP5;
- (e) adjustments to forecast enhancement expenditure in 2013-14 for errors, reclassifications to renewals; and
- (f) an indexation adjustment to reflect our latest forecast inflation assumptions.

13.74 Network Rail's estimate of its RAB at 31 March 2013 included an assumption for the adjustment for the non-delivery of outputs in CP4 of £436m for Great Britain (i.e. a reduction in the RAB). Our updated assumption for that adjustment is £170m for



Great Britain based on our latest annual assessment of Network Rail's efficiency and finance that we published in 2012-13<sup>303</sup>.

- 13.75 Our forecast of this adjustment is lower than Network Rail's despite the total cost of the non-delivery of outputs being higher as shown in our annual efficiency and finance assessment, because we think that Network Rail should not be worse off than if it had undertaken the additional expenditure necessary to deliver its required outputs and the additional expenditure had gone through our RAB roll forward process. The financial value added calculation does not adjust for the effect of the RAB roll forward policies as it simply just takes the difference in cash expenditure.
- 13.76 Following this methodology, our current assumption is that the adjustment to the RAB will be £170m, so given Network Rail assumed that the deduction would be £436m, we need to add back £266m to our forecast of the RAB for Great Britain at 1 April 2014<sup>304</sup>.

## Movements in Network Rail's CP5 RAB

- 13.77 The RAB is a key building block in our methodology for determining access charges. It is important that our assumptions on the level of the RAB during CP5 are transparent as it is one of the key issues that affect financial sustainability, e.g. it is one part of the calculation of the debt/RAB ratio and our determination of the limits on financial indebtedness and hence the balance sheet buffer. This means that it is important to understand the key movements in Network Rail's RAB over CP5 for Great Britain, England & Wales and Scotland.
- 13.78 The forecast movements in Network Rail's CP5 RAB that we assumed in our final determination are summarised in Table 13.8. In summary, the key movements are due to enhancement expenditure and indexation (this forecast is in nominal prices and inflation is added to the RAB each year to maintain its value in real terms). The renewals expenditure is mostly offset by the long-run steady state amortisation charge (including amortisation of the non-capex RAB), as explained in the financial framework chapter (chapter 12).

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<sup>303</sup> Our 2012-13 annual efficiency and finance assessment is available at <http://www.rail-reg.gov.uk/upload/pdf/nr-annual-assessment-2012-13.pdf>.

<sup>304</sup> For Great Britain, this is £436m less £170m = £266m. Network Rail only adjusted for the performance adjustment in England and Wales in its 2012-13 regulatory financial statements. It did not make an adjustment for Scotland. We have adjusted for performance in both the England & Wales RAB and the Scotland RAB and they both now reflect our current view of the necessary adjustments. Network Rail's England & Wales RAB and Scotland RAB at 31 March 2014 will be finalised in our 2013-14 annual assessment of Network Rail's efficiency and finance, which will be published in September 2014.

**Table 13.8: Summary of the forecast movements in Network Rail's RAB from 1 April 2014 to 31 March 2019**

£m (nominal prices)	Great Britain	England & Wales	Scotland
<b>Opening CP5 RAB</b>	<b>49,283</b>	<b>44,162</b>	<b>5,121</b>
Renewals	13,614	12,108	1,506
Core enhancements (incl. PAYG funded)	14,361	12,868	1,493
Amortisation (long-run steady state)	(11,166)	(9,951)	(1,215)
Amortisation (financial sustainability adjustment)	(2,274)	(2,047)	(227)
Indexation	7,227	6,443	784
<b>Closing CP5 RAB</b>	<b>71,044</b>	<b>63,583</b>	<b>7,461</b>

13.79 Table 13.9 shows the key reasons for the movements in our forecast of Network Rail's closing CP5 RAB for Great Britain between our draft determination and our final determination. These reasons are explained further in the relevant chapters.

**Table 13.9: Movements in our forecast of Network Rail's closing CP5 RAB for Great Britain from our draft determination to our final determination**

£m (nominal prices)	Great Britain	Reference
<b>Closing CP5 RAB per DD</b>	<b>69,428</b>	
Updated inflation	882	Chapter 13 – para 13.113
Revised opening RAB	(194)	Chapter 13 – para 13.67
Revised financial sustainability adjustment	453	Chapter 13 – para 13.87
Revised renewals expenditure	(218)	Chapter 8
Revised enhancement expenditure	693	Chapter 9
<b>Closing CP5 RAB per FD</b>	<b>71,044</b>	

## Amortisation

### Background

13.80 As we set out in the financial framework chapter (chapter 12) amortisation includes three elements: average long-run steady state renewals, amortisation of the non-capex RAB and a financial sustainability adjustment.

13.81 Average long-run steady state renewals are based on the average forecast renewals expenditure for the period from CP5 to CP11 as set out in the asset management: maintenance and renewals expenditure chapter (chapter 8). The non-capex RAB is amortised on a straight line basis over 30 years and the financial sustainability adjustment for CP5 is our view of the additional funding that Network Rail requires for financial sustainability purposes as set out in Network Rail's revenue requirement chapter (chapter 14).

## Responses to our draft determination

13.82 TfL considered that our approach seems inconsistent as one of the key messages of our periodic review is that we are not providing funding for Network Rail for risks in advance of them occurring. However, TfL noted that we have increased the amortisation charge on the grounds that a reduction in Network Rail's revenue could cause financial sustainability issues.

## Our comments on the responses to our draft determination

13.83 We agree with TfL that in PR13 we are not providing funding for risks in advance of them occurring and the balance sheet buffer allows Network Rail to manage these risks. However, in adjusting our amortisation assumption for financial sustainability purposes, we are considering our forecast of Network Rail's actual financial position and we are deciding whether that position is appropriate. That is not the same as providing funding for a risk that may arise in the future.

## Our decision

13.84 Our amortisation assumptions for Network Rail in CP5 are summarised in Table 13.10.

**Table 13.10: Summary of our final determination amortisation (annual average) assumptions for CP5**

£m (2012-13 prices)	Great Britain	England & Wales	Scotland
Average long-run steady state renewals	1,812	1,615	197
Non-capex amortisation	170	151	19
<b>Total long-run steady state amortisation (inc non-capex amortisation)</b>	<b>1,982</b>	<b>1,766</b>	<b>216</b>
Financial sustainability adjustment	400	360	40
<b>Total amortisation</b>	<b>2,382</b>	<b>2,126</b>	<b>256</b>

## Summary of changes from our draft determination

13.85 The main changes in our CP5 amortisation assumptions from our draft determination to our final determination are outlined in Table 13.11.

**Table 13.11: Comparison of our draft determination to our final determination average CP5 amortisation assumptions**

£m (2012-13 prices)	Great Britain			England & Wales			Scotland		
	DD	FD	FD - DD	DD	FD	FD - DD	DD	FD	FD - DD
Average long-run steady state renewals	1,789	1,812	23	1,595	1,615	20	194	197	3
Non-capex amortisation	170	170	0	153	151	(2)	17	19	2
<b>Total long-run steady state amortisation (inc non-capex amortisation)</b>	<b>1,959</b>	<b>1,982</b>	<b>23</b>	<b>1,748</b>	<b>1,766</b>	<b>18</b>	<b>211</b>	<b>216</b>	<b>5</b>
Financial sustainability adjustment	476	400	(76)	420	360	(60)	56	40	(16)
<b>Total amortisation</b>	<b>2,435</b>	<b>2,382</b>	<b>(53)</b>	<b>2,168</b>	<b>2,126</b>	<b>(42)</b>	<b>267</b>	<b>256</b>	<b>(11)</b>

13.86 The main reason for the reduction in total amortisation of £53m per annum for Great Britain, £42m per annum for England & Wales and £11m per annum for Scotland is due to the reduction in our financial sustainability adjustment partly offset by an increase in average long-run steady state renewals.

## Financial sustainability

### Background

13.87 As discussed in the financial framework chapter (chapter 12), because we are using an adjusted WACC approach, we are including additional amortisation in the calculation of Network Rail's revenue requirement for financial sustainability reasons. For the purpose of our draft determination, we used a simple approach to financial sustainability and assumed that total amortisation was equal to our forecast of Network Rail's renewals spend in CP5. This had the effect of funding Network Rail's capital expenditure on renewals as if it was operating expenditure (i.e. for each pound we assume that it efficiently spends it receives a pound in income), which is not a conventional regulatory approach to funding capital expenditure as capital expenditure is normally funded over time.

13.88 Since our draft determination, our forecast of Network Rail's end of CP5 net debt has increased by £2.3bn (in nominal prices). This is largely due to: an increase in the opening debt assumption (£0.8bn); higher CP5 capital expenditure (£0.5bn); a lower financial sustainability adjustment (£0.4bn), which increases debt; updated inflation assumptions (£0.3bn), higher financing costs due to changes in market interest rates (£0.2bn); and a revised approach to our modelling of accretion on index-linked debt (£0.1bn). These changes are shown in more detail in Table 13.6.

13.89 We have also tested the sensitivity of Network Rail's net debt to RAB ratio to changes in our regulatory assumptions and used Monte Carlo analysis<sup>305</sup> to help identify the robustness of Network Rail's financial position in the face of cost and revenue uncertainty. This analysis has been used in our decisions on the level of the limit on financial indebtedness as discussed in the financial framework chapter (chapter 12).

### Responses to our draft determination

13.90 Network Rail suggested that we should also consider two additional financial indicators. The first indicator considers the balance between the value of the RAB and the amount of funding that the industry receives from its customers (farebox), as Network Rail thinks that this ratio provides an indication of how affordable its RAB is in the context of whole industry funding.

13.91 The second indicator compares the balance sheet buffer (the value of the RAB – debt) to the amount of expenditure on support, operations, industry costs and rates, maintenance, & renewals<sup>306</sup> and is a means of checking whether the balance sheet buffer is sufficient to manage risk.

13.92 Railfuture noted that the assessment of financial sustainability should include an analysis of the trend in financial sustainability beyond CP5.

### Our comments on the responses to our draft determination

13.93 We have not modelled Network Rail's first proposed additional financial indicator, as farebox forecasts are not publicly available, although Network Rail's analysis suggests that this financial indicator is stable over CP5.

13.94 We have modelled Network Rail's second proposed additional financial indicator for CP5 and our analysis suggests that it steadily improves over the control period.

13.95 Network Rail's proposed additional financial indicators are interesting but we consider that the conventional financial indicators that we, and other regulators, use provide a better indication of Network Rail's financial position. These financial indicators are set out in the financial framework chapter (chapter 12). This is because Network Rail's first additional indicator is more helpful when considering how enhancements should be funded and the second indicator is more helpful when trying to determine the size of the balance sheet buffer.

### Our determination

13.96 We have considered Network Rail's financial position and after considering our determination in the round, our statutory duties and our forecast of Network Rail's financial indicators we consider that additional amortisation for financial sustainability of £2.0bn for Great Britain (£1.8bn for England & Wales and £0.2bn for Scotland) is

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<sup>305</sup> Monte Carlo analysis is a technique used to analyse complex issues by simulating the various outcomes based on a large number scenarios.

<sup>306</sup> Note: It excludes traction electricity.

appropriate for CP5. As shown in Table 13.12, these amounts are lower than our draft determination by £0.4bn for Great Britain (£0.3bn for England & Wales and £0.1bn for Scotland).

**Table 13.12: Additional amortisation for CP5 financial sustainability adjustment**

£m (2012-13 prices)	DD	FD	FD - DD
Great Britain	2,379	2,000	(379)
England & Wales	2,101	1,800	(301)
Scotland	278	200	(78)

13.97 Our analysis of financial sustainability for our PR13 determination has involved comparing Network Rail's financial indicators to the levels typical in other utility companies with investment grade credit ratings. We have also examined our forecast level of these financial indicators in CP5, CP6 and CP7. Our analysis has focused on the debt to RAB ratio as the AICR does not provide us with useful information for CP5 because, by definition under the adjusted WACC approach, the AICR is close to one and amortisation does not directly affect the AICR.

13.98 We have also discussed this issue with some credit rating agencies and we think that Network Rail's debt/RAB ratio at the end of CP5 for Great Britain (69.8%), England & Wales (70.4%) and Scotland (65.3%) are consistent, everything else being equal, with an investment grade credit rating. Also, the levels during CP5 are not materially different from those at the end of CP5. Our forecasts of these financial indicators are shown in Tables 13.16, 13.17 and 13.18.

## Long-term financial sustainability

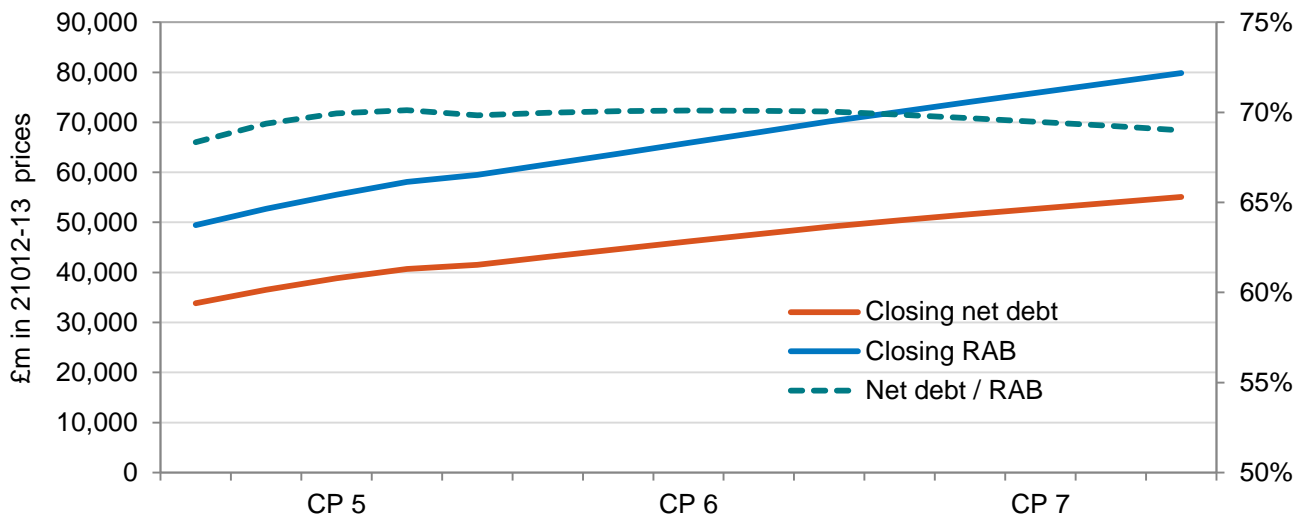
13.99 Our analysis of Network Rail's financial position beyond CP5 shows that, assuming the adjusted WACC approach is used in CP6 and CP7<sup>307</sup>, the debt to RAB ratios for Network Rail in CP6 and CP7 for Great Britain will be similar to the levels in CP5. These levels are comparable to other similar companies such as BAA, Thames Water and Yorkshire Water.

13.100 Figure 13.1 shows our forecast of Network Rail's net debt, RAB and net debt / RAB ratio for CP5, CP6 and CP7. Figure 13.2 shows the net revenue requirement for the same period.

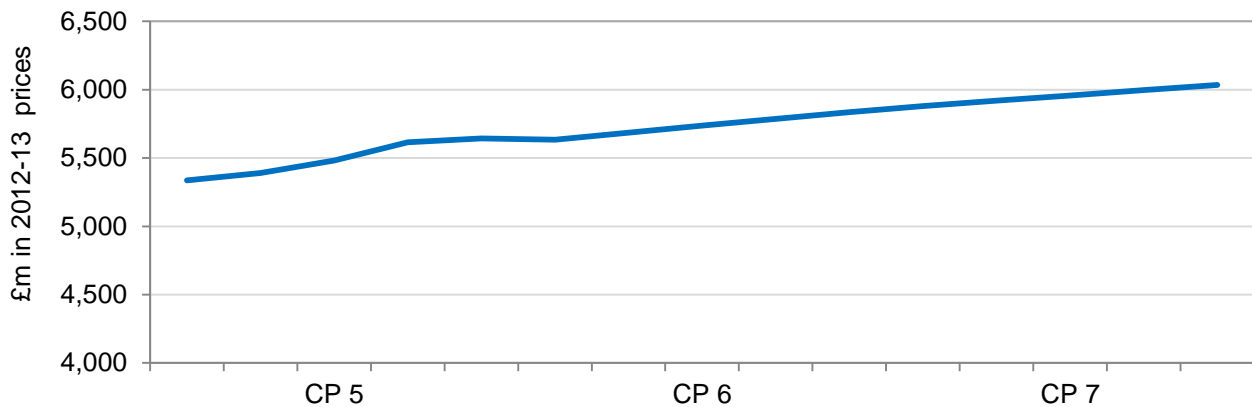
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<sup>307</sup> If the PR08 ring-fenced approach is used in CP6 and CP7, the financial indicators are generally better.

**Figure 13.2: Forecast of Network Rail's debt and RAB to the end of CP7 for Great Britain**



**Figure 13.3: Forecast of Network Rail's net revenue requirement to the end of CP7 for Great Britain**



13.101 We have used the following assumptions for our forecasts of CP6 and CP7:

- (a) after CP5, Network Rail continues to invest £2.5bn (2012-13 prices) in enhancements to rail infrastructure every year. This reflects the average level of investment made and planned for CP4 & CP5 (2008-09 to 2018-19). This does not include the cost of additional enhancements not funded by Network Rail, such as the non-Network Rail part of Crossrail and HS2;
- (b) renewals expenditure reflects our assumptions on Network Rail's long run renewals forecast and that Network Rail achieves its CP5 efficiency targets;
- (c) we have not included any efficiencies beyond those proposed in our determination;
- (d) Network Rail issues only government-guaranteed debt;
- (e) Network Rail re-finances £1bn of debt a year;



- (f) 15% of new debt is index-linked; and
- (g) interest rates are assumed to be the same as in the last year of CP5.

13.102 We note the key trends shown in Figures 13.1 and 13.2 above:

- (a) Network Rail's net debt / RAB ratio remains relatively stable (between 68% and 70%) over the three control periods;
- (b) there is an increase in Network Rail's RAB (approximately £30bn) and debt (approximately £20bn), largely as a result of the assumed enhancement spend; and
- (c) Network Rail's annual net revenue requirement increases from £5.4bn to £6.0bn. This is largely due to the increase in financing costs resulting from the higher level of debt, which offsets the reduction in operating costs.

13.103 We have forecast that Network Rail's debt to RAB ratio will increase from the end of CP4 to the end of CP5 by 7.4 percentage points for Great Britain. Some of this movement is due to one-off factors such as the revised treatment of the corporation tax double-count (1.6 percentage points) and the adjustments for non-delivery of CP4 outputs (0.2 percentage points). There is also an underlying increase of 5.6 percentage points, which is largely due to the net effect of the capital and expenditure programme and how that is funded in CP5<sup>308</sup> and the effect of the adjusted WACC approach. We will monitor closely in CP5 the debt/RAB ratio for Great Britain, England & Wales and Scotland.

13.104 In our long-term regulatory statement, published in July 2013, we identified financial sustainability as an important issue and we think that it is very important for PR18 that the industry and the governments have a clear understanding of the level of enhancements that may be needed in CP6, the benefits that these enhancements may bring, how they contribute to value for money and how they should be financed.

13.105 In particular, our PR18 development work will consider how the societal benefits of enhancements should be funded. We will also consider our approach to Network Rail's cost of capital and how we should take account of Network Rail not having equity shareholders and hence not paying an equity return to them, as the adjusted WACC approach is only intended to be used for CP5.

## Opex memorandum account

13.106 As set out in the financial framework chapter (chapter 12), only capital expenditure can be added to Network Rail's RAB from the start of CP4. In previous control periods

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<sup>308</sup> An illustrative example of this effect is if the debt at the end of CP4 was £50m and the RAB was £100m, the debt to RAB ratio is 50% (£50m / £100m). If in CP5 there is £50m of capex funded by debt, then the debt is now £100m (£50m + £50m) and the RAB is now £150m (£50m + £100m), so the debt to RAB ratio is now 67% (£100m / £150m).

we also added incentive payments such as the volume incentive, to the RAB at the start of the control period following the control period in which the payment was earned. These payments are now remunerated through the opex memorandum account. This works by 'logging up' the payment to the opex memorandum account during the control period and then reimbursing Network Rail in the following control period.

- 13.107 The opex memorandum account also includes funding for issues that needed adjustment, clarification or correction in CP4, e.g. adjustments for errors in capacity charges and updated business rates information. Where appropriate, our PR13 determination includes these amounts.
- 13.108 We have used Network Rail's latest forecasts of the CP4 opex memorandum account closing balance as the basis of our closing balance at 31 March 2014. We have also included the £3.1m (2012-13 prices) compensation to Network Rail for changes in variable usage charge rates for TEAP and TEAK wagons in relation to the Freightliner appeal under the Access & Management Regulations, which was decided after our draft determination. This compensated Network Rail for the loss of variable usage charge (VUC) income following our determination in January 2011 of an appeal under the Access & Management Regulations by Freightliner Heavy Haul Limited<sup>309</sup>.
- 13.109 Table 13.13 provides an analysis of our forecast of the closing balance at 31 March 2014 on Network Rail's opex memorandum account for our final determination.

**Table 13.13: Summary of our forecast of Network Rail's opex memorandum account balance at 31 March 2014**

£m (2012-13 prices)	Great Britain	England & Wales	Scotland
Volume incentive	68	56	12
Euston and Victoria property sales income shortfall	72	72	-
Capacity charge error	49	49	-
NSIP underspend on maintenance costs	(75)	(75)	-
Business rates additional spend	51	54	-3
ORR costs (licence fee, safety levy and independent reporter costs)	4	3	1
Freightliner charges	3	2	1
<b>Total</b>	<b>172</b>	<b>161</b>	<b>11</b>

- 13.110 We have assumed that the balance on the opex memorandum account at 31 March 2014 will be released to Network Rail on a straight line basis over CP5. This

<sup>309</sup> Full details of our determination can be found on our website at <http://www.rail-reg.gov.uk/server/show/nav.2471>.

results in an average payment of £34m per annum (2012-13 prices) in CP5 for Great Britain, £32m per annum (2012-13 prices) in CP5 for England & Wales and £2m per annum (2012-13 prices) in CP5 for Scotland, which is included in the revenue requirements.

13.111 We will adjust the opex memorandum account in CP5 for any differences between our assumptions in our PR13 determination and the final balances on the opex memorandum account for the five year period ended 31 March 2014.

## Summary of changes from our draft determination

13.112 The main changes in the forecast balance on the opex memorandum account at 31 March 2014 from our draft determination to our final determination are outlined in Table 13.14. The main reasons for this increase are due to an increase in the adjustment for business rates of £58m (due to an error in Network Rail's SBP assumption), Freightliner charges of £3m, offset by other relatively small adjustments.

**Table 13.14: Comparison of the forecast balance on the opex memorandum account at 31 March 2014 from our draft determination to our final determination**

£m (2012-13 prices)	DD	FD	FD – DD
Great Britain	115	172	57
England & Wales	111	161	50
Scotland	4	11	7

## Inflation assumptions

13.113 Although we set our PR13 determination in 2012-13 prices, to calculate Network Rail's revenue requirement, we need to make assumptions about inflation over CP5, e.g. to support our calculation of Network Rail's financing costs.

13.114 Since our draft determination, we have revised our CP5 inflation assumptions. In our draft determination, we assumed that the Retail Price Index (RPI) would rise by 2.75% in each year of CP5, which is the long-term UK Government forecast. However, for our final determination we have used a forecast, based on independent forecasts, published by HM Treasury in August 2013<sup>310</sup>. This forecast only covered the years 2013-14 to 2017-18, so we have retained the 2.75% inflation assumption for 2018-19. Our CP5 inflation assumptions are set out in Table 13.15 below.

<sup>310</sup> Our assumptions for 2014-15 to 2017-18 are taken from HM Treasury's 'Forecasts for the UK economy: a comparison of independent forecasts' document available at: <https://www.gov.uk/government/publications/forecasts-for-the-uk-economy-august-2013>.

**Table 13.15: CP5 inflation assumptions**

Annual RPI inflation	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Modelling assumption	3.10%	2.90%	2.90%	3.00%	3.40%	2.75%

## Financial modelling

- 13.115 We have used an excel-based financial model to support our PR13 determination of Network Rail's CP5 revenue requirement and financial position. As part of our quality assurance processes, our financial model has been audited by an independent consultancy firm, BDO LLP (previously PKF (UK) LLP). In January 2012, we commissioned them to carry out an audit of the financial model that we used for our advice to ministers.
- 13.116 In January 2013, we commissioned a further audit by BDO LLP for the financial model that supported our draft determination. Finally, in September 2013, we commissioned BDO LLP to audit the financial model that supports our final determination<sup>311</sup>.
- 13.117 These audits provided assurance that our financial model was logically constructed, internally consistent and that the formulae, algorithms and calculations were materially accurate<sup>312</sup>.
- 13.118 The main change in our financial model since our draft determination is that we now more accurately forecast the effect of inflation on index-linked debt.

## Other key financial information

- 13.119 We set out in Tables 13.16, 13.17 and 13.18 some key financial information such as our assumptions on debt, RAB, financing costs, the FIM fee and the debt/RAB ratio.
- 13.120 Table 13.19, 13.20, 13.21 set out the comparison between Network Rail's SBP, our draft determination and our final determination for these assumptions.
- 13.121 In England & Wales, our forecast end of CP5 debt / RAB ratio has increased from 68.4% in our draft determination to 70.4% in our final determination. Whereas in Scotland our forecast end of CP5 debt / RAB ratio has decreased from 66.1% (draft determination) to 65.3% in our final determination. The main changes to the financial indicators are mostly attributable to the changes in the opening CP5 RAB and the opening CP5 debt<sup>313</sup>.

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<sup>311</sup> There have not been significant changes to our financial model since our draft determination but it is still important that the version of the model used for our final determination was audited.

<sup>312</sup> The summary of their opinion is available at: <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

<sup>313</sup> For Scotland, the debt / RAB ratio has reduced because our assumption of the opening CP5 RAB position has increased by £133m since our draft determination, which is substantially more than our assumption of the opening CP5 debt position increased by £18m since our draft determination.

**Table 13.16: Our assumptions on key financial information for Great Britain in CP5**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	35,869	39,900	43,659	47,330	49,614	49,614
Closing RAB	52,490	57,521	62,423	67,507	71,044	71,044
Financing costs (exc FIM fee)	779	831	944	1,083	1,193	4,830
FIM fee	380	425	468	509	541	2,323
Total financing costs	1,159	1,256	1,412	1,592	1,734	7,153
Debt / RAB ratio	68.3%	69.4%	69.9%	70.1%	69.8%	69.8%

**Table 13.17: Our assumptions on key financial information for England & Wales in CP5**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	32,278	35,744	39,121	42,566	44,744	44,744
Closing RAB	46,851	51,205	55,595	60,291	63,583	63,583
Financing costs (exc FIM fee)	703	745	844	971	1,073	4,336
FIM fee	343	382	419	456	488	2,088
Total financing costs	1,046	1,127	1,263	1,427	1,561	6,424
Debt / RAB ratio	68.9%	69.8%	70.4%	70.6%	70.4%	70.4%

**Table 13.18: Our assumptions on key financial information for Scotland in CP5**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	3,591	4,156	4,537	4,764	4,870	4,870
Closing RAB	5,639	6,316	6,828	7,216	7,461	7,461
Financing costs (exc FIM fee)	76	86	100	112	120	494
FIM fee	37	43	49	52	54	235
Total financing costs	113	129	149	164	174	729
Debt / RAB ratio	63.7%	65.8%	66.5%	66.0%	65.3%	65.3%

**Table 13:19: Other key financial information for Great Britain in CP5, comparison of our final determination to Network Rail's SBP and our draft determination**

£m (nominal prices)	SBP	DD	FD	FD - SBP	FD - DD
Closing debt	51,275	47,325	49,614	(1,659)	2,289
Closing RAB	74,489	69,428	71,044	(3,445)	1,616
Total CP5 financing costs (exc. FIM fee)	6,789	4,535	4,830	(1,959)	295
Total CP5 FIM fee	2,675	2,191	2,323	(352)	132
Total CP5 financing costs	9,464	6,726	7,153	(2,311)	427
Debt / RAB ratio	68.8%	68.2%	69.8%	1.0%	1.6%

**Table 13:20: Other key financial information for England & Wales in CP5, comparison of our final determination to Network Rail's SBP and our draft determination**

£m (nominal prices)	SBP	DD	FD	FD - SBP	FD - DD
Closing debt	46,097	42,568	44,744	(1,353)	2,176
Closing RAB	66,817	62,231	63,583	(3,234)	1,352
Total CP5 financing costs (exc. FIM fee)	6,094	4,065	4,336	(1,758)	271
Total CP5 FIM fee	2,401	1,966	2,088	(313)	122
Total CP5 financing costs	8,495	6,031	6,424	(2,071)	393
Debt / RAB ratio	69.0%	68.4%	70.4%	1.4%	2.0%

**Table 13:21: Other key financial information for Scotland in CP5, comparison of our final determination to Network Rail's SBP and our draft determination**

£m (nominal prices)	SBP	DD	FD	FD - SBP	FD - DD
Closing debt	5,176	4,756	4,870	(306)	114
Closing RAB	7,671	7,197	7,461	(210)	264
Total CP5 financing costs (exc. FIM fee)	695	470	494	(201)	24
Total CP5 FIM fee	274	225	235	(39)	10
Total CP5 financing costs	969	695	729	(240)	34
Debt / RAB ratio	67.5%	66.1%	65.3%	(2.2%)	(0.8%)

# 14. Network Rail's revenue requirement

## Key messages in this chapter

- This chapter provides our determination of Network Rail's CP5 gross and net revenue requirements based on our assessment of the company's income and expenditure and our regulatory framework.
- Network Rail's net revenue requirement in CP5 is on average £5.5bn per annum in Great Britain, £4.9bn per annum in England & Wales and £584m per annum in Scotland. In comparison, the SBP assumed that Network Rail's net revenue requirement in CP5 would on average be £5.8bn per annum in Great Britain, £5.2bn per annum in England & Wales and £0.6bn per annum in Scotland.
- Indicative revenue requirements for each of Network Rail's operating routes are presented in Annex D.

## Main changes since our draft determination

- We have determined Network Rail's Great Britain net revenue requirement for CP5 to be £27,465m. This is £37m higher than our draft determination (£27,428m).
- We have determined Network Rail's England & Wales net revenue requirement for CP5 to be £24,543m. This is £59m higher than our draft determination (£24,485m).
- We have determined Network Rail's Scotland net revenue requirement for CP5 to be £2,922m. This is £22m lower than our draft determination (£2,944m).

## Introduction

- 14.1 This chapter sets out our determination of Network Rail's CP5 gross and net revenue requirements based on our assessment of the company's income and expenditure and our regulatory framework.
- 14.2 The revenue requirements represent the income and charges that are consistent with Network Rail delivering its regulatory outputs in CP5. The gross revenue requirement in CP5 is the total income that Network Rail needs to operate its business. The net revenue requirement is calculated by deducting Network Rail's other single till income, e.g. property income, from the gross revenue requirement. The net revenue requirement is received through access charges and network grant paid by governments 'in lieu of' some fixed track access charges.
- 14.3 The differences in financing costs, operating expenditure, opex memorandum account and amortisation compared to our draft determination and to Network Rail's SBP are further explained in the: support expenditure chapter (chapter 5); traction electricity, industry costs and rates chapter (chapter 6); the operations expenditure chapter



(chapter 7); asset management: maintenance and renewals expenditure chapter (chapter 8); impact of financial framework on financial parameters chapter (chapter 13); other single till income chapter (chapter 18); and the possessions and performance regimes chapter (chapter 20).

## Revenue requirements

- 14.4 Figures 14.1, 14.2 and 14.3 set out the net revenue requirements for Great Britain, England & Wales and Scotland in CP5. These revenue requirements have been calculated after our reclassification of reactive maintenance costs to maintenance from renewals.
- 14.5 Tables 14.1 to 14.12 summarise, for Great Britain, England & Wales and Scotland:
- (a) our annual assumptions of Network Rail's CP5 expenditure;
  - (b) our determination of Network Rail's annual CP5 net revenue requirements;
  - (c) a comparison of our final determination of Network Rail's CP5 expenditure assumptions compared to our draft determination, Network Rail's SBP and our PR08 determination; and
  - (d) a comparison of our final determination of Network Rail's CP5 net revenue requirements compared to our draft determination, Network Rail's SBP and our PR08 determination.
- 14.6 We have not restated our PR08 or SBP comparisons for the reclassification of reactive maintenance. We have also not restated the SBP comparisons for other issues that we have identified in the access charges chapter (chapter 16) and the other single till income chapter (chapter 18), e.g. income from freight connection agreements. These issues are explained in Annex C.
- 14.7 Indicative revenue requirements for each of Network Rail's operating routes are presented in Annex D.

## Great Britain

### Overview of changes from Network Rail's SBP

- 14.8 The net revenue requirement over CP5 is £1.8bn lower than the forecast in Network Rail's SBP, largely because:
- (a) our assumption on Network Rail's adjusted allowed return is £2.1bn lower than Network Rail's, as we are assuming lower financing costs in CP5 (partly due to lower expenditure assumptions e.g. renewals), which has the impact of lowering the revenue requirement compared to the SBP;
  - (b) our other single till income assumption is £0.2bn higher as we are assuming more property income, which has the impact of lowering the revenue requirement compared to the SBP; and

- (c) our total amortisation assumption is £0.4bn higher than Network Rail's as we have made a larger adjustment for financial sustainability than Network Rail did. This has the impact of increasing the revenue requirement compared to the SBP.

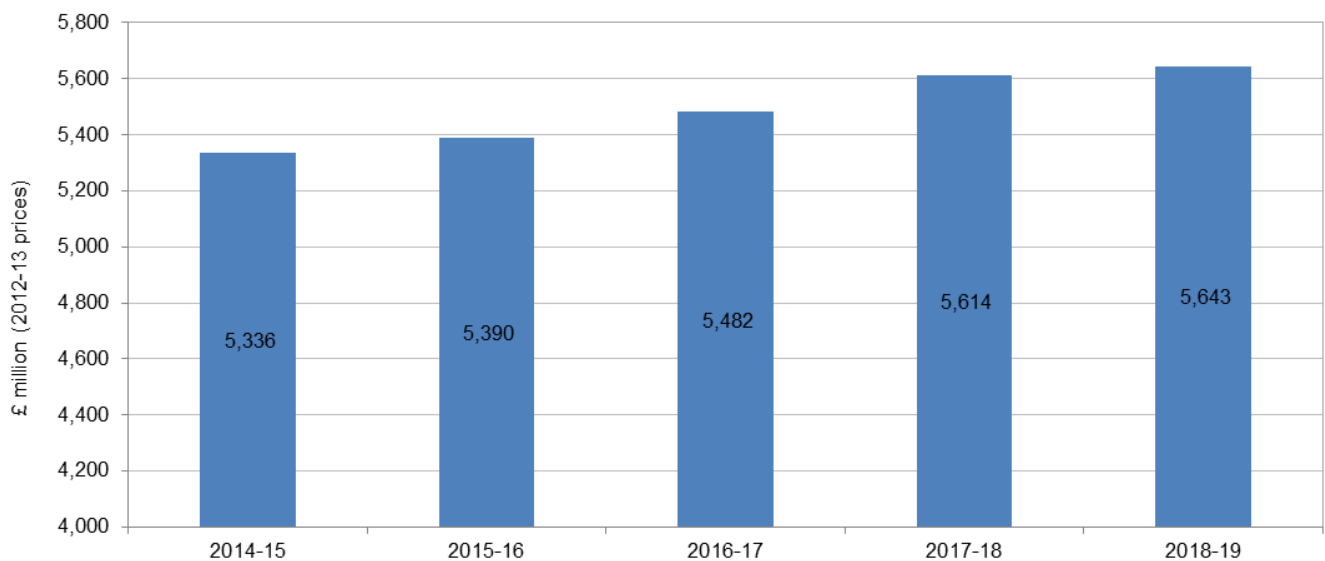
## Overview of changes from our draft determination

14.9 The net revenue requirement over CP5 is broadly similar to our draft determination (£37m higher), largely because our assumption on Network Rail's:

- (a) adjusted allowed return over CP5 is £0.3bn higher than our draft determination as we are assuming higher financing costs in CP5. This has the impact of increasing the revenue requirement compared to our draft determination; and
- (b) total amortisation over CP5 is £0.3bn lower as we have made a smaller adjustment for financial sustainability. This has the impact of decreasing the revenue requirement compared to our draft determination.

## Our determination

**Figure 14.1: Our assessment of Network Rail's CP5 net revenue requirement for Great Britain**



**Table 14.1: Our assessment of Network Rail's CP5 expenditure for Great Britain**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	468	445	417	403	386	2,119
Network operations	425	412	395	378	358	1,968
Traction electricity, industry costs and rates	496	586	602	653	719	3,056
Network maintenance	1,091	1,074	1,033	1,001	966	5,166
Schedule 4 & 8 costs	207	219	225	204	203	1,058
<b>Total operating expenditure</b>	<b>2,687</b>	<b>2,735</b>	<b>2,672</b>	<b>2,640</b>	<b>2,633</b>	<b>13,367</b>
Renewals	2,508	2,575	2,477	2,357	2,190	12,107
Enhancements	2,797	2,921	2,730	2,672	1,699	12,818
<b>Total capital expenditure</b>	<b>5,305</b>	<b>5,496</b>	<b>5,207</b>	<b>5,029</b>	<b>3,888</b>	<b>24,925</b>
<b>Total expenditure</b>	<b>7,992</b>	<b>8,231</b>	<b>7,880</b>	<b>7,669</b>	<b>6,521</b>	<b>38,293</b>

**Table 14.2: Our assessment of Network Rail's CP5 revenue requirement for Great Britain**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	2,687	2,735	2,672	2,640	2,633	13,367
Add: Long-run steady state amortisation (including non-capex amortisation)	1,982	1,982	1,982	1,982	1,982	9,909
Add: Regulatory tax allowance	4	-	-	-	3	6
Add: Opex memorandum account	34	34	34	34	34	172
<b>Gross rev. req. before cost of capital</b>	<b>4,707</b>	<b>4,752</b>	<b>4,689</b>	<b>4,656</b>	<b>4,652</b>	<b>23,455</b>
Add: Allowed return (real cost of capital)	2,024	2,155	2,283	2,396	2,479	11,337
Less: Real equity surplus	(931)	(1,004)	(1,027)	(1,027)	(1,028)	(5,018)
Adjusted allowed return	1,093	1,151	1,255	1,369	1,451	6,320
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>5,800</b>	<b>5,903</b>	<b>5,944</b>	<b>6,025</b>	<b>6,104</b>	<b>29,775</b>
Add: Amortisation financial sustainability adjustment	300	300	400	500	500	2,000
<b>Gross revenue requirement</b>	<b>6,100</b>	<b>6,203</b>	<b>6,344</b>	<b>6,525</b>	<b>6,604</b>	<b>31,775</b>
Less: Other single till income	(764)	(813)	(862)	(911)	(960)	(4,310)
<b>Net revenue requirement</b>	<b>5,336</b>	<b>5,390</b>	<b>5,482</b>	<b>5,614</b>	<b>5,643</b>	<b>27,465</b>

**Table 14.3: Comparison of CP5 expenditure for Great Britain**

£m (2012-13 prices)	PR08	SBP	DD	FD	FD less SBP	FD less DD
Support costs	4,113	2,232	2,093	2,119	(113)	26
Network operations		2,027	1,968	1,968	(59)	-
Traction electricity, industry costs and rates	2,175	3,701	3,114	3,056	(645)	(57)
Network maintenance	6,126	4,669	5,152	5,166	497	14
Schedule 4 & 8 costs	870	712	1,131	1,058	346	(73)
<b>Total operating expenditure</b>	<b>13,284</b>	<b>13,341</b>	<b>13,456</b>	<b>13,367</b>	<b>26</b>	<b>(89)</b>
Renewals	13,141	14,365	12,173	12,107	(2,258)	(66)
Enhancements	9,296	12,388	12,239	12,818	430	579
<b>Total capital expenditure</b>	<b>22,437</b>	<b>26,754</b>	<b>24,413</b>	<b>24,925</b>	<b>(1,829)</b>	<b>513</b>
<b>Total expenditure</b>	<b>35,721</b>	<b>40,095</b>	<b>37,869</b>	<b>38,293</b>	<b>(1,802)</b>	<b>424</b>

Note: Some of the numbers included in the SBP column in this table have been adjusted in the relevant chapters to reflect either errors in the SBP or to make the numbers consistent with the treatment in our determination (e.g. for reactive maintenance). But we have not adjusted them in this table. The adjustments are explained in the relevant chapters.

**Table 14.4: Comparison of CP5 revenue requirement for Great Britain**

£m (2012-13 prices)	PR08	SBP	DD	FD	FD less SBP	FD less DD
Total operating expenditure	13,284	13,341	13,456	13,367	26	(89)
Add: Long-run steady state amortisation (including non-capex amortisation)	8,903	10,540	9,794	9,909	(631)	115
Add: Regulatory tax allowance	-	-	18	6	6	(11)
Add: Opex memorandum account	-	138	115	172	34	57
<b>Gross rev. req. before cost of capital</b>	<b>22,187</b>	<b>24,019</b>	<b>23,384</b>	<b>23,455</b>	<b>(564)</b>	<b>72</b>
Add: Allowed return (real cost of capital)	10,455	13,092	11,267	11,337	(1,755)	70
Less: Real equity surplus	-	(4,716)	(5,280)	(5,018)	(302)	263
Adjusted allowed return	10,455	8,376	5,987	6,320	(2,056)	333
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>32,642</b>	<b>32,395</b>	<b>29,371</b>	<b>29,775</b>	<b>(2,620)</b>	<b>404</b>
Add: Amortisation financial sustainability adjustment	-	970	2,379	2,000	1,030	(379)
<b>Gross revenue requirement</b>	<b>32,642</b>	<b>33,365</b>	<b>31,749</b>	<b>31,775</b>	<b>(1,590)</b>	<b>25</b>
Less: Other single till income	(3,523)	(4,138)	(4,321)	(4,310)	(172)	11
<b>Net revenue requirement</b>	<b>29,119</b>	<b>29,227</b>	<b>27,428</b>	<b>27,465</b>	<b>(1,762)</b>	<b>37</b>

Note:

1. Total amortisation is - PR08 (£8.9bn); SBP (£11.5bn); draft determination (£12.2bn) and final determination (£11.9bn).

2. The SBP number for OSTI in this table has been adjusted in Table C.1 in Annex C to reflect either errors in the SBP or to make the OSTI calculation consistent with our treatment. Table C.4 in Annex C provides a reconciliation between the SBP number and our adjusted number. This is explained in Annex C.

## England & Wales

### Overview of changes from Network Rail's SBP

14.10 The net revenue requirement over CP5 is £1.6bn lower than Network Rail's forecast in its SBP, largely because:

- (a) our assumption on Network Rail's adjusted allowed return over CP5 is £1.8bn lower than Network Rail's, as we are assuming lower financing costs in CP5 (partly due to lower expenditure assumptions e.g. renewals), which has the impact of lowering the revenue requirement compared to the SBP;
- (b) our other single till income assumption over CP5 is £0.2bn higher as we are assuming more property income, which has the impact of lowering the revenue requirement compared to the SBP; and
- (c) our total amortisation assumption over CP5 is £0.4bn higher than Network Rail's as we have made a larger adjustment for financial sustainability than Network Rail did. This has the impact of increasing the revenue requirement compared to the SBP.

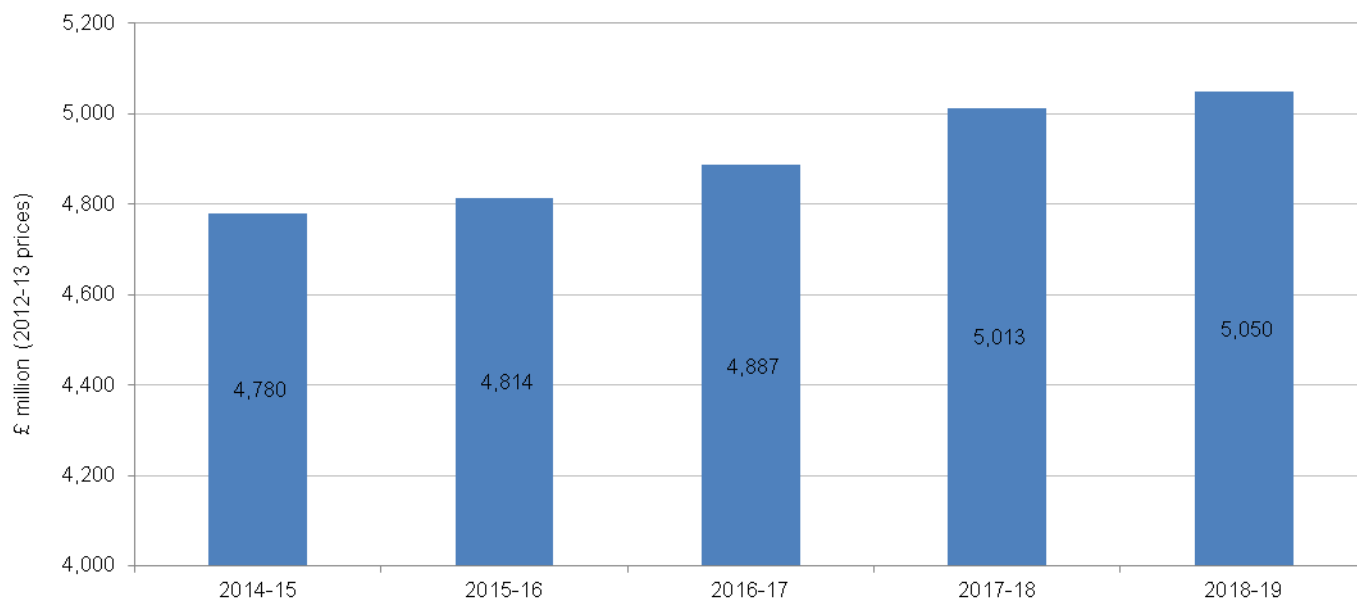
### Overview of changes from our draft determination

14.11 The net revenue requirement over CP5 is £0.1bn higher than our draft determination, largely because our assumption on Network Rail's:

- (a) adjusted allowed return over CP5 is £0.3bn higher than our draft determination, as we are assuming higher financing costs in CP5, which has the impact of increasing the revenue requirement, compared to our draft determination; and
- (b) total amortisation over CP5 is £0.2bn lower as we have made a smaller adjustment for financial sustainability. This has the impact of decreasing the revenue requirement compared to our draft determination.

## Our determination

**Figure 14.2: Our assessment of Network Rail's CP5 net revenue requirement for England & Wales**



**Table 14.5: Our assessment of Network Rail's CP5 expenditure for England & Wales**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	421	400	376	363	348	1,908
Network operations	385	374	358	344	325	1,787
Traction electricity, industry costs and rates	456	537	553	601	665	2,812
Network maintenance	986	965	930	899	872	4,651
Schedule 4 & 8 costs	187	194	195	182	182	939
<b>Total operating expenditure</b>	<b>2,434</b>	<b>2,472</b>	<b>2,411</b>	<b>2,389</b>	<b>2,391</b>	<b>12,097</b>
Renewals	2,242	2,248	2,199	2,113	1,964	10,766
Enhancements	2,329	2,533	2,465	2,516	1,620	11,463
<b>Total capital expenditure</b>	<b>4,571</b>	<b>4,780</b>	<b>4,664</b>	<b>4,629</b>	<b>3,584</b>	<b>22,228</b>
<b>Total expenditure</b>	<b>7,005</b>	<b>7,252</b>	<b>7,075</b>	<b>7,018</b>	<b>5,975</b>	<b>34,325</b>

**Table 14.6: Our assessment of Network Rail's CP5 revenue requirement for England & Wales**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	2,434	2,472	2,411	2,389	2,391	12,097
Add: Long-run steady state amortisation (including non-capex amortisation)	1,766	1,766	1,766	1,766	1,766	8,831
Add: Regulatory tax allowance	4	-	-	-	3	6
Add: Opex memorandum account	32	32	32	32	32	162
<b>Gross rev. req. before cost of capital</b>	<b>4,236</b>	<b>4,270</b>	<b>4,210</b>	<b>4,188</b>	<b>4,192</b>	<b>21,096</b>
Add: Allowed return (real cost of capital)	1,810	1,921	2,033	2,137	2,217	10,117
Less: Real equity surplus	(824)	(888)	(909)	(909)	(910)	(4,441)
Adjusted allowed return	986	1,033	1,123	1,228	1,306	5,676
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>5,222</b>	<b>5,303</b>	<b>5,333</b>	<b>5,415</b>	<b>5,498</b>	<b>26,772</b>
Add: Amortisation financial sustainability adjustment	270	270	360	450	450	1,800
<b>Gross revenue requirement</b>	<b>5,492</b>	<b>5,573</b>	<b>5,693</b>	<b>5,865</b>	<b>5,948</b>	<b>28,572</b>
Less: Other single till income	(712)	(759)	(806)	(852)	(899)	(4,028)
<b>Net revenue requirement</b>	<b>4,780</b>	<b>4,814</b>	<b>4,887</b>	<b>5,013</b>	<b>5,050</b>	<b>24,543</b>

**Table 14.7: Comparison of CP5 expenditure for England & Wales**

£m (2012-13 prices)	PR08	SBP	DD	FD	FD less SBP	FD less DD
Support costs	3,736	2,023	1,884	1,908	(115)	24
Network operations		1,842	1,787	1,787	(55)	-
Traction electricity, industry costs and rates	1,996	3,414	2,864	2,812	(602)	(52)
Network maintenance	5,543	4,214	4,644	4,651	437	7
Schedule 4 & 8 costs	818	632	1,003	939	307	(64)
<b>Total operating expenditure</b>	<b>12,094</b>	<b>12,124</b>	<b>12,182</b>	<b>12,097</b>	<b>(27)</b>	<b>(85)</b>
Renewals	11,569	12,809	10,840	10,766	(2,043)	(75)
Enhancements	8,820	10,959	10,833	11,463	504	630
<b>Total capital expenditure</b>	<b>20,389</b>	<b>23,768</b>	<b>21,673</b>	<b>22,228</b>	<b>(1,540)</b>	<b>555</b>
<b>Total expenditure</b>	<b>32,483</b>	<b>35,893</b>	<b>33,855</b>	<b>34,325</b>	<b>(1,568)</b>	<b>470</b>

Note: Some of the numbers included in the SBP column in this table have been adjusted in the relevant chapters to reflect either errors in the SBP or to make the numbers consistent with the treatment in our determination (e.g. for reactive maintenance). But we have not adjusted them in this table. The adjustments are explained in the relevant chapters.



**Table 14.8: Comparison of CP5 revenue requirement for England & Wales**

£m (2012-13 prices)	PR08	SBP	DD	FD	FD less SBP	FD less DD
Total operating expenditure	12,094	12,124	12,182	12,097	(27)	(85)
Add: Long-run steady state amortisation (including non-capex amortisation)	7,841	9,385	8,739	8,831	(554)	92
Add: Regulatory tax allowance	-	-	17	6	6	(10)
Add: Opex memorandum account	-	133	111	162	29	51
<b>Gross rev. req. before cost of capital</b>	<b>19,934</b>	<b>21,642</b>	<b>21,048</b>	<b>21,096</b>	<b>(546)</b>	<b>47</b>
Add: Allowed return (real cost of capital)	9,411	11,730	10,081	10,117	(1,613)	36
Less: Real equity surplus	-	(4,210)	(4,712)	(4,441)	(231)	271
Adjusted allowed return	9,411	7,520	5,369	5,676	(1,844)	307
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>29,345</b>	<b>29,162</b>	<b>26,417</b>	<b>26,772</b>	<b>(2,390)</b>	<b>355</b>
Add: Amortisation financial sustainability adjustment	-	815	2,101	1,800	985	(301)
<b>Gross revenue requirement</b>	<b>29,345</b>	<b>29,977</b>	<b>28,518</b>	<b>28,572</b>	<b>(1,405)</b>	<b>53</b>
Less: Other single till income	(3,241)	(3,858)	(4,034)	(4,028)	(170)	5
<b>Net revenue requirement</b>	<b>26,104</b>	<b>26,120</b>	<b>24,485</b>	<b>24,543</b>	<b>(1,577)</b>	<b>59</b>

Note:

1. Total amortisation is - PR08 (£7.8bn); SBP (£10.2bn); draft determination (£10.8bn) and final determination (£10.6bn).
2. The SBP number for OSTI in this table has been adjusted in Table C.2 in Annex C to reflect either errors in the SBP or to make the OSTI calculation consistent with our treatment. Table C.4 in Annex C provides a reconciliation between the SBP number and our adjusted number. This is explained in Annex C.

## Scotland

### Overview of changes from Network Rail's SBP

14.12 The net revenue requirement over CP5 is £186m lower than Network Rail's forecast in its SBP, largely because:

- (a) our assumption on Network Rail's adjusted allowed return is £212m lower than Network Rail's, as we are assuming lower financing costs in CP5 (partly due to lower expenditure assumptions e.g. renewals), which has the impact of lowering the revenue requirement compared to the SBP;
- (b) our assumption on Network Rail's operating expenditure is £54m higher, as we are assuming higher maintenance and Schedule 4 & 8 costs slightly offset by lower traction electricity, industry costs and rates, which has the impact of increasing the revenue requirement compared to the SBP; and

- (c) our total amortisation assumption is £32m lower than Network Rail's as we have made a lower assumption for long-run steady state amortisation (£78m) than Network Rail did, partly offset by a higher adjustment for financial sustainability (£46m). Overall, this has the impact of decreasing the revenue requirement compared to the SBP.

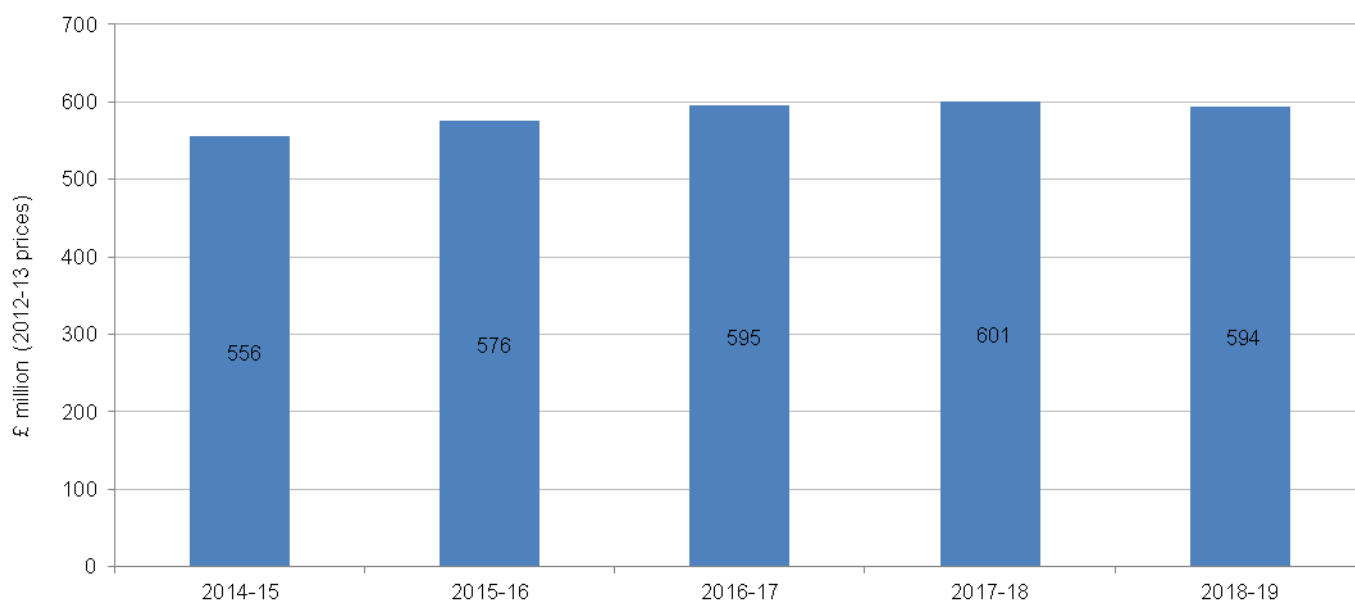
## Overview of changes from our draft determination

14.13 The net revenue requirement is £22m lower than our draft determination, largely because our assumption on Network Rail's:

- (a) adjusted allowed return is £25m higher than our draft determination, as we are assuming higher financing costs in CP5, which has the impact of increasing the revenue requirement, compared to the SBP; and
- (b) total amortisation is £55m lower as we have made a smaller adjustment for financial sustainability (£78m), partly offset by a higher assumption for long-run steady state amortisation (£23m). This has the impact of decreasing the revenue requirement compared to the SBP.

## Our determination

**Figure 14.3: Our assessment of Network Rail's CP5 net revenue requirement for Scotland**



**Table 14.9: Our assessment of Network Rail's CP5 expenditure for Scotland**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	47	44	42	40	38	211
Network operations	39	38	37	34	33	181
Traction electricity, industry costs and rates	40	48	49	52	55	245
Network maintenance	106	108	104	102	95	515
Schedule 4 & 8 costs	20	25	30	22	22	119
<b>Total operating expenditure</b>	<b>253</b>	<b>264</b>	<b>261</b>	<b>251</b>	<b>242</b>	<b>1,271</b>
Renewals	266	327	278	244	225	1,341
Enhancements	468	388	265	156	79	1,356
<b>Total capital expenditure</b>	<b>734</b>	<b>716</b>	<b>543</b>	<b>400</b>	<b>304</b>	<b>2,697</b>
<b>Total expenditure</b>	<b>987</b>	<b>979</b>	<b>804</b>	<b>651</b>	<b>547</b>	<b>3,968</b>

**Table 14.10: Our assessment of Network Rail's CP5 revenue requirement for Scotland**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	253	264	261	251	242	1,271
Add: Long-run steady state amortisation (including non-capex amortisation)	216	216	216	216	216	1,078
Add: Regulatory tax allowance	0	-	-	-	0	0
Add: Opex memorandum account	2	2	2	2	2	11
<b>Gross rev. req. before cost of capital</b>	<b>471</b>	<b>481</b>	<b>479</b>	<b>468</b>	<b>460</b>	<b>2,360</b>
Add: Allowed return (real cost of capital)	214	234	250	259	263	1,220
Less: Real equity surplus	(107)	(116)	(118)	(118)	(118)	(576)
Adjusted allowed return	107	118	132	141	145	644
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>578</b>	<b>600</b>	<b>611</b>	<b>610</b>	<b>605</b>	<b>3,004</b>
Add: Amortisation financial sustainability adjustment	30	30	40	50	50	200
<b>Gross revenue requirement</b>	<b>608</b>	<b>630</b>	<b>651</b>	<b>660</b>	<b>655</b>	<b>3,204</b>
Less: Other single till income	(52)	(54)	(56)	(59)	(62)	(282)
<b>Net revenue requirement</b>	<b>556</b>	<b>576</b>	<b>595</b>	<b>601</b>	<b>594</b>	<b>2,922</b>

**Table 14.11: Comparison of CP5 expenditure for Scotland**

£m (2012-13 prices)	PR08	SBP	DD	FD	FD less SBP	FD less DD
Support costs	377	211	209	211	0	2
Network operations		185	181	181	(4)	-
Traction electricity, industry costs and rates	178	287	250	245	(42)	(5)
Network maintenance	583	455	508	515	60	7
Schedule 4 & 8 costs	52	80	128	119	39	(8)
<b>Total operating expenditure</b>	<b>1,190</b>	<b>1,217</b>	<b>1,275</b>	<b>1,271</b>	<b>54</b>	<b>(4)</b>
Renewals	1,572	1,555	1,333	1,341	(214)	9
Enhancements	477	1,430	1,406	1,356	(74)	(51)
<b>Total capital expenditure</b>	<b>2,048</b>	<b>2,985</b>	<b>2,739</b>	<b>2,697</b>	<b>(288)</b>	<b>(42)</b>
<b>Total expenditure</b>	<b>3,238</b>	<b>4,202</b>	<b>4,014</b>	<b>3,968</b>	<b>(234)</b>	<b>(46)</b>

Note: Some of the numbers included in the SBP column in this table have been adjusted in the relevant chapters to reflect either errors in the SBP or to make the numbers consistent with the treatment in our determination (e.g. for reactive maintenance). But we have not adjusted them in this table. The adjustments are explained in the relevant chapters.

**Table 14.12: Comparison of CP5 revenue requirement for Scotland**

£m (2012-13 prices)	PR08	SBP	DD	FD	FD less SBP	FD less DD
Total operating expenditure	1,190	1,217	1,275	1,271	54	(4)
Add: Long-run steady state amortisation (including non-capex amortisation)	1,063	1,156	1,055	1,078	(78)	23
Add: Regulatory tax allowance	-	-	1	0	0	(1)
Add: Opex memorandum account	-	5	4	11	6	7
<b>Gross rev. req. before cost of capital</b>	<b>2,252</b>	<b>2,378</b>	<b>2,335</b>	<b>2,360</b>	<b>(18)</b>	<b>25</b>
Add: Allowed return (real cost of capital)	1,044	1,362	1,187	1,220	(142)	33
Less: Real equity surplus	-	(507)	(568)	(576)	(69)	(8)
Adjusted allowed return	1,044	856	618	644	(212)	25
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>3,296</b>	<b>3,233</b>	<b>2,954</b>	<b>3,004</b>	<b>(229)</b>	<b>50</b>
Add: Amortisation financial sustainability adjustment	-	154	278	200	46	(78)
<b>Gross revenue requirement</b>	<b>3,296</b>	<b>3,388</b>	<b>3,231</b>	<b>3,204</b>	<b>(184)</b>	<b>(27)</b>
Less: Other single till income	(283)	(280)	(288)	(282)	(2)	6
<b>Net revenue requirement</b>	<b>3,014</b>	<b>3,108</b>	<b>2,944</b>	<b>2,922</b>	<b>(186)</b>	<b>(22)</b>

Note:

1. Total amortisation is - PR08 (£1.1bn); SBP (£1.3bn); draft determination (£1.3bn) and final determination (£1.3bn).

2. The SBP number for OSTI in this table has been adjusted in Table C.3 in Annex C to reflect either errors in the SBP or to make the OSTI calculation consistent with our treatment. Table C.4 in Annex C provides a reconciliation between the SBP number and our adjusted number. This is explained in Annex C.

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# 15. Overall Incentives

## Key messages in this chapter

- Incentivising efficient behaviour is at the core of PR13. We are putting in place substantial improvements to our package of incentives which comprise charges, financial and contractual incentives. These incentives impact not just on Network Rail but the whole industry.
- We are improving the variable usage charge so that it better reflects the extent to which use of different vehicles drives cost; ensuring that Network Rail bears more of the cost of traction electricity transmission losses which it can manage and establishing a new 'freight specific charge' so that a greater proportion of the costs that freight generates are recovered from haulage of commodities that can bear such an increase – electricity supply industry coal, spent nuclear fuel, and iron ore.
- Improvements to financial incentives include a new route-based efficiency benefit sharing mechanism to encourage Network Rail and train operators to work together to reduce costs, and strengthening the volume incentive to encourage Network Rail to act more commercially in deciding how to encourage extra traffic.
- We are updating Schedules 4 and 8 payment rates and Schedule 8 benchmarks so they act as effective compensation and incentive regimes, to reduce disruption to passengers and freight customers.

## Introduction

- 15.1 Many elements of our PR13 decisions have incentive properties and there has been discussion of incentives in previous chapters relating to outputs, expenditure and financing.
- 15.2 The next chapter, chapter 16, covers access charges. But part of Network Rail's revenue requirement is provided by network grant in lieu of access charges – this is discussed in chapter 17. Other single till income is netted off of gross revenue to calculate the net revenue requirement and this is discussed in chapter 18. Chapters 19 and 20 consider financial and contractual incentives.
- 15.3 This chapter briefly describes the purpose of incentives and why regulatory intervention is required. It then describes the main types of incentives which we use to incentivise efficient behaviours both in Network Rail and more widely in the industry.

## Purpose of incentives

- 15.4 Most markets and industries respond to incentives that result from the normal operation of the market. But in the rail sector, as with other monopoly network industries, there is the potential for ‘market failure’ arising from:
- (a) **market power** – Network Rail is the provider of access to the mainline rail network and any company with such a monopoly or market power has an incentive to price higher than a competitive industry would and to provide less output which may be of a lower quality than that which would be provided in a competitive market; and
  - (b) **network externalities** – infrastructure networks, including the rail network, are complex and individual companies’ use of them is likely to impose costs or benefits on other users. These impacts on third parties are known as external costs or benefits. Even if this were not the case, it is unlikely that the complexities of arranging use of the network could be resolved entirely through bilateral arrangements between operating companies and Network Rail. There are likely also to be other external costs or benefits, such as congestion, pollution or accidents, to third parties other than the rail industry and its customers.
- 15.5 Regulatory intervention is often considered to be required to address these market failures. In the rail industry this intervention takes the form of the implementation of regulatory incentive mechanisms which include charges, financial and contractual incentives.

## Types of incentives

### Charges

- 15.6 The standard regulatory response to market power is to control the company’s prices so that overall revenues are not set above total costs. It may also involve specifying the quantity and quality of its output. These principles underlie our approach to establishing our PR13 determination.
- 15.7 Regulation attempts to ensure that unit prices are set at the marginal cost<sup>314</sup> of providing the unit of output. These cost-reflective prices incentivise efficiency by encouraging customers to purchase output if and only if the value of it to them exceeds the cost and by encouraging Network Rail to provide the product if and only if the value to customers exceeds the cost<sup>315</sup>. This principle underlies our consideration of access charges in the chapters which follow.

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<sup>314</sup> Marginal cost is the increment to cost that results from producing an additional unit of output.

<sup>315</sup> This sort of efficiency, concerned with producing the right thing, is known as ‘allocative efficiency’ and is distinguished from ‘productive efficiency’ or producing at least cost.



- 15.8 The principle of cost-reflective pricing may result in total revenue that differs from total costs. Indeed, the sum of revenues from Network Rail's present variable access charges falls far short of its total revenue requirement because it incurs a large proportion of fixed and common costs regardless of how much traffic runs on its network. In Network Rail's case, the difference between variable charges and its total revenue requirement is met by a combination of network grants from the governments and fixed access charges.
- 15.9 Charges can also be used to take account of costs and benefits that are external to the sector. These are losses and gains to third parties that are not necessarily taken into account by the industry or its customers unless an incentive is introduced to enable them to do so. Examples relevant to the rail industry include the relief of congestion on the road, environmental pollution, and the encouragement of innovation, R&D.
- 15.10 Environmental issues are an important feature of our duties. Environmental costs may be included in the prices of inputs used in the industry. An example is that the electricity prices that determine train traction electricity charges include the cost of purchasing allowances under the EU emissions trading scheme.

## Financial incentives

- 15.11 If its revenue is limited to be equal to what is necessary to recover its costs, a company that does not face competition no longer has an incentive to control costs and so a separate regulatory mechanism is necessary to give it one. The mechanism for Network Rail is that we incentivise it to outperform our determination, which will benefit customers and funders. The setting of outputs and revenue and the process of incentivising cost performance have been discussed at length in earlier parts of this determination but one aspect, the route-based efficiency benefit sharing mechanism, represents a new financial incentive for CP5, described in the financial incentives chapter (chapter 19).
- 15.12 Network Rail's unit charges do not cover all the costs of providing capacity and so we need to consider how it responds to requests for extra capacity. In a more commercial setting, Network Rail would charge prices which are set above its short run costs so that it would profit by selling more of what its customers wanted i.e. the use of network capacity. In the case of Network Rail, it also faces incentives in relation to train service punctuality outputs and so it may actually face a disincentive to make additional capacity available. So there is an existing volume incentive mechanism which is designed to encourage Network Rail to make trade-offs when deciding whether to meet unexpected demand similar to those which a company operating in a more commercial setting would make. We are improving the volume incentive for CP5, and this is described in full later in the financial incentives chapter (chapter 19).

## Contractual incentives

- 15.13 There are well established mechanisms through which important aspects of network management are undertaken through contractual incentives. These take the form of administered charges set to reflect the external costs caused to other units of the network. The possessions and performance regimes chapter (chapter 20) discusses:
- (a) the incentives in the 'Schedule 4' possessions regime through which compensation is paid to operators when they are unable to use parts of the network, due to planned restrictions of use, typically because engineering work is being carried out; and
  - (b) the incentives in the 'Schedule 8' performance regime through which operators are compensated for the costs of delay and cancellations imposed by others, including Network Rail.
- 15.14 The charges chapter discusses the 'capacity charge' which is levied on train operating companies to compensate Network Rail for the additional Schedule 8 delay payments it is expected to have to make to other operating companies as a result of the additional congestion caused by additional traffic.

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# 16. Access charges

## Key messages in this chapter

- This chapter is our determination with respect to track access charges and regulated station charges.
- The chapter has a wide scope. It covers two types of track access charge: first, charges covering costs directly incurred, which consist of the: variable usage charge (VUC), capacity charge, traction electricity charge (EC4T charge), electrification asset usage charge (EAUC), and coal spillage charge; and second, mark-ups, which consist of the freight only line (FOL) charge, the new freight specific charge (FSC), and the fixed track access charges (FTAC), the latter being payable only by franchised passenger operators. There is also a station long term charge.
- This chapter also covers our conclusions on our consultation on charges relating to on-rail competition.
- It is our role to set the framework within which Network Rail has responsibility for calculating its track access charges. It has undertaken a major programme of work with extensive consultation and industry engagement. Because of the different roles of ORR and Network Rail, the importance of consulting with the industry and the technical detail which underpins the work, the process for setting charges is an extended and detailed one. This chapter describes each stage of the process and hence is necessarily lengthy. At the start of the chapter we have summarised the combined effect of the changes to charges in terms of the impact on the main users: franchised passenger operators, freight operators, open access operators and charter operators.
- In setting the framework for charges, we are seeking to improve the extent to which charges reflect costs. By making charges more cost reflective we will improve incentives for Network Rail to manage provision of network capacity more efficiently, and on its customers to use that capacity efficiently. It will also improve incentives on Network Rail's customers to work with Network Rail to reduce costs where they can. At the same time, we recognise that changes to charges can significantly affect passenger and freight operators and their customers. In reaching our decisions we have had extensive discussions with stakeholders, have considered these impacts and have taken pragmatic steps to mitigate them where necessary.

## Key messages in this chapter (continued)

- In updating the VUC, we have concluded on accepting new research and evidence on how variable usage costs vary by vehicle. We concluded that the new rates for the VUC for all passenger traffic should be implemented in full from the start of CP5. This is because these result in a decrease in the average VUC for passenger operators and we consider it appropriate that passenger operators benefit from the new evidence on cost drivers as soon as possible. In our view, it would be beneficial for new franchises to expose TOCs to changes in charges, strengthening their incentives to work with Network Rail to reduce its costs.
- We have concluded that the new rates for the VUC for freight traffic should be implemented subject to a cap on the average VUC measured relative to CP4 rates and the increase is phased in for the last three years of CP5 in a way that is cost reflective and does not unduly discriminate. We have made our decision with reference to cumulative changes to all track access charges, set in the context of the overall PR13 package. This results in an average increase in the VUC for freight operators in real terms of 3.6% for CP5 overall.
- Network Rail undertook a major recalibration of the capacity charge in PR13, resulting in substantial increases in many of the capacity charge rates. With respect to this charge, following extensive helpful discussion with RDG and the wider industry, we have decided to implement an approach which we consider best meets the industry's objectives and our own statutory duties. We are implementing the newly recalibrated capacity charge during CP5 and mitigating, where necessary, the impacts of its large increases. We conclude that franchised passenger operators will pay the newly calibrated capacity charges in full. For freight operators, there will be year-end wash-up arrangements for three categories of commodities to ensure that Network Rail has appropriate incentives to accommodate additional traffic. Existing open access operators will pay CP4 capacity charge rates on existing traffic, but the CP5 recalibrated rates on new traffic. Any new entrant open access operator will pay CP4 rates on services below a threshold (set to provide broadly equivalent treatment with existing open access operators) and CP5 rates above the threshold. Charter operators will have similar arrangements, using a separate wash-up, to freight operators.

## Key messages in this chapter (continued)

- At the start of CP4, all operators were charged for EC4T on the basis of modelled rates, which provided operators with weak incentives to manage their electricity consumption. This is changing. Currently, around 25% of EC4T is billed on the basis of metered consumption, and we expect this to rise to around 50% by April 2015. In PR13, we are further supporting increases in electricity efficiency and reductions in CO<sub>2</sub> emissions by refining the EC4T charging framework, which we worked with the industry to establish during CP4, in order to support expansion of on-train metering. We are introducing financial incentives for the first time for Network Rail to manage transmission losses by exposing it to electricity volume risk through the volume wash-up.
- We have set out some changes to the EAUC and coal spillage charge, primarily to reflect updated estimates of the costs they are set to recover. We have agreed with Network Rail's conclusions to remove the annual review mechanism for the coal spillage charge on the basis of its disproportionate administrative costs, though we will revisit the case for a review mechanism as part of PR18.
- We are introducing a new FSC, payable for the haulage of coal for the electricity supply industry (ESI), spent nuclear fuel, and iron ore. The FSC is designed to recover those freight avoidable costs not recovered by other charges. Taking account of cumulative impact of increases to other freight charges, we have concluded not to introduce the FSC until April 2016, and then to increase it gradually in CP5 to reach only around 50% of what would have been its final level if we had fully implemented the charge on the basis of latest cost estimates. Further, we have decided not to impose the FSC on biomass in CP5.
- We have concluded on recalibrated rates for the FOL charge to reflect updated cost estimates. In CP5, consistent with the FSC, Network Rail will levy the FOL charge on ESI coal, iron ore and spent nuclear fuel. Large changes to the FOL charge relative to CP4 are being phased in gradually over CP5: this applies to iron ore, for which the FOL charge is a new charge, and to spent nuclear fuel, where the CP5 charge is substantially higher than that for CP4 due to a correction being made in the calculation of the charge.
- We conclude on income from FTAC and the station LTC in this chapter. In CP5 the station LTC will recover an additional group of costs, namely those for stations information and security systems (SISS), which in CP4 were recovered through FTAC.
- We estimate that average total franchised passenger variable charges will increase by 36% from CP4 to CP5 in real terms, and with constant levels of traffic and electricity prices. This is a consequence of the substantial increase in the capacity charge. Franchised operators are largely protected from this increase under the terms of their franchise agreements.

## Key messages in this chapter (continued)

- We estimate that average total freight charges will increase by 21% from the last year of CP4 to the last year of CP5, in real terms and with consistent levels of traffic and electricity prices. This equates to an increase in charges of 4% per year, in real terms, in each year of the period. For commodities not affected by the FSC, the corresponding increase is 1% a year on average. To give businesses more time to adjust, the increase to the VUC and the FSC will be phased in from April 2016, reaching the full capped level only in 2018-19.
- For open access, due to the measures we are taking to mitigate the impacts of increases in the capacity charge, the average variable charges will stay approximately constant from CP4 to CP5 in real terms.
- Our conclusions on charges for charter operators will improve consistency between charter track access contracts and those of other passenger and freight operators, and ensure that the prices charter services will pay to Network Rail are more reflective of cost. On average, our analysis shows that this package will result in charter operators being marginally better off financially than they have been in CP4.
- In this chapter we publish our conclusions on on-rail competition, following our consultation published on 14 June 2013 in which we consulted on options to allow passenger open access operators greater access to the network in return for some contribution to fixed costs. Reflecting the responses we received, we have decided not to implement either of the options so there will be no significant changes to the open access regime. However we will address open access as part of PR18 and, in response to suggestions from operators, explore possible improvements to the way the test that restricts access works.
- We will do more work in the early part of CP5 to improve our understanding of costs and consider how they might be better reflected in charges (including the capacity charge) for CP6. We will work with the industry, and also with passenger groups and freight customers, as appropriate, in conducting this review of the structure of charges.
- Network Rail will publish its price lists, consistent with our determination, on 20 December 2013.
- Our conclusions are largely consistent with those of our draft determination. The substantive change compared to our draft determination is in the way we implement the capacity charge to mitigate some of its impacts on operators. Other changes are small, including taking account of refinements to some cost estimates.

## Summary of changes to charges

- 16.1 We start this chapter by summarising how the levels of track access charges and the station long term charge will change from CP4 to CP5. These changes are partly a consequence of certain changes to the structure of charges that we have introduced for CP5, but also a consequence of Network Rail's work in PR13 re-estimating the costs that the charges are designed to recover.
- 16.2 The remainder of this chapter goes on to explain changes being made to Network Rail's charges as part of PR13, and the substantial body of work and lengthy processes undertaken by Network Rail, ourselves and the industry that underpin them. In some cases, there are changes to the basis on which a charge is levied that affect its incentives, without necessarily changing its level. This is particular true for electric current for traction (EC4T), where we are implementing changes to incentivise Network Rail to manage transmission losses more effectively and to further enable on train metering.
- 16.3 In this chapter we also present our forecast of Network Rail's income from each charge, using Network Rail's forecasts of changes to traffic volumes over CP5. This feeds into our calculation of Network Rail's net revenue requirement.
- 16.4 In this summary, we show changes to charges from the perspective of those that pay them, Network Rail's customers, in the following order:
- (a) franchised passenger operators;
  - (b) freight operators;
  - (c) open access operators; and
  - (d) charter operators.
- 16.5 The acronyms we use for the charges are explained in the introduction and subsequent sections. Consistent with the rest of this document, all values are in 2012-13 prices unless otherwise stated.

### Franchised passenger operators

- 16.6 Table 16.1 shows our comparison of track access charges for franchised passenger services for CP4 and CP5. The charges shown are our estimates, and in several cases they are weighted averages. They are accurate to the number of decimal places shown: Network Rail will publish actual charges, to a greater number of decimal places, in its price lists.



**Table 16.1: Comparison of charges in CP4 and CP5 for franchised passenger services**

Type of charge	Payable in CP5 by	CP4 charge	CP5 charge
<b>Variable charges (pence per vehicle mile, 2012-13 prices)</b>			
VUC (estimated weighted average)	All services	9.60	9.20
Capacity charge (estimated weighted average)	All services	10.23	22.08
EAUC – DC (third rail)	Electrically powered services	0.47	0.72
EAUC – AC (overhead line)	Electrically powered services	1.24	1.62
<b>Charges that do not vary with traffic (£m per year, 2012-13 prices)</b>			
FTAC (total, Great Britain)	All franchised passenger services	913 (for 2011-12)	406 (for 2014-15) to 855 (for 2018-19)
Station LTC – managed stations	Station	22 (for 2013-14)	31.8
Station LTC – franchised stations	Station facility owner GB	134 (for 2013-14)	119.4

Notes: the capacity charge is levied per train mile not vehicle mile, but is shown per vehicle mile to aid comparison

- 16.7 Table 16.2 shows our estimate of Network Rail’s income from each charge. To facilitate comparison, electricity prices and traffic levels constant for all years (and hence EC4T income is shown to be the same in each year).
- 16.8 The average capacity charge for CP5 will be more than double the equivalent CP4 charge, though there is significant variation across services, with some experiencing a reduced capacity charge. Under the terms of the franchise, these operators are protected from the financial effects of the large increase for those services that form part of the franchise. Other charges change little in absolute terms as a result of PR13. Charges in CP3 were a broadly similar level to CP4, but with substantially higher VUC and lower capacity charge, as documented in our PR08 final determination.

**Table 16.2: Train operator payments to Network Rail for franchised passenger services by charge (with constant traffic)**

Charge (£m a year, 2012-13 prices, 2013-14 traffic)	CP3	CP4	CP5	Change CP4 to CP5
VUC	327	164	157	-4%
Capacity charge	8	174	382	119%
EAUC	43	10	13	35%
EC4T (consistent electricity prices)	221	221	221	0%
<b>Total, variable charges</b>	<b>600</b>	<b>569</b>	<b>774</b>	<b>36%</b>

Notes:

1. The table shows charges determined as part of PR13. These do not include payments associated with Schedules 4 and 8, which are set out in chapter 20, and payments not determined as part of PR13.
2. EC4T revenue assumes constant electricity prices as well as traffic.
3. Numbers may not reconcile due to rounding.
4. CP3 revenue estimated on the basis of Table 19.14 in PR08 final determination.

16.9 Franchised services also receive Schedule 4 payments and pay Network Rail an access charge supplement to finance Schedule 4. They also receive and pay Network Rail Schedule 8 payments. These payments are set out in chapter 20.

## Freight operators

16.10 Table 16.3 shows our comparison of track access charges for freight services for CP4 and CP5. The charges shown are our estimates, and in several cases they are weighted averages. They are accurate to the number of decimal places shown: Network Rail will publish actual charges, to a greater number of decimal places, in its price lists. For those charges for which an increase is phased in, only the charges for the first and last year of CP5 are shown in this table: they are shown for each year of CP5 in full in the relevant section of this chapter.

16.11 Our decision on the freight capacity charge is such that its weighted average rate is a function of how traffic grows relative to a baseline. As there is forecast to be significant traffic growth, we have illustrated how the rate may change in Table 16.3 and the two subsequent tables by calculating it relative to the latest traffic forecasts for 2018-19 (which are Network Rail's draft forecasts for its delivery plan). We have then applied the rate to 2014-15 traffic to calculate income.

**Table 16.3: Comparison of charges in CP4 and CP5 for freight services**

Type of charge (2012-13 prices)	Payable in CP5 by	CP4 charge (£ per kgtm)	CP5 charge (£ per kgtm)
VUC (estimated weighted average)	All services	1.81	1.81 (2014-15) rising to 1.99 (2018-19)
Capacity charge (estimated weighted average)	All services	0.15	c. 0.12 (2014-15) potentially rising to c.0.15 (2018-19)
Coal spillage	Services transporting coal	0.32 (2009-10) 0.25 (2012-13)	0.40
EAUC – DC (third rail)	Electrically powered services	0.063	0.050
EAUC – AC (overhead line)	Electrically powered services	0.118	0.248
FOL charge	ESI coal	0.53	0.52
FOL charge	Iron ore	0.00	0.00 (2014-15) rising to 0.84 (2018-19)
FOL charge	Spent nuclear fuel	5.34	5.34 (2014-15) rising to 27.72 (2018-19)
FSC	ESI coal	0.00	0.00 (2014-15) rising to 1.04 (2018-19)
FSC	Iron ore	0.00	0.00 (2014-15) rising to 0.76 (2018-19)
FSC	Spent nuclear fuel	0.00	0.00 (2014-15) rising to 3.00 (2018-19)

Notes:

1. The capacity charge is levied per train mile not per kgtm, but is shown per kgtm to aid comparison
2. kgtm = thousand gross tonne miles.

16.12 Tables 16.4 and 16.5 show freight operators' payments to Network Rail broken down by charge and by rail freight commodity respectively. To facilitate comparison, we have held electricity prices and traffic levels constant for all years (and hence EC4T income is shown to be the same in each year). As increases in some charges are phased in over time, we show both revenue for the charge at the end of CP5 (2018-19) and as an average for CP5. Commodities with relatively low shares of traffic that are not subject to a FSC are aggregated in the category "other".

16.13 Overall, in real terms, charges are set to increase by around 21% on current levels by 2018-19, equivalent to 4% a year average. For commodities not affected by the FSC, the corresponding increases are 6% and 1% respectively. There will be a large

variation in the extent of the increase in charges for individual commodities, with track access charges falling marginally for some commodities, and increasing materially for others.

**Table 16.4: Freight operator payments to Network Rail for freight services by charge (with constant traffic)**

Charge (£m a year, 2012-13 prices, 2014-15 traffic)	CP3	CP4	CP5 average	End CP5 (2018-19)	Change CP4 to 2018-19	Average annual increase
VUC	95.2	55.2	57.1	60.5	9%	2%
Capacity charge	4.0	4.0	3.7	4.2	4%	1%
Coal spillage charge	4.0	1.9	3.0	3.0	56%	11%
EAUC	N/A	0.3	0.7	0.7	108%	22%
FOL charge	N/A	3.8	4.0	4.5	19%	4%
FSC	N/A	N/A	2.7	7.5	N/A	N/A
EC4T (consistent electricity prices)	6.2	6.2	6.2	6.2	0%	0%
<b>Total variable charges</b>	<b>109.4</b>	<b>71.5</b>	<b>77.4</b>	<b>86.5</b>	<b>21%</b>	<b>4%</b>

Notes:

1. Coal spillage charge revenue for CP4 is for the year 2012-13.
2. EC4T revenue assumes constant electricity prices as well as traffic.
3. The table shows charges determined as part of PR13. These do not include payments associated with Schedules 4 and 8, which are set out in chapter 20, and payments not determined as part of PR13.
4. Numbers may not reconcile due to rounding.
5. CP3 revenue estimated on the basis of Table 19.15 in PR08 final determination.

**Table 16.5: Freight operator payments to Network Rail for freight services by key commodity (with constant traffic)**

Commodity (£m a year, 2012-13 prices, 2014-15 traffic)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Change CP4 to 2018-19	% annual increase CP4 to end CP5
Domestic intermodal	23.1	23.3	23.5	23.6	23.6	23.7	2%	0%
Construction materials	8.6	8.5	8.5	8.9	9.5	10.2	18%	4%
Steel	6.0	5.9	5.9	6.0	6.2	6.4	6%	1%
Petroleum	2.5	2.5	2.5	2.5	2.5	2.6	2%	0%
Biomass	1.8	1.8	1.8	1.9	2.0	2.2	21%	4%
Coal other	1.4	1.5	1.5	1.5	1.6	1.6	17%	3%

Commodity (£m a year, 2012-13 prices, 2014-15 traffic)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Change CP4 to 2018-19	% annual increase CP4 to end CP5
European intermodal	1.4	1.5	1.5	1.5	1.4	1.4	-1%	0%
Industrial minerals	0.9	0.9	0.9	0.9	1.0	1.0	12%	2%
Domestic automotive	1.0	1.0	1.0	1.0	0.9	0.9	-6%	-1%
Other	4.0	3.9	3.9	4.0	4.0	4.1	3%	1%
<b>Total, commodities to which FSC does not apply</b>	<b>50.8</b>	<b>50.7</b>	<b>51.0</b>	<b>51.7</b>	<b>52.9</b>	<b>54.1</b>	<b>6%</b>	<b>1%</b>
ESI coal	19.9	20.7	20.6	22.6	26.7	30.8	55%	11%
Iron ore	0.4	0.4	0.4	0.4	0.6	0.7	80%	16%
Nuclear	0.4	0.4	0.4	0.4	0.7	1.0	158%	32%
<b>Total, commodities subject to FSC</b>	<b>20.7</b>	<b>21.4</b>	<b>21.4</b>	<b>23.5</b>	<b>28.0</b>	<b>32.5</b>	<b>57%</b>	<b>11%</b>
<b>Total</b>	<b>71.5</b>	<b>72.2</b>	<b>72.4</b>	<b>75.2</b>	<b>80.8</b>	<b>86.5</b>	<b>21%</b>	<b>4%</b>

Notes:

1. The table shows charges determined as part of PR13. These do not include payments associated with Schedules 4 and 8, which are set out in chapter 20, and payments not determined as part of PR13.
2. Numbers may not reconcile due to rounding.

## Open access passenger operators

16.14 Table 16.6 shows our comparison of track access charges for open access passenger services for CP4 and CP5. The charges shown are our estimates, and in several cases they are weighted averages. They are accurate to the number of decimal places shown: Network Rail will publish actual charges, to a greater number of decimal places, in its price lists.

16.15 There are some anomalies in the levying of the capacity charge in CP4 that, as we explain in this chapter, we are addressing for CP5. This accounts for the difference in the capacity charge between CP4 and CP5. We have not shown a capacity charge for new services because the charge rate varies significantly depending on the characteristics of the service.

**Table 16.6: Comparison of charges in CP4 and CP5 for open access passenger services**

Type of charge (2012-13 prices)	Payable in CP5 by	CP4 charge (pence per vehicle mile)	CP5 charge (pence per vehicle mile)
VUC (estimated weighted average)	All services	13.1	12.5
Capacity charge (estimated weighted average)	All services	5.7	Existing operators, existing traffic: 6.5 Existing operators, additional traffic: 31.6 New operators, at or below threshold: 6.5 New operators, above threshold: 31.6
EAUC – DC (third rail)	Electrically powered services	0.47	0.72
EAUC – AC (overhead line)	Electrically powered services	1.24	1.62

Notes:

1. The capacity charge is levied per train mile not vehicle mile, but is shown per vehicle mile to aid comparison
2. Due to data constraints, we estimate the open access weighted charges to one or two significant figures only.

16.16 The impact of our determination on track access charges for open access passenger services is shown in Table 16.7. As with the equivalent previous tables, we have assumed constant traffic and electricity prices so that the impact of PR13 is shown in full.

**Table 16.7: Train operator payments to Network Rail for open access passenger services by charge (with constant traffic)**

Charge (£m a year, 2012-13 prices, 2013-14 traffic)	CP4	CP5	Change CP4 to CP5
VUC	2.2	2.1	-6%
Capacity charge	1.1	1.2	13%
EAUC	0.0	0.0	0%
EC4T (consistent electricity prices)	3.6	3.6	0%
<b>Total</b>	<b>6.9</b>	<b>6.9</b>	<b>0%</b>

Notes:

1. The table shows charges determined as part of PR13. These do not include payments associated with Schedules 4 and 8, which are set out in chapter 20, and payments not determined as part of PR13.
2. EC4T income assumes constant electricity prices as well as traffic.
3. Numbers may not reconcile due to rounding.

## Charter passenger operators

16.17 Table 16.8 shows charges for CP5 for charter operators. The charges shown are our estimates, and in several cases they are weighted averages. They are accurate to the number of decimal places shown: Network Rail will publish actual charges, to a greater number of decimal places, in its price lists. Note that the charges are presented per train mile, whereas the equivalent tables for other passenger operators show charges per vehicle mile.

**Table 16.8: Comparison of charges in CP4 and CP5 for charter operators**

Type of charge (2012-13 prices)	CP4 charge (£/ train mile)	CP5 charge (£/ train mile)
VUC - diesel or electric equipment	1.21	1.06
VUC - steam equipment	1.45	1.06
VUC - diesel or electric light locomotive	N/A	0.56
VUC - steam light locomotive	N/A	0.61
EAUC	N/A	Same as franchised passenger (per vehicle mile)
Capacity charge - CP4 rate (to apply to traffic below baseline)	N/A	0.17 (0.13 weekend discount)
Capacity charge - CP5 charter rate (to apply to traffic above baseline and apportioned to all traffic in the wash-up)	N/A	1.00 (0.67 weekend discount)

16.18 Table 16.9 shows CP4 payments to Network Rail from charter operators, and forecast CP5 annual average income. A positive net difference means a reduction in the total income paid by operators to Network Rail between CP4 and CP5.

**Table 16.9: Train operator payments to Network Rail for charter services (with constant traffic)**

£'000 a year (2012-13 prices)	VUC	EC4T	Schedule 8 <sup>1</sup>	Capacity charge	Total
CP4 payments	521	0	174	0	695
Forecast CP5 payments	482	30	0	73	585
<b>Net difference between CP4 and CP5 payments</b>	<b>39</b>	<b>-30</b>	<b>174</b>	<b>-73</b>	<b>110</b>

Note:

1. With the introduction of benchmarks, the expected financial value of Schedule 8 would be zero at expected levels of performance, and we have assumed CP4 Schedule 8 performance for charter operators.
2. We have used average annual charter traffic in CP4 to calculate the CP4 and CP5 charges income.
3. The analysis excludes income from slot and cancellations charges, which will not change in real terms as a result of PR13. It also excludes EAUC income because it is very small.



## Introduction

- 16.19 In this chapter we conclude on the access charges paid by Network Rail's customers that are within the scope of PR13<sup>316</sup>. They include:
- (a) track access charges paid by franchised passenger train operators, open access passenger train operators and charter passenger train operators;
  - (b) track access charges paid by freight train operators; and
  - (c) station long term charges paid by the users of franchised stations and the 17 Network Rail 'managed' stations.
- 16.20 It is important that Network Rail's charges reflect the costs they are designed to recover. In this way, charges provide the best possible signals to Network Rail and to its customers about the provision and use of infrastructure services. This in turn drives efficient use of resources, both in terms of existing infrastructure and the provision of new capacity, and incentives to reduce costs where possible.
- 16.21 In PR13, Network Rail has undertaken a thorough review of the costs that the charges are set to recover and, on that basis, calculated the charges. We have largely held the structure of charges constant, with two exceptions.
- 16.22 The first is the introduction of a new freight specific charge (FSC) on certain commodities. In CP4, freight accounted for around 7% of all train kilometres and 24% of gross tonne kilometres on the network, generating costs of roughly £280m per year. However, less than 1% of Network Rail's revenue, of £6.4bn in 2011-12, comes from rail freight. While we recognise that there are good reasons for subsidising rail freight, there are some parts of the rail freight sector that could make a greater contribution to the costs they impose on the network. This charge represents a small increase in their contribution towards the costs they generate.
- 16.23 The second is a set of changes relating to the treatment of the costs of electricity for traction, in particular relating to incentives for on-train metering and for Network Rail to manage electricity transmission losses. These changes will increase Network Rail's exposure to the costs associated with transmission losses, improving incentives to reduce these losses, increasing efficiency and benefitting the environment.
- 16.24 In addition, Network Rail has provided better evidence in relation to cost drivers; and we are implementing changes to existing charges in a way that broadly reflects the relative importance of different factors in driving cost, while at the same time mitigating impacts by introducing some interim arrangements for CP5, prior to our

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<sup>316</sup> Access charges not within the scope of PR13 are those in access contracts either exempt from regulation (such as the non-stopping Paddington to Heathrow services operated by Heathrow Express) or those that do not contain a contractual reopener permitting a periodic review by ORR of the charges (such as depot access agreements and connection contracts). Charges not within the scope of PR13, but which contribute towards Network Rail's other single till income are discussed in chapter 18.

review of the structure of charges for CP6. In particular, for freight we are phasing in substantial changes to the different relativities between the different variable usage charges for different vehicle types. And we are mitigating the impacts of large increases to the capacity charge for some operators by implementing the new rates relative to baseline traffic levels and allowing for year-end reconciliations.

- 16.25 By increasing the extent to which Network Rail's charges reflect cost in this way, we improve incentives for efficiency, improve value for money for users and funders, and reduce the reliance of the railway on public subsidy, which is currently running at more than £4bn per year.
- 16.26 In relation to all these changes and having regard to our statutory duties, we have taken account of the impact, not only on passenger and freight operators but also on their customers. Where appropriate, for example in relation to the FSC, this has caused us to mitigate their impacts, for example by phasing them in over a longer period.
- 16.27 Following PR13, we will work with the industry to conduct an extensive review of the structure of charges in the early stages of CP5 as part of work preparing for PR18. By beginning this review early, the aim is to give the industry more time to plan for any changes. In undertaking this work, we would like to gain a better understanding of infrastructure costs and their drivers, and to identify scope for charges to send better signals for efficient provision and use of network capacity, and for more efficient cost recovery, ultimately improving value for money. We are keen that the work should look at the balance between recovery of costs from network grant, fixed charges and variable charges. Recognising the potential significance of this review for Network Rail, its customers and their customers we are keen to see RDG and industry involved from the start. We will shortly be developing our governance structure and work programme, and look forward to the commitment of industry resource and expertise.
- 16.28 This chapter is structured as follows:
- (a) background to the access charges framework;
  - (b) brief overview of the level of charges in CP4;
  - (c) description of our general approach to assessing Network Rail's charging proposals;
  - (d) description of how we have taken account of our decisions for efficiency in determining the level of charges;
  - (e) the role of traffic forecasts in the forecasts of income from charges;
  - (f) the method of calculation and charge levels for each of the charges for 'costs directly incurred':
    - (i) variable usage charge (VUC);

- (ii) capacity charge;
- (iii) traction electricity charge (EC4T charge);
- (iv) electrification asset usage charge (EAUC); and
- (v) coal spillage charge;
- (g) the method of calculation and charge levels for the 'mark-up' which is levied on certain types of freight traffic (in addition to charges for costs directly incurred), via:
  - (i) the freight only line (FOL) charge; and
  - (ii) the new freight specific charge (FSC);
- (h) the method of calculation and levels of the fixed track access charges (FTAC) payable by franchised passenger operators;
- (i) the method of calculation and charge levels for station long term charge (LTC);
- (j) conclusions following our consultation on charges relating to on-rail competition between passenger services;
- (k) issues specific to charter services;
- (l) implementation issues; and
- (m) what our conclusions mean for different stakeholders:
  - (i) franchised passenger services;
  - (ii) freight services; and
  - (iii) open access passenger services.

16.29 Consistent with the rest of this document, all values are in 2012-13 prices unless otherwise stated. In addition, costs and charges for CP5 are presented at end of CP5 levels of efficiency (which is the basis on which charges for CP5 will be levied) unless otherwise stated.

## Background

16.30 Charges provide:

- (a) Cost recovery: A mechanism for Network Rail to recover the efficient costs it incurs in providing track and station infrastructure used by train operators;
- (b) Signals for efficiency of use: Users make better use of services, including capacity, by responding to signals sent through prices based on cost. Charges provide signals to train operators, their suppliers and funders for the efficient use and development of vehicles and the infrastructure;

- (c) Signals for cost efficiency and allocation: Charges allow costs to be allocated. Where charges allocate costs to those who have caused them to be incurred they provide an incentive to reduce those costs; and
- (d) Signals for efficient provision of goods and services: Charges send signals to providers as to the goods and services they should provide. In this case, charges could provide an incentive to Network Rail to respond to signals sent by users through prices and their consumption decisions about what they are willing to pay for and what Network Rail should therefore provide (as long as those charges cover the cost of provision).

16.31 Charges are therefore an important means through which information and incentives can be provided to encourage improvements in efficiency, and therefore the value for money provided by the railway. Where charges are not cost-reflective, the incentives on both providers and users of the infrastructure to act commercially are weakened.

16.32 Under the charging principles set out in EU legislation, transposed into the Access & Management Regulations, the track access charges that each operator pays are calculated to reflect the costs that Network Rail incurs as a result of allowing that operator's services to operate on the network. These costs include wear and tear of Network Rail's assets, and also those Schedule 8 costs, which are compensation payments for delays and cancellations, that vary with traffic that Network Rail recovers through the capacity charge.

16.33 Exceptions to these charging principles are permitted in certain narrowly defined circumstances. One such exception is that of a mark-up, where the charge is above that of the costs directly incurred, which is permitted so that a greater proportion of Network Rail's costs are recovered through charges, provided that certain principles are adhered to, including that the charge does not price market segments off the network. Some freight services have paid mark-ups in CP4, and we are extending this in CP5 so that those freight services that can bear a mark-up because they do not compete with road make a greater contribution to the costs they impose on the infrastructure.

16.34 Station facility owners pay regulated station long term charges to Network Rail to enable it to recover the costs of maintaining, renewing and repairing its stations.

16.35 The FTAC recovers Network Rail's net revenue requirement. This is calculated as Network Rail's total revenue requirement net of Network Rail's variable track access charges, Network Rail's regulated station charges, network grant and other single till income<sup>317</sup>. FTAC is paid by franchised passenger operators only and is determined as an annual charge rather than a charge per unit of traffic.

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<sup>317</sup> Network grant and other single till income are covered in other chapters.

## Charges in CP4

16.36 As Table 16.10 shows, in 2011-12 around 90% of Network Rail's income came from those charges paid by passenger and freight operators and grant income determined as part of PR08 (in lieu of FTAC that would otherwise have been paid by franchised passenger TOCs). Around 78% came from grant income and FTAC alone (which do not vary according to the volume of traffic).

16.37 Of the variable charges, for passenger services the three charges accruing the most income in CP4 have been the VUC, the capacity charge and the charge for using EC4T. In contrast, for freight services, around 75% of income has accrued from the VUC. This is because proportionately fewer freight services use EC4T, and because of the lower capacity charge for freight reflecting, for example, freight services' use of the network at less congested times than passenger services.

**Table 16.10: Network Rail Great Britain-wide income from regulated charges and grants for 2011-12**

Charge £m (2012-13 prices)	Franchised passenger operators	Freight operators	Open access passenger operators	Total, passenger and freight operators
VUC	155	50	3	207
EAUC	9	0	0	9
Coal spillage charge	0	2	0	2
Freight-only line charge	0	4	0	4
Traction electricity charge	206	5	3	214
Capacity charge	174	4	1	179
<b>Total variable charges</b>	<b>544</b>	<b>64</b>	<b>7</b>	<b>614</b>
FTAC	913	0	N/A	913
Grant income	4,108	N/A	N/A	4,108
<b>FTAC and grant income</b>	<b>5,021</b>	<b>N/A</b>	<b>N/A</b>	<b>5,021</b>
Station long term charge	145	0	1	146
<b>Total regulated charges and grant income</b>	<b>5,710</b>	<b>64</b>	<b>7</b>	<b>5,781</b>
<b>Total Network Rail income (includes other single till income)</b>				<b>6,464</b>

Notes:

1. Source: ORR analysis of Network Rail Regulatory Accounts
2. Traction electricity income from open access operators includes that from Heathrow Express and other operators not subject to other regulated variable charges.
3. Numbers may not reconcile due to rounding.

16.38 Table 16.11 lists each of the regulated access charges levied by Network Rail in CP4. The table also shows the units on which each charge is levied, for example kgm

means the charge is levied in terms of pounds or pence per thousand gross tonne mile (kgtm). With the exception of FTAC, the track access charges are not disaggregated geographically, in that the charges for a particular vehicle type, service group and commodity do not vary according to what section of route they are travelling on.

**Table 16.11: Regulated access charges in CP4**

Type of charge	Basis for charge	Payable in CP4 by	Unit on which charge has been levied
<b>Charges for costs directly incurred</b>			
VUC	Recovers maintenance and renewal costs that vary with traffic	All services	kgtm (freight) Vehicle mile (passenger)
Capacity charge	Recovers Network Rail's Schedule 8 compensation costs that vary with traffic	All franchised passenger, open access passenger and freight services (charter do not currently pay the capacity charge)	Train mile
Coal spillage charge	Recovers the costs of coal spillage	Services that transport coal	kgtm
EC4T charge	Recovers the costs of providing electricity for traction purposes	Electrically powered services	kWh. For services that are not metered, this is modelled per train mile for multiple units, otherwise per kgtm
Electrification asset usage charge (EAUC)	Recovers maintenance and renewal costs of electrification assets that vary with traffic	Electrically powered services	Vehicle mile (passenger) kgtm (freight)
<b>Mark-ups</b>			
Freight only line (FOL) charge	Recovers the fixed costs of FOLs	Services that transport electricity supply industry coal (ESI) and spent nuclear fuel	kgtm

Type of charge	Basis for charge	Payable in CP4 by	Unit on which charge has been levied
<b>Other</b>			
Station long term charge (LTC)	Recovers station building and civils maintenance, repair and renewal costs	Station facilities owner (who levy on services that call at stations)	Billing period
FTAC	Determined on basis of Network Rail's revenue requirement after accounting for the income received from variable track access charges, regulated station charges, other single till income and network grants.	Franchised passenger operators	Billing period

## Process for determining the level of charges for CP5

- 16.39 Network Rail has responsibility for developing charging proposals in line with our charging objectives and guidance, which we set out in Annex F of our May 2011 consultation<sup>318</sup>. We retain responsibility for the charging framework, i.e. for any changes to policy including the development of new charge proposals, and we also audit and approve the charges that Network Rail has calculated.
- 16.40 Network Rail has conducted its work calculating track access charges with a high degree of industry engagement. Network Rail has consulted and then concluded on all of its charges, and published its work. For all charges it has engaged closely with the industry throughout PR13. And it has held working groups with respect to particular technical issues, notably with respect to the methodology for allocating variable usage costs to individual vehicles and commodities, and with respect to the capacity charge.
- 16.41 We have reviewed Network Rail's work and its treatment of points made in response to its consultations. In addition, we asked the independent reporters to review some of Network Rail's proposals as part of our scrutiny process.
- 16.42 Table 16.12 lists reports published as part of this process. In addition to the reports listed below, Network Rail published draft price lists for all charges with explanatory

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<sup>318</sup> *Periodic Review 2013 First Consultation Annexes*, Office of Rail Regulation, May 2011. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/PR13-first-consultation-annexes.pdf>.



notes on 12 July 2013. Network Rail's publications on charges can be found via its PR13 web page<sup>319</sup>.

**Table 16.12: PR13 Network Rail consultations, studies and reviews on charges**

Category of cost or charge	Network Rail consultation	Network Rail conclusions	Network Rail consultancy studies	Independent reporter reviews
1) Variable usage charge (VUC)				
VUC initial cost estimates and freight caps	November 2011	March 2012	N/A	Review of analysis in Network Rail's 'freight cap' consultation, by Arup, March 2012
Suspension factors	March 2012	August 2012	Various including RFCpro User Guide, University of Huddersfield, November 2012	N/A
Allocation of the VUC to individual vehicles and commodities	December 2012	April 2013	VTISM <sup>320</sup> analysis to inform the allocation of variable usage costs to individual vehicles, by Serco, December 2012	ORR staff conducted a review
2) Capacity charge				
Consultation on the capacity charge	July 2012	September 2012 Preliminary conclusions	N/A	N/A
		April 2013 capacity charge conclusions and draft pricelists	Recalibrating the capacity charge for CP5, Arup, May 2013	FTI consulting - review of the econometric work underpinning the capacity charge, September 2013

<sup>319</sup> This may be accessed at <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/>.

<sup>320</sup> Vehicle Track Interaction Strategic Model, discussed in the section on the VUC.

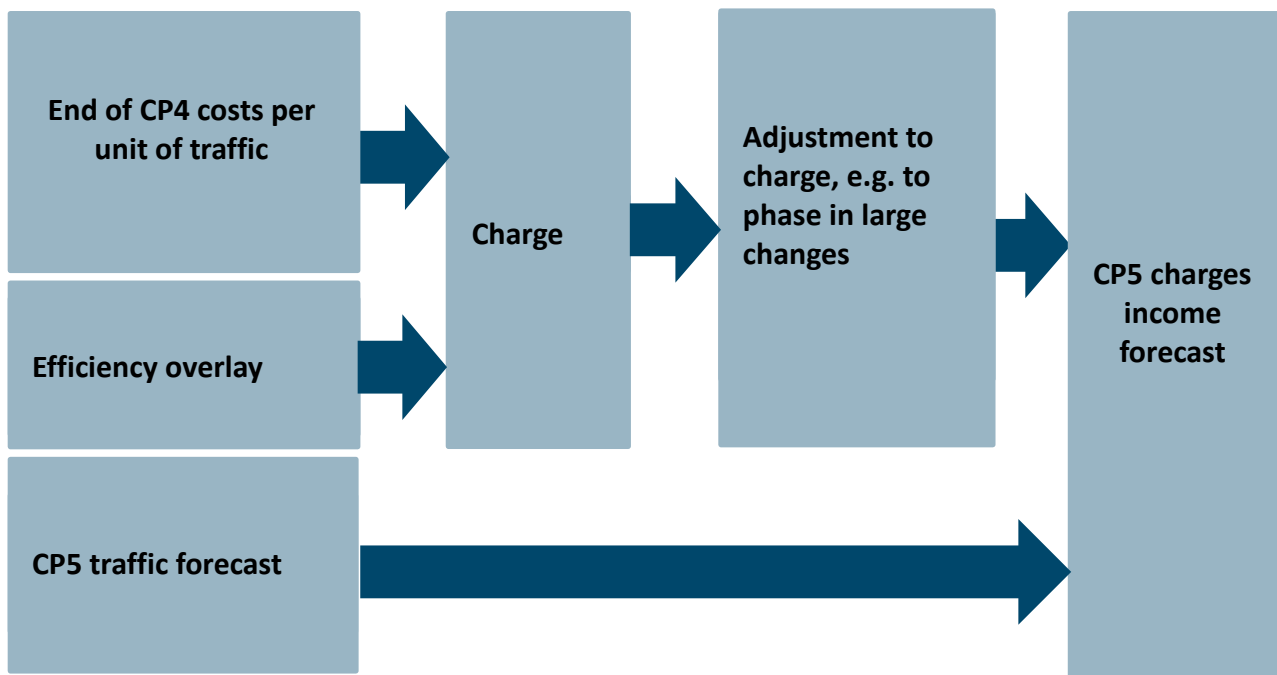
Category of cost or charge	Network Rail consultation	Network Rail conclusions	Network Rail consultancy studies	Independent reporter reviews
	ORR capacity charge consultation letters of 19 July, 24 September and 8 October 2013	N/A	N/A	N/A
3) Traction electricity charge				
Consultation on traction electricity charge and EAUCs in CP5	September 2012 ORR consultation April 2013	February 2013	N/A	1. EC4T transmission losses estimates review, AMCL, December 2012. 2. EC4T SBP model audit report, by Arup, June 2013
Consultation on charges for losses and regenerative braking for metered operators on the DC network	November 2012	February 2013	N/A	
4) EAUC	September 2012	February 2013 and amended May 2013	N/A	Assessment of EAUC Proposals, by AMCL, June 2013
5) Coal spillage charge	December 2012	April 2013	N/A	Review of Network Rail's coal spillage charge, by Arup, April 2013
6) Freight only line charge				
Freight only line charge initial cost estimates (part of Network Rail's consultation on freight caps)	November 2011	March 2012		Review of analysis in Network Rail's 'freight cap' consultation, by Arup, March 2012
Part of a wider consultation focusing on phasing in the FSC	February 2013	April 2013	Estimating freight avoidable costs, by L.E.K, October 2012	
7) FSC				

Category of cost or charge	Network Rail consultation	Network Rail conclusions	Network Rail consultancy studies	Independent reporter reviews
	ORR consultation May 2012	ORR conclusions January 2013	Estimating freight avoidable costs, by L.E.K, October 2012	Review of VTISM modelling, Arup, November 2012
Phasing in of the charge and other issues	February 2013	April 2013		
8) FTAC	November 2012	March 2013	N/A	N/A
9) Station LTC	September 2012	January 2013	N/A	Various reporter studies on station costs (see chapter 8).

16.43 In addition to the work undertaken by Network Rail, we have developed two main changes to the charging framework: the introduction of a FSC and amendments to the EC4T charge. These are also listed in the above table.

16.44 Figure 16.1 shows how Network Rail's income from variable charges is calculated, in both the SBP and in our determination. The charge is calculated as a cost per unit of traffic to which an efficiency overlay is applied, so that the charge is equivalent to costs at end-CP5 efficiency. The income is calculated by taking the product of individual charges and their respective traffic forecasts for CP5. These calculations are made in constant prices (2012-13 prices) and so do not take account of inflation.

**Figure 16.1: Calculation of CP5 income for each variable charge**



16.45 Before setting out our determination with respect to each individual charge, we first explain the efficiency overlays that we have used.

### **Feedback on the process**

16.46 A number of respondents to our draft determination, including Freightliner, DB Schenker and RFG, said that PR13 had placed heavy resource requirements on stakeholders. Respondents called for ORR to review how PR13 has been conducted with a view to reducing the burden on stakeholders for PR18 and assessing whether the level of consultation and timescales for responding to consultations were appropriate. We also received strong feedback on the process for setting the capacity charge in PR13.

16.47 Following PR08, we undertook a review of the process for setting charges in that periodic review. We published our conclusions on this at the start of PR13<sup>321</sup>. Although many respondents were complimentary about the PR08 process, some had stated that some Network Rail consultations only allowed a short timescale for responses; that the consultation on vehicle characteristics should have been conducted earlier, and operators were given insufficient opportunity to check their data. They also argued that there was a lack of transparency on the development of charges, and that Network Rail had had insufficient resources to liaise with

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<sup>321</sup> *Appendix to Annex F: responses to initial consultation on structure of charges*, Office of Rail Regulation, May 2011. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/PR13-first-consultation-annexes.pdf>.

consultees. An operator also observed that there were a large number of consultations, which used up significant operator resources.

- 16.48 In PR13, Network Rail and ORR have extensively engaged with operators, not least through the monthly charging meetings which have allowed a large number of issues to be discussed in a single forum. And, in contrast to PR08, operators have been given extensive opportunity to review assumptions regarding their vehicle characteristics and services. We are grateful for the considerable contribution of operators, who have helped improve Network Rail's cost estimates and improve industry's understanding of freight avoidable cost.
- 16.49 There is a balance to be struck between transparency and administrative burden, but ultimately it is important that the process is transparent for those that want to scrutinise it. This scrutiny is largely voluntary, but welcome and improves the quality of the process.
- 16.50 RDG and others have stated that the ORR process regarding treatment of the capacity charge has been subject to time pressure. We think that this process has been important, because it has enabled us to work with the industry to achieve a good outcome in terms of compensating Network Rail for the performance compensation costs of accommodating additional traffic, while mitigating impacts on groups of operators. The time pressure itself has been a consequence of increases in capacity charges of this scale only emerging late in PR13 (albeit in accordance with the project plan). It is important that we avoid such a situation again, which is why we wish to conduct a review of the structure of charges early in CP5. We will take lessons from this experience, including our interaction with the industry, and the experience of PR13 more widely, into account as we prepare the governance arrangements and work programme for the review.

## Treatment of efficiency in the estimation of charges

- 16.51 It is very important that Network Rail manages its assets effectively and efficiently. The assumptions we have made on the level of Network Rail's maintenance and renewals expenditure, as described in chapter 8, will be reflected in the level of charges that operators pay, given that charges are set to be cost reflective.
- 16.52 In determining our approach for CP5, consistent with the wider decisions described in chapter 8, we have considered the efficiency overlay that should be applied to each charge. This overlay reduces the cost, calculated on the basis of end-of-CP4 costs, by the gains in efficiency we assume in our determination over the relevant period.
- 16.53 This section describes<sup>322</sup>:

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<sup>322</sup> Refer to chapter 8 for further information on our decisions on efficiency for both maintenance and renewals expenditure. Chapter 8 further describes the treatment of embedded efficiencies and the methodology we have adopted in making adjustments to Network Rail's baseline.

- (a) our approach to applying an efficiency overlay to charges in CP4;
- (b) our draft determination decision; and
- (c) our determination of the approach to applying an efficiency overlay for each charge in CP5.

## **Treatment of efficiency in charges for CP4**

- 16.54 In PR08, charges for each year of CP4 were calculated using our determination of long-term efficiency as an overlay. This reflected our assessment of efficiency improvement in CP4 and the further catch-up efficiency estimated for CP5. The VUC, coal spillage charge and EAUC were calculated on this basis.
- 16.55 The approach taken for the FOL charge was slightly different in that the charge (for the whole of CP4) was adjusted by an overlay that reflected end-of-CP4 efficiency only. This reflected the fact that the charge, distinct from other variable charges, was a mark-up, levied in order to recover some portion of fixed cost.
- 16.56 An efficiency overlay was not applied to Schedule 8 (performance regime) payment rates, as they are determined with reference to the financial impact of performance on train operators' revenue, and hence was not applied to the capacity charge either. No efficiency overlay was applied to EC4T in CP4 as it was regarded as a 'non-controllable' cost.

## **Our draft determination**

- 16.57 In our draft determination, to determine our view of the level of income by charge, we first calculated Network Rail's pre-efficient level of income (the "Network Rail baseline") by removing the efficiency assumed in its SBP and the efficiencies associated with Network Rail's CP5 asset policies. We then made certain adjustments to Network Rail's baseline, consistent with our adjustments to pre-efficient expenditure (as set out in chapter 8). We then applied our view of efficiency for CP5.
- 16.58 Table 16.13 shows our draft determination view of the end of CP5 level of efficiency for each charge. We received consultation responses on the efficiencies to be applied to Network Rail's maintenance and renewals costs, which are described in chapter 8. However, we did not receive any material comments specifically on the efficiency overlays to be applied to charges.

**Table 16.13: Our draft determination of efficiency overlays for CP5 charges<sup>323</sup>**

Charge	ORR adjustment to pre-efficient expenditure	ORR efficiency overlay	Efficiency type
VUC (where not capped)	-4.4%	19.1%	weighted maintenance and renewals
EAUC	+8%	29.5%	electrical power and fixed plant maintenance and renewal
Coal spillage charge	-4.4%	19.1%	weighted maintenance and renewals
Station LTC – buildings expenditure	0% for managed stations and -6.3% to -13.6% for franchised stations	19.2% for managed stations and 23.3% for franchised stations	buildings – managed and franchised stations
Station LTC – Stations Information and Security Systems (SISS) expenditure	+0.3% to -13.2%	16.2%	SISS expenditure – managed and franchised stations
Freight only line charge	-4.4%	19.1%	weighted maintenance and renewals

## Our determination of the efficiency overlay for charges

16.59 Chapter 8 sets out our analysis of efficiencies available in CP5.

16.60 We have applied our end of CP5 efficiency assumption to charges. We think that it is important that the charges are adjusted for efficiency in a way that is cost reflective. Table 16.14 shows our view of the end of CP5 level of efficiency that should be applied to each charge, on the basis of our comprehensive review of the evidence. These efficiencies are applied in each year of CP5.

16.61 Since our draft determination, Network Rail has identified the SISS maintenance and repair expenditure for those stations where it is contractually responsible for carrying out these activities. Table 16.14 shows our view of the end of CP5 level of efficiency for this expenditure.

<sup>323</sup> These are applied so that, for example, the adjustment for the EAUC is an increase of 8% and then reduction of 29.5% (approximate net impact a reduction of 21.5%, but they are applied as a product rather than a sum).



16.62 The changes to our efficiency assumptions since our draft determination have led to a mixture of increases and decreases in terms of the impact on charges. All other things being equal, relative to the draft determination, they result in:

- (a) a slight increase in the level of charges for the VUC (passenger services), coal spillage charge, average station LTC – buildings expenditure (managed stations), average station LTC – SISS renewals expenditure and freight only line charge; and
- (b) a slight reduction in the level of the EAUC.

16.63 The changes in efficiency assumptions do not change the average VUC for freight services, the capacity charge or EC4T charges. In the case of the freight VUC, this is because they are capped charges. The capacity charge is a function of Schedule 8, so is treated differently. We do not make explicit efficiency assumptions for EC4T costs and income, which are primarily driven by train operators' consumption.

**Table 16.14: Our determination of efficiency overlays for CP5 charges**

Charge	ORR adjustment to pre-efficient expenditure	ORR efficiency overlay	Efficiency type
VUC (where not capped)	-4.0%	18.9%	weighted maintenance and renewals
EAUC	+7.8%	29.5%	electrical power and fixed plant maintenance and renewal
Coal spillage charge	-4.0%	18.9%	weighted maintenance and renewals
Station LTC – buildings expenditure	0% for managed stations and -7.5% to -15.2% for franchised stations	16.7% for managed stations and 23.0% for franchised stations	buildings – managed and franchised stations
Station LTC – Stations Information and Security Systems (SISS) renewals expenditure	+0.2% to -12.3%	16.4%	SISS renewals expenditure – managed and franchised stations
Station LTC – Stations Information and Security Systems (SISS) maintenance and repair expenditure	0.0%	18.1%	maintenance - telecoms
Freight only line charge, freight specific charge	-4.0%	18.9%	weighted maintenance and renewals

## Traffic forecasts and forecast charges income

- 16.64 For its SBP, Network Rail forecast traffic volumes for each of its routes for each year of CP5 in order to estimate the income it would receive from all track access charges excluding FTAC (which is not levied per unit of traffic). Its traffic forecasts also drove some of its estimates of costs, notably track maintenance and renewal costs, as well as other considerations including performance and capacity.
- 16.65 Subsequent to its SBP, Network Rail has updated its forecast of freight traffic for CP5 and this forecast is substantively different from that submitted as part of its SBP. We think that the updated forecast is much more realistic: for example it takes account of the projected decline in the use of coal for electricity generation, and the impact of planning constraints on growth in intermodal traffic. We have assessed the implications of updating our determination for these new traffic forecasts. Nonetheless, we have concluded that we will retain the SBP traffic forecasts as the basis for our determination of Network Rail's costs and charges income. We have made this decision on the basis that:
- (a) retaining the SBP traffic forecasts only has a small impact on the financial settlement, and therefore does not require further detailed modelling; while at the same time
  - (b) using the new forecasts on a consistent basis would require a major effort in the updating of costs, with significant associated risks of insufficient quality assurance this late in PR13.
- 16.66 While we have not updated forecasts of costs or income to reflect the updated traffic forecasts, we have updated other elements of our determination, for example the baseline for the volume incentive (chapter 19).
- 16.67 In this section, we outline the traffic forecasts we have used and the basis of our decision not to update them in our determination of Network Rail's funding. We also explain the quality assurance we have undertaken with respect to the associated projections of income from track access charges.
- 16.68 The rest of this section is structured as follows:
- (a) we set out how Network Rail prepared its SBP traffic forecasts;
  - (b) we describe our draft determination on traffic forecasts;
  - (c) we describe our approach to assessing whether to use Network Rail's updated traffic forecasts (prepared in draft for its delivery plan) including considering the implications of the selected forecasts for our determination of Network Rail's income from charges in CP5 and its net revenue requirement; and
  - (d) we describe work carried out to audit forecast charges income.

## Network Rail's SBP traffic forecasts

- 16.69 Network Rail submitted its SBP traffic forecasts to us as part of its infrastructure cost model (ICM) submission. This model was used to forecast income from charges, the results of which Network Rail published<sup>324</sup>.
- 16.70 Consistent with the basis on which different charges are levied, for freight services its forecasts were in train km, and gross tonne km for each commodity; and for passenger services its forecasts were in train km and vehicle km for each service group<sup>325</sup>. Summary statistics for the forecasts are shown in Table 16.15. Note that we have made a correction to the growth in franchised passenger traffic shown in this table since our draft determination, as the previous version (used as the basis for income forecasts in our draft determination) incorporated some errors from Network Rail's ICM submission.

**Table 16.15: SBP traffic forecasts of growth in traffic 2013-14 to 2018-19**

Metric	Freight		Franchised Passenger		Open Access Passenger		Electrified traffic (passenger)	Electrified traffic (freight)
	Train km	Tonne km	Train km	Vehicle km	Train km	Vehicle km	Vehicle km	Tonne km
<b>Great Britain</b>								
	24%	25%	7%	10%	2%	3%	24%	43%
<b>England &amp; Wales</b>								
	25%	26%	7%	10%	2%	3%	23%	43%
<b>Scotland</b>								
	17%	16%	6%	9%	0%	0%	40%	47%

Source: Network Rail Infrastructure Cost Model, June 2013

- 16.71 Network Rail's SBP forecasts were derived from 2011-12 actual traffic. Network Rail forecast changes in passenger traffic for CP5 by taking account of planned and other expected changes to services, for example resulting from infrastructure enhancements. However, some parts of the network, for some times of the day, have sufficient spare capacity that they may experience increases in traffic without associated infrastructure enhancements or other investment. Network Rail sought to forecast this underlying growth in vehicle km using guidance from the industry-standard Passenger Demand Forecasting Handbook. It forecast changes in freight

<sup>324</sup> See Network Rail's SBP supporting documents on financing and funding, which set out income forecasts for each of the charges. *Financing and funding*, Network Rail. This may be accessed at <http://www.networkrail.co.uk/browseDirectory.aspx?root=&dir=%5cStrategicBusinessPlan%5cCP5%5cSupporting%20documents%5cFinancing%20and%20funding>.

<sup>325</sup> For legacy reasons, charges are billed on the basis of miles, whereas Network Rail conducts much of its analysis using km.

traffic for CP5 by taking account of the freight forecasts prepared for Network Rail's March 2007 Freight Route Utilisation Strategy<sup>326</sup>.

## Our draft determination and responses to our draft determination

16.72 In our draft determination we considered that Network Rail's approach to passenger traffic forecasting had been sensible and balanced. We noted that better information on freight traffic had been published subsequent to the SBP. We received very few comments on these forecasts. One freight operator commented that the SBP freight forecasts would need further work to be suitable short-term forecasts for CP5. It also expressed scepticism about the relative growth rates of freight train km and freight tonne km. Network Rail addressed both of these points in its updated CP5 forecasts.

## Network Rail's updated traffic forecasts

16.73 Subsequent to the publication of the SBP, Network Rail updated its forecasts for both passenger and freight traffic for its delivery plan, which it will publish in draft in December 2013. Its passenger forecasts were based on current information on planned and expected changes to services. Its updated freight forecasts were based on new draft forecasts published in its freight market study consultation as part of its long term planning process<sup>327</sup>. As the freight market study forecasts were based on long term unconstrained growth, Network Rail has made some adjustments to forecast for CP5 and account for capacity constraints, including to reflect the likely speed of development of intermodal freight terminals.

16.74 Table 16.16 compares the Network Rail's SBP and draft delivery plan freight traffic forecasts for Great Britain in CP5. We have disaggregated the table into groups of commodities with very different traffic projections. The analysis excludes engineering trains.

**Table 16.16: Comparison of forecasts of growth in freight traffic for CP5**

% change 2013-14 to 2018-19	Coal & biomass		Intermodal		Other		All commodities	
	Train km	Tonne km	Train km	Tonne km	Train km	Tonne km	Train km	Tonne km
SBP forecasts	15.8%	19.6%	51.1%	51.1%	2.8%	3.0%	23.7%	24.8%
Draft delivery plan forecasts	-22.2%	-20.3%	18.2%	24.3%	2.3%	2.6%	2.1%	3.5%

<sup>326</sup> *Freight Route Utilisation Strategy*, Network Rail, March 2007. This may be accessed at <http://www.networkrail.co.uk/browseDirectory.aspx?dir=%5CRUS%20Documents%5CRoute%20Utilisation%20Strategies%5CFreight>.

<sup>327</sup> *Long Term Planning Process: Freight Market Study Draft for Consultation*, Network Rail, April 2013. This may be accessed at <http://www.networkrail.co.uk/improvements/planning-policies-and-plans/long-term-planning-process/market-studies/freight/>.

## The sensitivity of the financial settlement to a change in the traffic forecasts

- 16.75 We considered whether to reflect Network Rail's updated delivery plan traffic forecasts across our determination. While the change in the passenger forecast was small, the updated freight forecasts for CP5 were significantly lower than those in the SBP.
- 16.76 Traffic forecasts affect both costs and charges income. In general, as most charges are set to equal costs directly incurred, the forecast change in income associated with a change to the traffic forecast should approximately equal the forecast change in cost. If this principle holds, Network Rail's funding requirement is insensitive to small changes in overall traffic forecasts.
- 16.77 Small differences occur as a result of differences in the profile of efficiency assumptions. But the key instances in which incremental costs do not cancel out the incremental income are:
- (a) when a charge is capped, as per our draft determination conclusions with respect to the freight VUC; and
  - (b) when the charge is a mark-up, rather than set to recover a cost directly incurred, as is the case for FOL charge and FSC.
- 16.78 We estimated the impact of the change in traffic forecast on the costs that are recovered by the VUC, namely the operating, maintenance and renewal costs that vary with traffic. To do this, we used Network Rail's estimates of variable costs that it used as the basis for calculating the VUC. These differed from the VUC income for freight principally because in our draft determination we concluded that we would cap the VUC for freight. When netting off the change in VUC charges income as a result of the forecast, we estimated, when considering these costs alone, Network Rail would be approximately £15m better off for CP5 as a whole, GB total, as a result of us not updating the SBP freight traffic forecast.
- 16.79 We calculated the discrepancy in forecast income from the FOL charge and FSC resulting from the different forecasts. As a simplifying assumption, we attributed no change in costs to these charges, which, unlike other charges, are mark-ups and hence do not reflect costs directly incurred. We found that Network Rail would be approximately £10m worse off for CP5 as a whole, GB total, with respect to these charges as a result of us not updating the SBP freight traffic forecasts.
- 16.80 Consistent with our conclusion on the capacity charge (paragraph 16.194 onwards), we assumed that the incremental capacity charge revenue would be approximately cancelled out by changes to Schedule 8 costs. Similarly, for other charges not mentioned above we assumed that incremental income would cancel out incremental cost.
- 16.81 On the basis of the above, across all costs and charges we estimated that Network Rail would be approximately £5m better off, in total for the whole of CP5, if we

continued to use the SBP forecast for freight relative to the updated forecast. This would take the form of increased funding through FTAC, and would not affect freight operators' charges.

- 16.82 As a result of this analysis, we concluded that retaining the SBP traffic forecasts only had a small impact on the financial settlement and hence did not require further detailed modelling. In addition, we considered that there would be a substantive risk that any updated estimates of costs and income to reflect updated traffic forecasts would not be sufficiently quality assured within the remaining timescale of PR13. As a consequence, we estimated Network Rail's costs and income from charges in the determination on the basis of the SBP traffic forecasts.

### **Process for checking charges income forecasts**

- 16.83 Network Rail's charges income model has been reviewed by Network Rail's consultants and the independent reporter Arup, and we have made cross-checks with our own calculations. We noted above that the franchised passenger traffic forecast used in our draft determination omitted some traffic. Network Rail has corrected this forecast in its income model and we have checked that this change has been reflected in the calculations of charges income where necessary.
- 16.84 Following our draft determination, Network Rail commissioned Steer Davies Gleave (SDG) to review a number of Network Rail's charges spreadsheets, including its income model, and its Schedule 8 benchmarks model. SDG carried out a bottom-up review of the spreadsheets, checking that they correctly performed the calculations intended. Where SDG identified potentially material errors in the calculations, Network Rail produced revised versions of the spreadsheets demonstrating that errors had been corrected. SDG's final report confirmed that it was satisfied that the spreadsheets carried out the calculations intended and were fit for purpose. The report has been published on Network Rail's website<sup>328</sup>.
- 16.85 We have also carried out additional cross-checks between Network Rail's charges income model and our own income calculations. For all charges except the capacity charge and VUC, we reconciled Network Rail's income model with our own calculations, and understood the basis for any discrepancies. For the capacity charge, we have made our own income calculations using Network Rail's income model for franchised and open access passenger income. These calculations have been audited internally and checked independently by Network Rail. For freight capacity charge income we have developed a bottom-up income forecast, which we audited internally. For the VUC, Network Rail provided a new income model superseding its

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<sup>328</sup> *Review of income and Schedule 8 benchmark models*, Steer Davies Gleave, October 2013. This may be accessed at: <http://www.networkrail.co.uk/PR13-closed-consultations/SDG-final-report-review-of-income-and-schedule-8-benchmark-models.pdf>.



SBP charges income model. We audited this model internally and were satisfied that it performed the income calculations as intended.

## Variable usage charge

### The method of calculation and charge levels for the VUC

- 16.86 The VUC is set to equal the operating, maintenance and renewal costs that vary with traffic. In CP4, the VUC made up more than 75% of Network Rail's track access charges income from rail freight, and around 30% of variable track access charges from passenger traffic.
- 16.87 In practice, rail infrastructure operating costs are widely understood not to vary materially with traffic, and the charge was set in CP4 to recover variable maintenance and renewal costs only. Network Rail has estimated that around 85% of these variable usage costs (i.e. the costs recovered through the VUC) consist of track wear and tear, with the remainder consisting of civil costs and signalling. The charge does not reflect the costs of providing or changing the capability or capacity of the network.
- 16.88 Not all costs that vary with traffic are recovered through the VUC. The VUC recovers costs that change with marginal changes in traffic, whereas some costs change with larger increments and are not recovered through standard variable charges (though may be recovered through mark-ups). Some costs relate to subsets of traffic. In particular, as we explain later, variable costs associated with electrification assets are charged only to electrified vehicles through the EAUC; and costs associated with coal spillage are recovered through the coal spillage charge, which is only levied on coal traffic. The capacity charge is necessarily a separate charge because it is levied per train mile, rather than per vehicle mile or kgm.
- 16.89 The VUC is differentiated by vehicle class. This differentiation reflects the significant variation in infrastructure wear and tear costs associated with different vehicle characteristics, for example vehicle operating speed and axle weight. In the case of freight, the charge is further disaggregated by commodity type, reflecting the different axle loads associated with different commodities. The rates are averaged across the network as a whole, resulting in a single Great Britain-wide price for each permutation of vehicle type and commodity.
- 16.90 We consulted on geographic disaggregation of the VUC, but decided as set out in our January 2013 conclusions document<sup>329</sup> not to pursue this approach for CP5, reflecting concerns raised by the industry about the complexity this could introduce and the extent to which this would undermine rail freight's ability to compete with road. We will include the question of how cost drivers vary with geography and how this should be

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<sup>329</sup> *Periodic review 2013 decision on the variable usage charge and a freight specific charge*, Office of Rail Regulation, January 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/consultations/freight-charges.php>.



reflected in charging in our wider review of the structure of charges in the initial part of CP5.

## Calculating the charge in CP5

16.91 Network Rail has used broadly the same approach for calculating the VUC in PR13 as that used in PR08. As with PR08, its recalibration of the VUC has comprised two stages:

- (a) estimating variable usage costs for an average vehicle; and
- (b) apportioning total variable usage costs between individual vehicles (or vehicles and commodities in the case of freight).

16.92 The first stage has historically been referred to as calculating total variable usage costs, and indeed it is the basis on which revenue for the VUC can be forecast. It is, however a calculation of the costs associated with a small change in traffic, measured as a rate per gross tonne km (or mile)<sup>330</sup>. The rate is then multiplied by total traffic across the network. This calculation would result in a good estimate of total variable usage costs if the relationship between variable usage costs and traffic were linear, but research has suggested that this may not be the case. In particular, as part of work estimating freight avoidable costs, Network Rail has estimated that the total variable usage track costs associated with freight to be substantially more than the costs recovered through the VUC, i.e. that the VUC under-recovers freight's variable costs<sup>331</sup>. We consider this methodology for calculating the charge (i.e. calculating the costs for a small change in traffic) is consistent with the Access & Management Regulations which set the principles which must be followed when setting access charges. It is relevant, however, in respect to equivalent discussions relating to the capacity charge where some stakeholders have expressed concern that an over-recovery of compensation costs is occurring.

## Estimating variable usage costs for an average vehicle

16.93 Network Rail estimated the costs for a small change in traffic for an average vehicle using broadly the same methodology as that which it used in PR08.

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<sup>330</sup> Network Rail found its estimates of increases in costs per unit of traffic to be very similar irrespective of whether it tested a 10% or 20% increase in traffic, and it has estimated the costs on that basis.

<sup>331</sup> The reporter Arup reviewed this work (*Review of Network Rail VTISM modelling and allocation to market segments for Freight Avoidable Costs*, Arup, November 2012), and concluded that the total variable usage track costs associated with freight would be in the range £144m to £210m a year 35 average traffic, in 2011-12 prices and end of CP4 efficiency, of which £70m may be recovered by the variable usage charge. L.E.K. has subsequently re-estimated so that, when we convert to end-CP5 efficiency and 2012-13 prices and adjust to 2013-14 traffic, amounts to £89m to £128m a year for all variable usage costs (not just track). This compared to freight revenue from the variable usage charge in CP4 of less than £50m a year (and a capacity charge of less than £5m a year), and hence the VUC under-recovers the variable usage costs.

- 16.94 Network Rail used a ‘bottom-up’ approach to estimating track variable usage costs. In order to derive these bottom-up estimates, Network Rail used the Vehicle Track Interaction Strategic Model (VTISM), which was developed for the cross-industry Vehicle/Track Systems Interface Committee (V/T SIC). VTISM directly related rolling stock and track characteristics to track damage, and thus to renewal and heavy maintenance requirements. VTISM uses engineering principles, embodied in numerical relationships, to predict track degradation and the remedial effects of heavy maintenance and renewal.
- 16.95 Network Rail had calibrated VTISM for its asset policies over the next 35 years. It tested track costs under current traffic levels and under incremental uniform increases in traffic levels across the network. Network Rail equated the resulting difference in cost per unit of traffic to be the track variable usage costs for the average vehicle.
- 16.96 For other variable usage costs (amounting to around 14% of total variable usage costs), Network Rail has taken a “top-down” approach. In particular, it disaggregated civils and signalling costs into a number of cost categories and, using a mixture of empirical evidence and engineering judgement, estimated the percentage of each cost that varied with traffic.
- 16.97 Network Rail consulted on its work as part of its freight caps consultation in November 2011 and concluded in March 2012. The independent reporter Arup reviewed its work and made a number of recommendations. As a result of this, Network Rail refined some small aspects of its estimates and provided more evidence to us for the basis of its assumptions. This evidence is published on its website.
- 16.98 We concluded that we were content with its approach as part of our January 2013 conclusions on track access charges. On the basis of this work, in our January 2013 conclusions we set a cap on the average VUC for freight. Our January 2013 document, and our earlier May 2012 consultation on the same issue, set out the technical issues and sources of evidence in some detail<sup>332</sup>.
- 16.99 Subsequent to our conclusion, Network Rail updated its estimates as part of its SBP (our cap was based on earlier unit cost data). Since then, Network Rail has made some minor changes to its methodology. In particular, it reduced the cost estimate to remove some items of cost that would have otherwise been doubly recovered through both this charge and the coal spillage charge.

## **Our January 2013 decision on capping the VUC**

- 16.100 The rail freight industry asked us for early assurance of the scale of track access charges in CP5. We agreed that this was appropriate, noting the uncertainty to the industry associated with our consultation on a new freight charge (the FSC). In

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<sup>332</sup> *Periodic Review 2013 Rail Freight: conclusion on the average variable usage charge and a freight specific charge*, Office of Rail Regulation, January 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/freight-conclusions-jan-2013.pdf>.

particular, we agreed to set a cap on the average freight VUC for our PR13 determination.

16.101 In our January 2013 document<sup>333</sup>, we concluded on a cap on the average VUC of £1.68 per kgtkm in 2011-12 prices for freight services. This cap was calculated using a central cost estimate that was 5% to 7% higher than the CP4 charge, before taking account of expected improvements to efficiency, combined with a 15% confidence interval to account for uncertainty. We noted that it was possible that charges would be higher than they were in CP4, but that they would not exceed the cap that we set out in that document. Our conclusion was widely interpreted as meaning a 23% average increase in the freight VUC (product of 7% and 15% increase, allowing for rounding); this interpretation was a worst case scenario and took no account of our efficiency challenge for CP5<sup>334</sup>.

### **Allocating costs to individual vehicles**

16.102 Network Rail's cost estimates were then allocated between each vehicle operating on the network. The allocation was achieved, as was the case in PR08, based on the levels of damage caused by rail vehicles through vertical track forces, horizontal track forces, and damage to other rail infrastructure, in particular civils and signalling.

16.103 In early 2012, Network Rail established a working group of industry representatives to decide the scope of work for improving the methodology in this area. Collaborating with the industry group, it then prepared a specification for some of the work and appointed consultants to carry it out. The remainder of the work (in particular, relating to horizontal track forces) it carried out in-house.

### **Allocating vertical track damage costs to individual vehicles**

16.104 Network Rail appointed Serco Technical Services (Serco) to undertake a study using VTISM to inform the allocation of track damage from vehicle forecasts between individual vehicle classes and commodities on a national average basis. Track damage from vertical forces amounts to around 70% of all track variable usage costs. Network Rail also asked Serco to review the allocation of civils and signalling costs.

16.105 Serco proposed a revised approach for apportioning vertical track costs to individual vehicles. Serco's analysis showed that relative to Network Rail's PR08 allocation methodology, the track damage associated with vertical forces resulting from heavy axle loads was higher and that track was less sensitive to vehicle speed<sup>335</sup>. Network

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<sup>333</sup> *Periodic Review 2013 Rail Freight: conclusion on the average variable usage charge and a freight specific charge*, Office of Rail Regulation, January 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/freight-conclusions-jan-2013.pdf>.

<sup>334</sup> Both the CP4 and CP5 charge are being set on the basis of Network Rail's efficiency for end of CP5; but our determinations of what that might be, in PR08 and PR13 respectively, differ.

<sup>335</sup> *VTISM analysis to inform the allocation of variable usage costs to individual vehicles*, Serco, December 2012. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064784406>.

Rail estimated that applying this research would increase the VUC for certain laden freight wagons, particularly bulk wagons, between 50% and 100%.

16.106 Network Rail explained in its April 2013 conclusions on the allocation of the VUC<sup>336</sup> that it considered the work carried out by Serco was a robust piece of analysis that represents a step-change improvement in the understanding of the drivers of vertical track damage. However, it stated that “following careful consideration of consultation responses, we consider that changes to charges of this scale would be inappropriate to introduce in CP5. The primary reason for our conclusion in this regard is because of the combined effect that these price changes would have with ORR’s new FSC...we are proposing that, as part of the wider charges review that the industry has committed to in early CP5 to inform CP6, the revised equivalent track damage equation developed by Serco should be adopted from the start of CP6.”

### **Allocating horizontal track damage to individual vehicles**

16.107 Network Rail estimated that horizontal track variable usage costs make up around 30% of total track variable usage costs. For CP5 Network Rail carried out work to update the CP4 methodology in order to improve the accuracy of the apportionment of horizontal track variable usage costs. Its revised approach incorporated a new damage calculation methodology and parameters.

16.108 Network Rail stated in its April 2013 conclusions document that it considered the revised methodology was robust and represented a significant improvement over PR08. But in the light of its conclusion that the adoption of the findings from Serco to allocate the vertical track damage costs should be deferred until CP6, Network Rail argued in its April 2013 conclusions that that it would be inappropriate to introduce the revised methodology in CP5.

### **Allocating other variable usage costs to individual vehicles**

16.109 Network Rail has estimated that civils and signalling variable usage costs make up around 10% and 5% of total variable usage costs, respectively. The Serco study also recommended changes to the methodologies for apportioning other variable usage costs to individual vehicles. The recommendations were:

- (a) to use the revised Serco equivalent track damage equation for apportioning variable usage costs for embankments, culverts and masonry underbridges;
- (b) to use the civils methodology for apportioning variable usage costs for metallic underbridges, but with a modification to one of the parameters (the modified axle load exponent); and

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<sup>336</sup> *PR13 closed consultations*, Network Rail. This may be accessed at <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/pr13-closed-consultations/>.

- (c) to apportion 50% of the signalling costs on the basis of vehicle mileage, and the other 50% on the basis of the (revised) equivalent track damage equation (in CP4 all signalling costs were allocated on the basis of the equivalent track damage equation).

16.110 In its April 2013 conclusions, Network Rail decided not to implement the revised methodology in CP5, instead retaining the CP4 methodology, on the basis that doing this was consistent with its decision not to implement the revised methodologies for apportioning track variable costs.

### **Suspension bands**

16.111 In PR08, suspension factors took the form of discounts or premia applied to the VUC for each freight vehicle on the basis of descriptions of bogie type. The aim of this was to provide a discount for those vehicles which used 'track friendly' bogies<sup>337</sup> and hence an incentive for their use. In CP4, Network Rail conducted work and concluded on a new approach to determine suspension factors. The new approach uses a metric (the ride force count or RFC) rather than qualitative descriptions for calculating the impact of suspensions on track damage.

16.112 We confirmed our acceptance of this approach first by letter<sup>338</sup>, where we set out the conclusions in some detail, and then as part of our January 2013 conclusions on track access charges. The new approach will apply to vehicles which start running on the network during CP5 and vehicles that have been opted in by a party that has provided the requisite data on vehicle characteristics to Network Rail as part of PR13.

### **Our draft determination on variable usage costs and VUC**

16.113 The Serco research into vertical track damage was intended to replace a quantitative relationship between vehicle characteristics and vertical track damage that was in excess of ten years old.

16.114 We were supportive of the Serco work, and its contribution to a better understanding of cost drivers. We were however keen to understand the significance and robustness of the Serco work so we conducted a review using a multi-disciplinary team, and prepared a paper setting out the process we followed and the content of our review<sup>339</sup>.

16.115 We agreed with Network Rail's view that the research was robust and represented a step change improvement in the measurement of vertical track damage. Table 16.17

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<sup>337</sup> A bogie is a framework connected to the underside of the vehicle to which the wheels are attached.

<sup>338</sup> ORR letter of 24 September 2012, *VUC – Calculating suspension factors for CP5 for freight vehicles*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/vuc-suspension-bands-240912.pdf>.

<sup>339</sup> *ORR review of the Serco report 'VTISM analysis to inform the allocation of variable usage costs to individual vehicles'*, Office of Rail Regulation, July 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/serco-vuc-report-review-july-2013.pdf>.

illustrates how the change would bring the measurement of vertical track damage with respect to axle load into line with research conducted elsewhere<sup>340</sup>.

**Table 16.17: Summary of axle load exponents**

	Exponent	Exponent including gross tonnage
VUC CP4	0.49	1.49
Serco analysis for CP5	1.13	2.13
Railway Group Standards EMGTPA	1.00	2.00
Öberg and Andersson	Up to 3.0	Up to 4.0
International Union of Railways, UIC Code 714	1.00	2.00

Source: TTCI research on VUC for CP4<sup>341</sup>; Serco analysis for CP5.

- 16.116 We wrote to Network Rail in April 2013<sup>342</sup> asking it to recalculate the VUC using the PR13 research findings on apportioning costs to individual vehicles, where it considered that to do so – taking account of data constraints etc – improved the cost reflectivity of the charges. Network Rail replied in May 2013 with revised estimates of the VUC<sup>343</sup>.
- 16.117 Our draft determination estimates of variable usage cost and charges were based on this letter from Network Rail. For our draft determination, we adjusted the values in Network Rail’s letter to be consistent with our assumptions regarding Network Rail’s efficiency.
- 16.118 As we expressed above, we agreed with Network Rail’s assessment that the Serco research, supported by benchmarking from other sources, was a robust piece of analysis that represented a step-change improvement in the understanding of the drivers of vertical track damage. We thought that this analysis should be reflected in charges because it sends the right price signals to operators, customers, and others in the value chain regarding choice of vehicle and use of the infrastructure.

<sup>340</sup> The exponent determines the relationship between axle load and cost such that, all else being equal, cost per gross tonne mile is proportional to axle load to the power of the exponent; an exponent of 1 means that a vehicle with double the axle load causes twice the amount of damage.

<sup>341</sup> See Table 4 of *Methodology to Calculate Variable Usage Charges for Control Period 4*, UK NR Report No. 08-002, TTCI, March 2008. This may be accessed at [http://www.networkrail.co.uk/StrategicBusinessPlan2008/TTCI\\_\(UK\)\\_variable\\_charges\\_methodology.pdf](http://www.networkrail.co.uk/StrategicBusinessPlan2008/TTCI_(UK)_variable_charges_methodology.pdf).

<sup>342</sup> ORR letter of 17 May 2013, *Rail Freight: Conclusion on the average variable usage charge and a freight specific charge*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/consultations/freight-charges.php>.

<sup>343</sup> *Preparing Control Period 5 (CP5) price lists for the Variable Usage Charge (VUC)*, Network Rail, May 2013. This can be accessed at: <http://www.networkrail.co.uk/NetworkRailresponsetoORRletter.pdf>.



16.119 We were, however, also very conscious that implementing this new research evidence, would result in very significant increases in the VUC for some commodities, for example 55% for construction materials and 71% for industrial minerals according to Network Rail's May 2013 letter<sup>344</sup>. We listened carefully to the rail freight industry's representations on this. We understand that many rail freight markets are highly competitive, not least with road haulage, and that it would take the industry and its customers some time to adjust to such changes in a way that is efficient.

16.120 In our draft determination we therefore concluded that:

- (a) the new rates for the VUC for all passenger traffic should be implemented in full from the start of CP5; and
- (b) the new rates for the VUC for freight traffic should be phased in over CP5, subject to a 10% cap on the average VUC compared with CP4 rates by 2018-19. This should be implemented in a way that is cost reflective and does not unduly discriminate.

### **Network Rail publication of draft price lists**

16.121 In July 2013, Network Rail published draft price lists for VUC consistent with our draft determination<sup>345</sup>. The purpose of these price lists was to allow train operating companies the opportunity to check their own proposed charges and to query any anomalies relative to other vehicles or CP4 rates.

16.122 The calculations in our draft determination were based on data provided to us from Network Rail that only implemented the Serco research on vertical track damage. We subsequently clarified that we were asking Network Rail to implement all the recommendations of Serco that it considered would make VUC rates more cost reflective. The draft price list rates reflected this and an explanation of the changes made to the VUC allocation methodology are provided in Annex A to Network Rail's draft price list consultation.

### **Summary of consultation responses on variable usage costs and VUC**

16.123 A number of respondents questioned the robustness of Serco's review and also more generally commented on problems around the ability and use of VTISM for accurately modelling track damage. One criticism, among others that was received was that Serco disregarded results for vehicles travelling at high speed and respondents would like this investigated further. ATOC, along with others, supported the use of VTISM however and said it would welcome similar approaches for other cost factors.

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<sup>344</sup> *Preparing Control Period 5 (CP5) price lists for the Variable Usage Charge (VUC)*, Network Rail, May 2013. This may be accessed at: <http://www.networkrail.co.uk/NetworkRailresponsetoORRletter.pdf>.

<sup>345</sup> *Draft price lists for CP5 consistent with ORR's draft determination*, Network Rail, July 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064786915>.



- 16.124 ATOC requested that additional geographic disaggregation be considered further in the upcoming review of charges to improve the signals to Network Rail and others. Others were supportive that we did not make this change as it would only add to the complexity of the charging regime.
- 16.125 Given the mitigating steps we took to avoid the large increases in freight charges, Network Rail accepted that the Serco recommendations should be implemented in CP5 with the phased caps that we proposed applied. Several freight operators also welcomed the proposed caps for the freight VUC rates over CP5.
- 16.126 Some freight operators did however highlight that the risk remains of freight charges rising in the future. They expressed the need for greater predictability in our long term plan so as not to damage rail freight competitiveness. Network Rail suggested that freight operators should assume that the caps would be removed in CP6 when making procurement decisions.

## **Our determination on variable usage costs and VUC**

- 16.127 We carefully considered all the responses to the consultation. We acknowledge some challenge on specific technical points regarding the robustness of VTISM specifically. In response to the concerns raised both during the consultation period and before, we commit to working with industry and Network Rail, to gain greater assurance around the VTISM methodology during CP5.
- 16.128 We also recognise the issue that many freight respondents raised on the competition faced by rail freight markets and the need for certainty over future charges. In our forthcoming review of the structure of charges, working with the industry, we expect to consider how best to reflect in charges the impact of freight traffic on the network. We will also seek to move further towards our goal of greater cost reflectivity and understand more clearly the range of options that the freight sector has to reduce its impact on the network.
- 16.129 Along with the above considerations, we have decided to continue with the approach proposed in our draft determination as set out below.
- 16.130 For CP5 charges, we conclude that:
- (a) the new rates for the VUC for all passenger traffic should be implemented in full from the start of CP5. This is because these result in a decrease in the average VUC for passenger operators and we consider it appropriate that passenger operators benefit from the new evidence on cost drivers as soon as possible;
  - (b) the new rates for the VUC for freight traffic should be implemented subject to a cap on the average VUC that is lower than the cap we concluded on in our January 2013 conclusions. This cap will be relative to CP4 rates. We consider that this is necessary to reflect the balance of our statutory duties and conclude that the cap should be 10%. In balancing our statutory duties the capped average increase to the VUC for freight traffic should be phased during CP5 on

the same profile as the phasing for FSC; 0% in years 1 and 2, 20% of the capped charge in year 3, 60% in year 4 and 100% in year 5. This results in an average increase in the VUC in real terms of 3.6% for CP5 overall; and

- (c) the cap referred to in (b) above should be implemented in a way that is cost reflective and does not unduly discriminate.

16.131 We have made our decision with reference to cumulative changes to all track access charges, set in the context of the overall PR13 package. We expect the package to deliver many important improvements in the services operators can provide for passengers and rail freight customers.

16.132 Estimates of average variable usage costs per unit of traffic are set out in Table 16.18. These are costs rather than charges but are the basis on which the VUC is set, and the average VUC for CP4 is shown for comparison. We have adjusted estimates from previous reports so that they are expressed with consistent units, prices and efficiencies<sup>346</sup>.

**Table 16.18: Weighted average variable usage costs (not charges)**

Weighted average cost (2012-13 prices)	Freight (£/kgtm)	Passenger (p/vehicle mile)	All traffic (£/kgtm)
<b>CP4 weighted average actual charge</b>			
Weighted average 2013-14 (source: Network Rail's updated VUC income model using traffic data disaggregated by service group and commodity, 2013-14 forecast traffic)	1.80	9.64	1.96
<b>CP5 weighted average estimated cost</b>			
Network Rail March 2012 conclusions (based on PR08 determined efficiency)	2.02	-	2.16
ORR January 2013 cap (based on PR08 determined efficiency) <sup>347</sup>	2.32	-	-
Network Rail SBP (2014-15 forecast traffic)	2.05	10.91	2.23
Network Rail April 2013 conclusions (no Serco)	1.80	11.59	-

<sup>346</sup> Network Rail has calculated the average cost by weighting costs for individual vehicles by the amount of traffic (and hence Network Rail income) associated with that vehicle. The choice of year used as the basis of traffic for weighting the charge does vary between some measures. This introduces some inconsistency between measures, but the effect is small.

<sup>347</sup> This is the £1.68 per kgtkm referred to early in the section with adjustment for prices and for PR08 efficiency and conversion from per km to per mile.

Weighted average cost (2012-13 prices)	Freight (£/kgtm)	Passenger (p/vehicle mile)	All traffic (£/kgtm)
Network Rail July 2013 (with Serco and ORR draft determination efficiencies)	2.23	9.48	2.12
Final determination	2.24	9.54	2.13

16.133 Network Rail's July 2013 draft price lists implemented our draft determination conclusions.

16.134 Table 16.19 shows Network Rail's estimates of how the Serco research impacts on estimates of variable usage costs for certain key freight commodities (prior to any capping of charges). These increases have fallen slightly since draft determination as Network Rail has now included further changes to reflect all of the Serco proposals that it considered improved cost reflectivity and hence were appropriate to implement. Details of all the changes it has made to reflect Serco can be found in Network Rail's July 2013 draft price list publication.

**Table 16.19: Estimates of the impact of implementing Serco research on the variable usage costs for certain key commodities carried by freight operators**

Commodity	Increase in variable usage costs resulting from implementing Serco research
Industrial Minerals	66%
Coal ESI	62%
Construction Materials	46%
Iron Ore	45%
Steel	37%
Biomass	27%
Domestic Intermodal	2%
European Intermodal	0%

Source: Network Rail's calculations for July 2013 draft price lists.

16.135 Table 16.20 shows our forecast of Network Rail's income from the VUC for franchised passenger, open access passenger and freight services, consistent with our determination. The numbers here are quite different from the draft determination, mostly due to the fact that Network Rail has now provided an updated income model that uses disaggregated historic traffic and uses the July 2013 draft price lists. Both these datasets have allowed analysis to be done much more precisely than for draft determination. The biggest change is for franchised passenger income which is now considerably lower.

**Table 16.20: Our forecast of VUC income for CP5 (with growth in traffic)**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>							
Franchised passenger	163.6	158.8	160.3	161.7	165.5	170.7	817.0
Freight	52.7	55.2	56.8	61.0	65.0	69.3	307.3
Open access passenger	2.2	2.1	2.1	2.1	2.1	2.1	10.5
<b>England &amp; Wales</b>							
Franchised passenger	150.6	146.2	147.6	148.9	152.2	157.2	752.2
Freight	47.5	50.0	51.4	55.3	58.9	62.7	278.2
Open access passenger	2.2	2.1	2.1	2.1	2.1	2.1	10.5
<b>Scotland</b>							
Franchised passenger	13.0	12.5	12.7	12.8	13.2	13.5	64.8
Freight	5.2	5.3	5.4	5.7	6.1	6.6	29.1
Open access passenger	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: numbers may not reconcile due to rounding.

16.136 Income from VUC does not necessarily equate to variable usage costs because, for example, certain large changes to charges will be phased in. Our decision to cap the increase in the VUC for freight means that the forecast VUC income is below that which it would be if the cost reflective charges were introduced in full, hence there is a commensurate increase in FTAC (or grants).

16.137 Table 16.21 shows our estimate of the weighted average VUC for franchised passenger, open access passenger and freight services, consistent with our determination. There are wide variations in the charges between these groups that reflect different vehicle characteristics. The vehicles used by open access services have a higher charge on average than the vehicles of franchised passenger operators because of these vehicles, for example higher than average operating speed.

**Table 16.21: Our determination of estimated weighted average VUC**

Weighted average charge (2012-13 prices)	Freight (£/kgtm)	Franchised passenger (p/vehicle mile)	Open access passenger (p/vehicle mile)
<b>CP4 weighted average actual charge</b>			
Weighted average 2013-14 (source: Network Rail's updated VUC income model using traffic data disaggregated by service group and commodity)	1.80	9.60	13.08
<b>CP5 weighted average estimated charge – our determination</b>			
2014-15	1.79	9.19	12.30
2015-16	1.78	9.20	12.30
2016-17	1.80	9.20	12.31
2017-18	1.85	9.20	12.31
2018-19	1.90	9.14	12.32

Notes:

1. Source: ORR calculations using data provided by Network Rail on vehicle mix in each service group in 2012-13 for passengers. Freight calculations done using vehicle mix to create an average weighted VUC rate for each commodity.
2. The average charge is weighted based on income forecast data so varies year on year for all types of traffic.

16.138 These numbers vary from the draft determination for several reasons. Network Rail have produced their draft price lists since the draft determination so they have a charge per vehicle rate which can be combined with 2012-13 outturn data on vehicle mixes from their billing systems to calculate a weighted average. This was done at a much more aggregated level at draft determination. Efficiencies have also changed since draft determination.

## Other matters relating to the VUC

16.139 In this section we set out our conclusions on other policies related to the VUC on which Network Rail consulted.

### Temporary default rates

16.140 In CP4, if track access charges of a freight vehicle have not been approved by ORR by the time that the vehicle has started running on the network, Network Rail instead has levied a default rate as an interim measure<sup>348</sup>. There has been no equivalent in the passenger contracts which have required a specific amendment to add an interim charge for each new vehicle. There have been several vehicles for which default or interim rates have been levied in CP4, where Network Rail has not known all the

<sup>348</sup> This is set out in paragraph 2.2 of Schedule 7 of the track access contract, the default rate being £1.82 per kgm.

vehicle characteristics needed to calculate the VUC. When the correct rate is eventually approved, Network Rail has re-charged all journeys during the control period (including those already charged at the default or interim rate) at the approved rate.

16.141 Network Rail concluded, in its VUC April 2013 conclusions, on making the following changes to this procedure:

- (a) applying a default rate to all passenger and freight vehicles where no specific rate for the vehicle exists on the price list;
- (b) charging a default rate for the VUC only, on the presumption that other charges, which in most cases are flat rates, would be readily calculable; and
- (c) introducing default rate bands (e.g. locomotive or laden wagon), with the respective rate for each of these bands being the highest relevant rate on the CP5 price list.

16.142 As before, when the correct rate is eventually approved, Network Rail would re-charge all journeys during the control period previously charged at the default rate by using the new approved rate. Income already received at the default rate would be refunded (i.e. the net impact on operators will be the difference between the default and ORR new approved rate).

16.143 Network Rail has argued that the default rates should be the highest rather than average rates so that operators (and others such as rolling stock manufacturers) are incentivised to provide the correct vehicle characteristics more quickly. Once the necessary vehicle parameters are known, the process within the track access contract provides for a specific VUC rate corresponding to the vehicle to be calculated and approved in good time. Provided that this process is adhered to, any delay in calculating the rate would primarily be as a result of a lack of information regarding a particular vehicle characteristic, which operators are best placed to provide. On this basis, in our draft determination we agreed with Network Rail's conclusions to set the default rates at high levels.

16.144 In our draft determination, we welcomed the other changes that Network Rail had proposed to the arrangements for default charges, recognising that these would provide for a more logical and equitable treatment across categories of vehicle. We sought views on the contractual changes required to implement these conclusions as part of our 12 July 2013 consultation on implementing PR13.

### **Our determination on temporary default rates**

16.145 We received few responses on this issue following the consultation. Network Rail was very supportive, proposing, as above, that operators would provide correct vehicle data more quickly under these changes. DB Schenker however raised concerns that a freight operator would not always have easy access to all the required information. DB Schenker agreed to work with Network Rail to discuss this issue further with the

intention of putting in place a process where this information is collected at an early stage.

- 16.146 Network Rail has committed, prior to commencement of CP5, to issuing guidance to stakeholders setting out the information required and details of the end-to-end process for calculating VUC rates, and to strive to work collaboratively with key stakeholders when developing this guidance. We think that such guidance is a good initiative which will be an important complementary measure to that of having the default rate.
- 16.147 We support the new approach outlined above as it will strengthen the incentives around providing the correct data early on so that operators are charged the correct rate. We therefore conclude on replacing the current provisions for a default rate in the freight operator contract with new provisions for default rates that apply for VUC only, and introducing similar provisions into the franchised and open access passenger operator contracts. The default VUC rates would apply to all passenger and freight vehicles where no specific VUC rate for the vehicle exists on the price list (nor have been agreed as a bilateral supplement to the price list). As now, when the correct rate is eventually approved this is used to charge journeys and, in addition, Network Rail is to re-charge all journeys during the control period that had already been charged at the default rate.
- 16.148 We confirm Network Rail's conclusions for charging default rates, which will have default rate bands with the respective rate for each of these bands being the highest relevant rate on the CP5 price list.
- 16.149 We understand the significant difficulties in acquiring some of the data on vehicle characteristics so we are keen for Network Rail and industry to work together, as proposed by DB Schenker.
- 16.150 This will improve the process for collecting this information efficiently and pragmatically.

### **Rates for modified vehicles**

- 16.151 Network Rail has concluded that, where a vehicle is modified mid-control period, an adjusted VUC rate should be calculated and applied to that vehicle, reflecting its changed characteristics. We are pleased that Network Rail has set out its intention to do this, having previously set out our support for VUC rates to reflect such vehicle modifications. This form of cost reflective charging incentivises operators to undertake these modifications to reduce Network Rail's costs. Where vehicles are modified, the application of a new VUC rate should be carried out using the process in the track



access contract<sup>349</sup> to supplement the price list with a new rate for that train operator (with the vehicle re-designated as a new sub-class).

### **Circumstances in which an individual charge might be changed during CP5**

16.152 Network Rail has consulted on and concluded on its proposal that, with the exception of vehicles that have been subject to modification, VUC rates for individual vehicles will be fixed (“locked down”) for CP5. It has cited, in particular, that the industry has made reasonable endeavours to set VUC rates using a robust list of vehicle characteristics. It has set out this process in its conclusions, and in our draft determination we encouraged operators to check that they were content with the parameters that Network Rail has used. As we have already set out, Network Rail has also prepared the methodology and calculated charges with extensive industry engagement and with careful review from us and the independent reporter.

16.153 In CP4, the passenger model contract (but not the freight model contract) has allowed for changes to the VUC and traction electricity modelled rates in circumstances of “manifest error” (paragraph 9.2 of Schedule 7). Given that the charges have been calculated and approved on the basis of extensive industry engagement and audit, we will remove the “manifest error” provision in the passenger contract. The PR13 process, with extensive industry engagement and audit, should ensure that the charges are compliant with the Access & Management Regulations.

## **Capacity charge**

16.154 Under the performance regime (Schedule 8 of the track access contract, as set out in chapter 20 of this document) Network Rail is liable for train lateness or delays and cancellations that are not the fault of other operators, in particular delays caused by Network Rail or due to other factors such as the weather. The scale of Network Rail’s Schedule 8 payments varies with traffic, however, as the volume of traffic affects Network Rail’s ability to manage the knock-on delays resulting from incidents; this variation in Schedule 8 compensation payments is a cost directly incurred that is recovered through the capacity charge.

### **The capacity charge in CP4**

16.155 The capacity charge was established as part of the Access Charges Review 2000. It was calculated by applying an estimated mathematical relationship to capacity utilisation (measured by the so-called Capacity Utilisation Index or CUI) and traffic volume-related delays for which Network Rail is liable (so-called Congestion-Related Reactionary Delays or CRRD). The CUI varies with traffic, and the associated change in CRRD, and hence Schedule 8 payments, were calculated using this relationship.

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<sup>349</sup> This process is set out in paragraph 9 of Part 2 of Schedule 7 to passenger track access contracts and paragraph 2.2 of Schedule 7 to freight track access contracts.

- 16.156 The capacity charges we determined in PR08 were derived from CUI and CRRD data compiled for the Access Charge Review 2000. The capacity charge for passenger services used Schedule 8 rates consistent with those applied in CP4 (with some anomalies, which we are correcting in PR13), whereas the capacity charge for freight services was uplifted in PR08 only for inflation.
- 16.157 In CP4, the capacity charge for passenger services has been levied by service group, whereas the freight capacity charge has been a flat rate for the entire network. Both charges have been subject to a weekend discount to reflect lower weekend traffic volumes.

## Calculating the charge in PR13

### Network Rail's recalibration of the capacity charge

- 16.158 In addition to the ORR-led recalibration of Schedule 8 rates, Network Rail has undertaken a recalibration of the capacity charge for PR13. We considered this not only important in the calculation of the capacity charge but also in that having an updated understanding of capacity utilisation and its relationship with delay across the network would be valuable in itself. The industry can use this updated information in work to develop charges beyond PR13. It is also a useful metric to inform ongoing work to better understand Network Rail's performance with respect to its role as a system operator.
- 16.159 Network Rail commissioned a consortium made up of consultants Arup and Imperial College London (ICL) to undertake the recalibration. The consultants carried out the recalibration in the following stages:
- (a) they developed a dataset for 6,688 individual components of the network, referred to as constant traffic route sections (CTSs), and 24 time bands across the week. They calculated the CUI (using timetable data) and the CRRD (using Schedule 8 data) for each route section and time band;
  - (b) they estimated the impact of capacity utilisation on delay by testing statistical relationships between the CUI and CRRD;
  - (c) they estimated the impact of a small change in capacity utilisation (for example, an additional train, "CUI+1") on delay on each route section during each time band, by applying the relationship between CUI and CRRD that they established;
  - (d) they calculated the financial cost to Network Rail of the additional delay by applying the weighted average Schedule 8 payment rate, for each route section and time band; and
  - (e) they aggregated the financial costs by service code, weighted by train miles, in order to estimate charges.
- 16.160 The consultants also reviewed whether certain aspects of the CP4 capacity charging regime remained valid for CP5, including reduced charges at weekends to reflect

lower weekend traffic volumes and reduced freight charges to reflect Network Rail's ability to re-route some freight trains in the event of disruption to the network.

- 16.161 The calculations resulted in substantially higher capacity charges, reflecting:
- (a) significantly higher Schedule 8 payment rates for CP5 (reflecting greater associated revenue per train and other factors);
  - (b) higher capacity utilisation across the network on average, resulting in an increased number of capacity-related reactionary delays; and
  - (c) a higher proportion of freight services using more congested high value parts of the network (for example as a result of a shift from bulk to container traffic).
- 16.162 In April 2013 Network Rail published its capacity charge conclusions and draft price lists for CP5<sup>350</sup>. These calculations have subsequently been updated to reflect changes to Schedule 8 rates. The revised capacity charges include weekend discounts of 33%, compared to 25% for CP4.
- 16.163 These capacity charge rates would, if implemented, result in a very large percentage real terms increase in the charge for freight (of the order of 300 to 350%) and on average 119% real term increase for passenger services, though with wide variations for individual services including very substantial increases for open access services on the East Coast Mainline. Some fluctuations in individual charges relate to Network Rail's conclusion to levy the charge on passenger services at a more disaggregate level, on the basis that that was more cost reflective<sup>351</sup>.

### **Challenges on the principle of and methodology used to calculate the capacity charge**

- 16.164 Prior to the introduction of the capacity charge, Network Rail recovered the additional Schedule 8 costs of additional services on the network through negotiated bespoke arrangements. The capacity charge, calculated by formula, removed the considerable administrative costs associated with such arrangements.
- 16.165 Certain stakeholders, however, have expressed concern about the capacity charge. Some of these concerns related to its design, whereas others relate to the increased cost it imposed on operators, relative to the bespoke system, because it has been charged to all traffic rather than, under previous arrangements, being charged just on additional traffic.
- 16.166 For example, freight operators have argued that they should not pay the capacity charge on existing levels; rather they should only pay the capacity charge on traffic

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<sup>350</sup> *Periodic Review 2013 – Capacity Charge Conclusions and Draft Pricelists*, Network Rail, April 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064785533>.

<sup>351</sup> In CP4, the capacity charge has been levied by service group for passenger services. Network Rail concluded that for CP5 the capacity charge would be levied by service code, where each service group consists of a number of service codes.

above a baseline. This is because Schedule 8 is a benchmarked regime. In particular, reactionary delay associated with existing traffic is reflected in Network Rail Schedule 8 benchmarks, meaning that Network Rail does not incur net costs associated with existing traffic levels.

16.167 Certain freight operators have argued both as part of PR08 and PR13 that the capacity charge is unacceptable in its current form because it over-recovers, i.e. it raises revenue in excess of the total costs associated with increases in traffic, and rather it should be levied only on traffic above that forecast in our determination. We discuss the over and under-recovery of costs with respect to variable charges in the VUC section. In particular, we point out that if the argument that the capacity charge in CP4 has over-recovered costs is applied to the VUC, then for the two charges combined for freight operators there has appeared to be a net under-recovery of costs.

### **The capacity charge for freight operators**

16.168 In April 2013, the Rail Freight Operators' Association (RFOA) submitted a proposal outlining an alternative approach for calculating a capacity charge for freight operators (the 'RFOA proposal')<sup>352</sup>.

16.169 The suggested approach was based on reviewing the difference between actual and benchmarked level of traffic on a periodic basis. It would start from establishing a mileage based baseline. Actual mileage would then be monitored against this baseline. Where mileage exceeded the baseline a per mile capacity charge would be levied. The charge would be levied periodically, e.g. annually, via a wash-up process. There would only be a payment if the calculation were positive, i.e. if mileage exceeded the baseline.

16.170 In terms of financial flows, this change would mean that Network Rail would receive substantially less funds from this alternative than it would from a capacity charge because no charge would be levied on train miles below the baseline. Any net change in total forecast variable charges revenue would be offset by a change to the revenue Network Rail received from FTAC.

### **Draft determination**

16.171 In our draft determination, we noted that the pattern of use of the network has changed since the capacity charge was originally introduced. We identified that we are concerned that further work is needed to establish whether the capacity charge is the best way fully to reflect the value of capacity or the costs generated in its allocation and usage. As part of our review of charges in CP6, we are planning an extensive review of the way that charges reflect cost and in doing so send signals for

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<sup>352</sup> RFOA letter of 24 April 2013, *Freight Capacity Charge – proposal on methodology*. This may be accessed at: <http://www.rail-reg.gov.uk/pr13/PDF/freight-capacity-charge-2013-04-24.pdf>.

efficient allocation, use and expansion of capacity. We may therefore substantially change the design or role of capacity charges in the future.

- 16.172 We also noted that the changes in capacity charge resulting from the Arup review were very material and accepted that it would be undesirable for track access charges to fluctuate significantly from one periodic review to the next from the perspective of industry investment and planning.
- 16.173 For those reasons, we concluded that we would not implement the recalibrated capacity charges as part of PR13. We would instead either implement an alternative proposal put forward by the RFOA (possibly applying it also to open access passenger operators and/or franchised passenger operators, having regard to their views on this), or approve capacity charge rates that have been calculated using the methodology established in CP4, uprated for inflation.

### **Responses to our draft determination**

- 16.174 Around 20 stakeholders who responded to our draft determination commented on the capacity charge.
- 16.175 With the exception of two respondents, consultees opposed retaining the CP4 capacity charge rates. Go-Ahead argued for retaining the CP4 rates by referring to the level of increase which would have resulted from using Arup's proposed approach and over-recovery in CP4.
- 16.176 Network Rail argued that our proposal to retain CP4 rates for the capacity charge, while updating Schedule 8 rates in CP5 would, even with the proposed higher volume incentive rates, mean that Network Rail would have net financial incentives over CP5 to reduce traffic on some parts of the network. Because of the inconsistent net financial incentives for traffic growth across the network, Network Rail considered that there was a risk of undue discrimination in our proposal.
- 16.177 Network Rail also argued that fixing "the capacity charge regime at CP4 levels would mean that capacity charge tariffs would be around 20 years out of date by the end of CP5. Continuing with the CP4 regime would generate an array of anomalies and perverse outcomes." It stated that our proposals to retain CP4 capacity charge rates, uplifted for inflation, would reverse moves to increase the accuracy of charging and make the regime more cost reflective (by charging at the more disaggregate service code rather than service group) and that foregoing this greater accuracy could have detrimental impacts on passengers.
- 16.178 A number of respondents said that the charges regime (particularly capacity charge, Schedule 8, and volume incentive) needed to be "reviewed holistically" and "integrated in such a way as Network Rail is encouraged to optimise the use of the network and optimise growth"
- 16.179 Centro described the CP4 rates as "manifestly wrong" and the Passenger Transport Executives Group (PTEG) said "it would be inconceivable to continue with a set of

charges which, by virtue of aggregating congested and uncongested sections of the network, have over-charged the types of service subsidised by PTEs for years”.

- 16.180 There was considerable support for the process of forming an industry view being undertaken by the RDG (discussed below) and for the principles expressed in the note of its conclusions. Some of the respondents (Network Rail, Abellio, ATOC, East Coast) endorsed the RDG’s specific proposals in their responses.
- 16.181 The RFOA proposal for a freight wash-up, which forms part of the RDG proposal, had wide support, not only from the rail freight industry but also (in general terms) from DfT, FirstGroup and Network Rail. Freight operators, while unanimously supporting the proposal in general, differed slightly over its details such as the level of the baseline and whether the wash-up should be disaggregated by commodity. DB Schenker opposed our proposal (in the July 2013 letter) of overlaying the wash-up on a CP4 charge rate.
- 16.182 We have listened carefully to the points made by industry, and consider that our conclusions on the capacity charge have largely addressed their concerns.

## **Work on the capacity charge conducted since the draft determination**

### **Independent review of the capacity charge recalibration**

- 16.183 Following the completion of Arup and ICL’s work to recalibrate the capacity charge, Network Rail, with our support, commissioned FTI Consulting to review the econometric analysis undertaken in the recalibration process, based on the dataset developed by Arup<sup>353</sup>. This review was intended to provide a critique of the approach adopted by Arup and ICL and a separate econometric analysis of the relationship between CRRD and CUI.
- 16.184 The conclusion of the FTI review was that there was evidence to suggest that the Arup/ICL proposed relationship between reactionary delay and CUI was conservative in that “the relationship used by Arup may be ‘flatter’ than the ‘true’ relationship”. FTI gave as a possible explanation that the ICL models ignore the spill-over effect that CRRD in contiguous CTSs have on CRRD in one CTS. They were therefore likely to underestimate the total impact of capacity utilisation on CRRD. The implication of this is that the capacity charge rates estimated by Arup are, if anything, likely to be too low.

### **Seeking further views following the draft determination**

- 16.185 Subsequent to our draft determination, the industry under the leadership of the RDG has carried out significant work on the capacity charge and we have had a number of detailed exchanges with RDG and the wider industry. These are as follows:

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<sup>353</sup> *Review of econometric work underpinning the capacity charge*, FTI Consulting, September 2013. This may be accessed at <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5-periodic-review/FTI-consulting-review-re-capacity-charge.pdf>.



- (a) on 19 July 2013 we published a consultative letter expanding on our draft determination with possible options for the capacity charge for both passenger and freight services<sup>354</sup>;
- (b) on 26 July 2013 we hosted an extended meeting of the Capacity Charge Working Group to discuss our draft determination and options for the capacity charge;
- (c) we held a separate industry and funders meeting on 21 August 2013 at which representatives of RDG presented its proposal to us;
- (d) we received RDG's proposal for passenger operators formally in a letter dated 28 August 2013, which also outlined a series of principles which it felt should underpin the decision on the capacity charge<sup>355</sup>;
- (e) on 13 September 2013 we received a proposal from the RDG freight group on implementing a form of the capacity charge for freight<sup>356</sup>;
- (f) on 24 September 2013, we wrote to the industry and RDG on the capacity charge for passenger operators<sup>357</sup>;
- (g) on 30 September 2013 the RDG wrote back to us in response to our 24 September 2013 letter on the capacity charge for passenger operators<sup>358</sup>;
- (h) we met members of the RDG freight group on 2 October 2013 to discuss their proposal for freight;
- (i) on 8 October 2013 we issued a consultation letter setting out the ORR's proposed conclusions for the capacity charge for freight operators in CP5<sup>359</sup>; and
- (j) on 15 October 2013 RDG and DB Schenker wrote to us in response to our 8 October 2013 letter on the capacity charge for freight operators<sup>360</sup>.

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<sup>354</sup> ORR letter of 19 July 2013, *PR13: capacity charge and alternative RFOA proposal*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/orr-options-rfoa-proposal.pdf>.

<sup>355</sup> RDG letter of 28 August 2013, *RDG's proposals on Schedule 8 / volume incentive / capacity charge for CP5*. This may be accessed at <http://www.raildeliverygroup.com/assets/files/2013/09/LtrtoCRoss280813.pdf>.

<sup>356</sup> RDG letter of 13 September 2013, *RDG Freight Group proposal for the capacity charge for Freight Operating Companies in CP5*. This may be accessed at [http://www.raildeliverygroup.com/assets/files/2013/10/RDG%20Freight%20Group%20Proposal%20FOC%20CP5%20Capacity%20Charge\\_13%20Sept%202013.pdf](http://www.raildeliverygroup.com/assets/files/2013/10/RDG%20Freight%20Group%20Proposal%20FOC%20CP5%20Capacity%20Charge_13%20Sept%202013.pdf).

<sup>357</sup> ORR letter of 24 September 2013, *Capacity charge for franchise and open access passenger for CP5*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/capacity-charge-for-franchise.pdf>.

<sup>358</sup> RDG letter of 30 September 2013, *Capacity Charge for franchise and open access passenger for CP5*. This may be accessed at <http://www.raildeliverygroup.com/assets/files/2013/10/RDGtoORR30Sep2013.pdf>.

<sup>359</sup> ORR letter of 8 October 2013, *Capacity charge for freight operators for CP5*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/freight-capacity-charge-2013.pdf>.



16.186 RDG, working on the capacity charge for passenger operators, set out a series of principles that it considered our decisions regarding the capacity charge should adhere to. They were:

- (a) "There should be, as far as possible, a predictable and stable charging regime for all operators. This was considered particularly important for OA operators;
- (b) Trains of a similar nature operating on the same parts of the network should have their various access charges set on a consistent basis;
- (c) OA operators entered the market and based their business cases/ models on a reasonable expectation of predictable charges;
- (d) The Arup CP5 proposed capacity charge rate increases for OA are very significant and a sustainable pace of transition is needed if they are not to become unaffordable for existing OA operators;
- (e) There would be merit in 'special arrangements' for OA Capacity Charge in CP5; and
- (f) That any OA Capacity Charge 'special arrangements' should be restricted to CP5 and clearly signalled as such in anticipation of an immediate review of charges for CP6."

16.187 We think that our engagement with RDG and the industry has been important, because it has enabled us to work with the industry to achieve a good outcome in terms of compensating Network Rail for accommodating additional traffic, while mitigating impacts on groups of individual operators. We will take lessons from this experience, including our interaction with the industry, and the experience of PR13 more widely, into account as we prepare the governance arrangements and work programme for PR18.

## **Our assessment of Network Rail's recalibration of the capacity charge**

16.188 Network Rail and Arup carried out their review and recalibration of the capacity charge with extensive industry engagement, including a capacity charge working group. Through the working group, the methodology developed has been subject to extensive scrutiny. In addition to Arup's quality assurance<sup>361</sup>, both Network Rail and we have conducted high-level sense checks of the calculations, and we have jointly

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<sup>360</sup> RDG letter of 15 October 2013, *Capacity charge for freight operators for CP5*. This may be accessed at: <http://www.rail-reg.gov.uk/pr13/PDF/freight-capacity-charge-rdg.pdf>.

DB Schenker letter of 15 October 2013, *Capacity charge for freight operators for CP5*. This may be accessed at: <http://www.rail-reg.gov.uk/pr13/PDF/freight-capacity-charge-dbs.pdf>.

<sup>361</sup> *CCR – Summary of Project QA Procedures*, Arup, 4 October 2013. This may be accessed at <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/arup-summary-of-QA.pdf>.

commissioned FTI Consulting to review the derived econometric relationship, the conclusion of which was that the capacity charge rates were conservative.

16.189 We recognise that the capacity charge is a contentious area for freight and open access operators. We do not accept the arguments they have made against the capacity charge and consider it is important to provide incentives for Network Rail and operators in relation to the making available of capacity and its use, particularly where there is congestion. However, we do recognise that the pattern of use of the network is now very different from when the capacity charge was introduced and we consider that further work is needed to establish whether for CP6 the charge is the best way fully to reflect changes to Network Rail's costs from the Schedule 8 performance regime. This further work will be carried out as part of the work on the structure of charges for PR18.

### **Anomalies**

16.190 During the course of CP4, three potential anomalies in relation to the capacity charge price list were identified. We asked Network Rail to correct for any anomalies in its draft CP5 price lists published in July 2013<sup>362</sup>.

16.191 First, charter operators have not been subject to the capacity charge in CP4. We address this issue in the section on charter operators in this chapter.

16.192 In the second case, it appeared that different operators using similar parts of the network with similar services had been subject to significantly different tariffs in CP4. This affected three operators: East Coast, First Hull Trains, and Grand Central. To address this anomaly, Network Rail recalculated the CP4 tariffs for Grand Central and First Hull Trains services by using the CP5 rates and applying the differential between the CP5 and CP4 rates for East Coast.

16.193 In the third case, during CP4 Network Rail had levied zero charges on some service codes relating to empty stock movements while non-zero charges on others. Following investigation, Network Rail concluded that these charges were not anomalous with the CP4 methodology, which set some charges to zero rather than have very low charges, in order to simplify billing. Under the Arup (CP5) methodology, however, no charges are rounded down to zero for reasons of administrative simplicity.

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<sup>362</sup> *Draft CP5 price lists (consistent with ORR's draft determination*, Network Rail, July 2013. This may be accessed at <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/>. The cover note accompanying the price lists, which outlines the work under taken to address the anomalies, may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064786915>.

## Our determination

### Our decision

- 16.194 In our draft determination, we said that we would not implement the recalibrated capacity charges as part of PR13. Instead we said we would either implement an alternative proposal put forward by RFOA (possibly applying it also to open access passenger operators and/or franchised passenger operators) or approve capacity charge rates that have been calculated using the methodology established in CP4, uplifted for inflation.
- 16.195 In light of consultation responses and the extensive engagement with RDG and the wider industry that we have had over the summer, we have reconsidered our position. We are now of the view that it is important that our approach to the capacity charge is aligned with that of Schedule 8 because otherwise we think that the financial disincentives for Network Rail to accommodate additional demand on some routes might result in less efficient use of capacity. As we are updating Schedule 8 payment rates in CP5, we also think we should update the capacity charge rates so that they are reflective of the new Schedule 8 costs.
- 16.196 However, we have also assessed the impact of levying the full new CP5 capacity rates on the various different groups of operators and have considered whether, in accordance with our section 4 duties, we should mitigate this. This approach addresses our concerns in the draft determination that it would be undesirable for the charge to fluctuate significantly from one periodic review to the next from the perspective of industry investment and planning. We have set out our assessment of the impact of options in our published consultations listed in the previous section.
- 16.197 In the remainder of this section, we set out our conclusions for:
- (a) franchised passenger operators;
  - (b) existing open access operators;
  - (c) new open access operators; and
  - (d) freight operators.
- 16.198 We set out our conclusions for charter operators in the charter operator section.
- 16.199 **Franchised passenger operators** will pay the new CP5 rates for both existing and new services. As franchised operators will be held harmless by the government for any increases in capacity charge for services specified in their franchise agreement and can factor any increase into their commercial arrangements with government for any new services, we do not consider that we need to mitigate the impact of the charge for them.
- 16.200 **Existing open access operators** will pay CP4 rates for their existing services (with any anomalies corrected) but will pay CP5 rates for any additional or new services. Implementing the full rates for existing open access services would equate to a real

term average increase of 450% in the capacity charge. Unlike franchised passenger services, these services would not have protection from such an increase from government. In light of this, when considering our statutory duties, in particular to promote the use of the railway network, to protect the interests of users of railway services and to promote competition in the provision of railway services, we think it is appropriate for these services to pay CP4 rates. However, we consider that existing open access operators could factor the new rates into their commercial plans for any new or additional services and therefore these will be subject to the CP5 rates.

16.201 **New entrant open access operators** will pay CP4 rates on services below a threshold (set to provide broadly equivalent treatment with existing open access operators) and CP5 rates above the threshold. This approach is to ensure that we are treating existing and new entrant open access operators in the same way, as required by European law and our section 4 duties.

16.202 We think these capacity charge decisions for passenger operators are consistent with the principles that RDG proposed should govern the capacity charge for CP5 for passenger operators. We have concluded that for CP5 open access operators require special arrangements in the form of full CP5 rates, in some cases, being mitigated to reflect the fact that, unlike franchised passenger operators, they do not have government protection from increases in the capacity charge. The mitigation that open access operators will receive both allows open access operators already providing services to continue doing so on a predictable basis and ensures that new open access operators are being treated in the same way.

16.203 **Freight Operators** – we have decided to adopt the “RDG proposal – no negative wash-up” that we set out in our letter to RDG dated 8 October 2013. We explain the reasons for our preference for this option in our letter. This means that:

- (a) during the year, operators will pay the capacity charge for traffic based upon their actual mileage at a capacity charge rate set at £0.13 per train mile weekday;
- (b) at the end of the year a reconciliation or wash-up will be carried out. For the purposes of the reconciliation there will be three commodity groups: coal and biomass, intermodal and other commodities;
- (c) for the purposes of the reconciliation, each commodity group will have a baseline set using 2012-13 actual traffic levels for that commodity group;
- (d) the reconciliation will determine the difference between the revenue Network Rail would have received if full CP5 rates were applied to the actual traffic for that commodity group for that year above the baseline and its actual capacity charge revenue from the commodity group across the year above the baseline. The amount of any excess will be apportioned to freight operators in proportion to their train mileage for the relevant commodity grouping; and

- (e) the reconciliation will work so that where the traffic for the commodity group for that year corresponds to or is less than its 2012-13 level, the reconciliation will be zero.

16.204 Implementing the full CP5 rates would equate to a real term average increase of around 300% to 350% for the capacity charge for freight. In light of our statutory duties, we think it is appropriate to mitigate the impact of the full rates. In deciding on the form of mitigation, we have considered the overall impact of all our PR13 charging conclusions on freight operators and their customers and, in particular, have considered the mitigation we have concluded the freight sector requires in the application of the VUC and FSC. We factored into our decisions on the VUC and FSC an expectation that the capacity charge would recover £4m to £5m during CP5; we consider that for the package as a whole this is still appropriate. Therefore, rather than revisit the decision on the other charges which we think would be unhelpful at this late stage, we think it is appropriate to set the capacity charge in such a way that, in its mitigated form, it is expected to recover this amount. We think it is appropriate to disaggregate the cost reconciliations across three commodity groupings because this improves the incentives for Network Rail to accommodate additional demand.

16.205 In accordance with RDG's principles, our capacity charge decisions for passenger and freight operators ensures that there is a stable charging regime for all operators for CP5 whilst the review of the structure of charges is carried out. We will work closely with the industry, including RDG, in carrying out this review to conclude how, post CP5, charges should best reflect cost and incentivise efficient allocation, use and expansion of capacity.

### Our estimates of forecast income from the capacity charge

16.206 Table 16.22 below shows our forecast of capacity charge income in CP5 from franchised and open access passenger operators, consistent with our decision. As outlined in the section on traffic forecasts in this chapter, the income forecast below is based on the traffic forecasts produced by Network Rail for its SBP, corrected for inconsistencies within the SBP.

**Table 16.22: Our forecast of capacity charge income from passenger operators for CP5 (with growth in traffic)**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>							
Franchised passenger	174.2	385.3	387.0	388.8	393.7	408.7	1,963.5
Open access passenger	1.1	1.2	1.2	1.2	1.3	1.3	6.2
<b>England &amp; Wales</b>							
Franchised passenger	168.6	368.4	370.0	371.8	376.5	391.0	1,877.7
Open access passenger	1.1	1.2	1.2	1.2	1.3	1.3	6.2

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Scotland</b>							
Franchised passenger	5.6	16.9	17.0	17.0	17.2	17.7	85.7
Open access passenger	0.0	0.0	0.0	0.0	0.0	0.0	0.0

16.207 For the purpose of our determination of Network Rail's funding, we have assumed the capacity charge income using freight traffic forecasts provided to us by Network Rail as part of its SBP. These forecasts of income are set out in Table 16.23.

**Table 16.23: Our forecast of capacity charge income from freight operators for CP5 (with growth in traffic)**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>							
Freight	4.3	4.2	4.8	5.9	6.7	7.6	29.3
<b>England &amp; Wales</b>							
Freight	3.9	3.8	4.4	5.4	6.1	7.0	26.7
<b>Scotland</b>							
Freight	0.4	0.4	0.4	0.5	0.6	0.7	2.6

16.208 As explained in paragraph 16.64 onwards, however, we agree with Network Rail and freight operators that these forecasts of freight traffic are unrealistically high. As the capacity charge for freight in CP5 will work on the basis of a higher rate for traffic above a baseline, forecast income from the freight capacity charge is particularly sensitive to traffic forecast assumptions. For comparison purposes, therefore, in Table 16.24 we show capacity charge income calculated on a basis consistent with Network Rail's updated traffic forecasts, issued to us in June 2013 in preparation for its delivery plan.

**Table 16.24: Our forecast of capacity charge income from freight operators for CP5 (using updated traffic growth forecasts)**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>							
Freight	4.1	3.3	3.5	3.7	3.9	4.2	18.6
<b>England &amp; Wales</b>							
Freight	3.7	3.0	3.2	3.4	3.6	3.8	17.0
<b>Scotland</b>							
Freight	0.4	0.3	0.3	0.3	0.3	0.4	1.6



## Charges for electric current for traction

- 16.209 Network Rail is the single biggest user of electricity in the UK. By the end of CP5, it expects consumption of electric current for traction (EC4T) on its network to have increased by around 25% on current levels. As discussed in chapter 6, Network Rail recovers the vast majority of its traction electricity costs from train operators who require electricity to run their electrified train services. These costs are recovered through the traction electricity charge.
- 16.210 At the start of CP4, all operators were charged for EC4T on the basis of modelled rates, which provided operators with weak incentives to manage their electricity consumption. This is changing. Currently, around 25% of EC4T is billed on basis of metered consumption, and we expect this to rise to around 50% by April 2015. In PR13, we are further supporting increases in electricity efficiency and reductions in CO<sub>2</sub> emissions by:
- (a) refining the EC4T charging framework, which we worked with the industry to establish during CP4, in order to support expansion of on-train metering; and
  - (b) introducing financial incentives for the first time for Network Rail to manage transmission losses by exposing it to electricity volume risk through the volume wash-up.
- 16.211 Electric current for traction (EC4T) can take four key forms:
- (a) electricity consumed by trains;
  - (b) electricity consumed for non-traction purposes by Network Rail or supplied by Network Rail to other parties (e.g. London Underground Ltd);
  - (c) electricity lost in transmission through the infrastructure (i.e. third rail or overhead line equipment); and
  - (d) electricity generated through trains' regenerative braking (to return the energy from braking to the electrification system).
- 16.212 In the next section we explain how electricity is charged in CP4. This forms the basis for the policy conclusions that follow, which need to be read with reference to this section.
- 16.213 After our description of CP4, the rest of our determination with respect to EC4T charges is structured as follows:
- (a) Network Rail's SBP forecast of income from EC4T;
  - (b) our assessment of Network Rail's SBP forecast;
  - (c) Network Rail's conclusions on charges for EC4T;
  - (d) our consultation on EC4T charges and the responses we received;
  - (e) our draft determination;



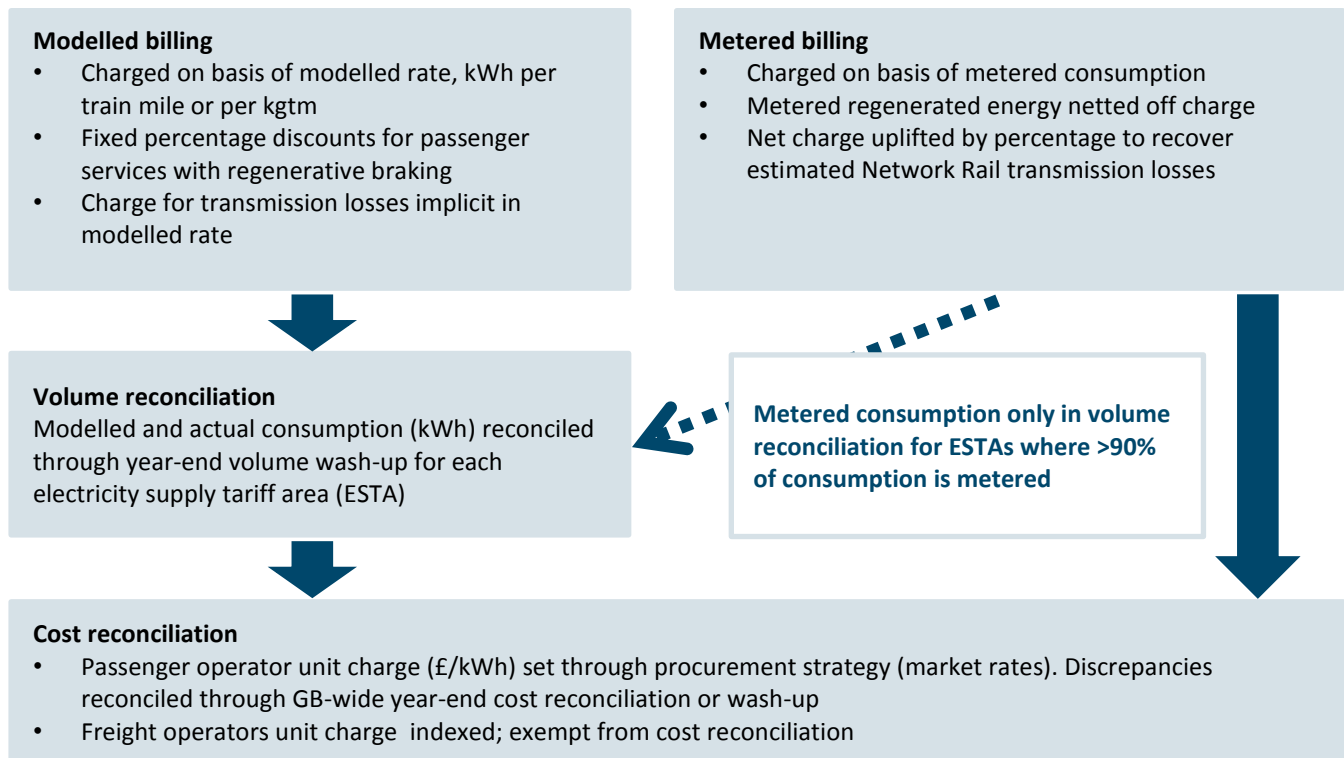
- (f) developments since our draft determination; and
- (g) our conclusion on charges for EC4T.

## Calculating the charge in CP4

16.214 Currently around 25% of EC4T consumption is charged on the basis of consumption recorded by on-train meters (OTM). Metered regenerated energy has been netted off the energy charged. Operators pay an uplift on metered consumption net of regenerated energy to recover estimated transmission losses, referred to as the distribution systems loss factor (DSLFL).

16.215 Until April 2010, all electrified train services were charged on the basis of modelled (i.e. unmetered) electricity consumption rates (taking the form of kWh per train mile or gross tonne mile), and around 75% of all EC4T is still charged in this way. Modelled services with regenerative braking have been charged at a discounted rate. Under this system, modelled and actual consumption have been reconciled through a year-end wash-up referred to as the volume wash-up. Transmission losses have been charged for implicitly through the modelled rate and volume wash-up; they have not been charged for explicitly. This volume wash-up reconciliation has occurred at the level of the electricity supply tariff area (ESTA). ESTAs are defined in Schedule 7 of the track access contracts. Network Rail's own consumption amounts to around 3% of all EC4T and is also subject to the volume wash-up. Figure 16.2 summarises the basis for charging for EC4T in CP4.

**Figure 16.2: EC4T charging framework in CP4**



- 16.216 Track access charges, including EC4T charges, are contractualised in Schedule 7 of the track access contract. For metered operators, this is supplemented by the EC4T Metering Rules<sup>363</sup>, which apply to all services billed through OTM. Currently, the EC4T Metering Rules can be amended through an industry-led change process subject to consultation, majority endorsement and our consent<sup>364</sup>.
- 16.217 There are industry processes for procuring electricity. The reconciliation of electricity prices (i.e. £ per kWh), referred to as the cost reconciliation, is included in the track access contract and therefore falls within scope of PR13.

### **Network Rail's SBP forecast of income from EC4T**

- 16.218 In its SBP, Network Rail made a number of forecasts in order to estimate the level of future income from the traction electricity charge. Network Rail's key forecasts included:
- (a) using market projections of the electricity price for 2014-15 and 2011 DECC projections for each year of CP5 thereafter;
  - (b) estimating future electric traffic km by using actual 2011-12 data and making growth assumptions based on forecast increased electric traffic; and
  - (c) estimating the future rate of electricity consumption based on actual 2011-12 data.
- 16.219 Given these supporting forecasts, Network Rail projected traction electricity charges in the first year of CP5 of £239m rising to £575m in the final year of CP5. This increase was largely due to a forecast increase in electricity prices<sup>365</sup> and an increase in the size of the electrified network. Network Rail used 2011-12 traffic and electricity consumption data from its track access billing system (TABS) and applied a series of adjustments before applying the forecast electricity cost per kWh to forecast traffic to produce electric traction cost forecasts by route. Table 16.25 shows Network Rail's income estimate.

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<sup>363</sup> *On-train metering*, Network Rail. This may be accessed at <http://www.networkrail.co.uk/using-our-network/on-train-metering/>.

<sup>364</sup> ORR also has the right to make amendments without majority endorsement, subject to consultation.

<sup>365</sup> See pages 54 and 55 respectively in *Strategic Business Plan for England Wales* and *Strategic Business Plan for Scotland*, Network Rail, January 2013. These may be accessed at <http://www.networkrail.co.uk/publications/strategic-business-plan-for-cp5/>.

**Table 16.25: Network Rail's SBP forecast traction electricity charge income for CP5 (with growth in traffic)**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>							
Franchised passenger	221.3	229.3	446.1	459.2	495.1	551.0	2,180.7
Freight	5.7	6.2	12.7	13.9	15.1	16.2	64.1
Open access passenger	3.6	3.7	7.1	7.2	7.3	7.3	32.6
<b>England &amp; Wales</b>							
Franchised passenger	208.1	215.0	414.5	427.0	462.0	516.7	2,036.2
Freight	5.2	5.7	11.6	12.7	13.8	14.8	58.6
Open access passenger	3.6	3.7	7.1	7.2	7.3	7.3	32.6
<b>Scotland</b>							
Franchised passenger	13.3	14.4	31.6	32.2	33.0	34.3	145.5
Freight	0.5	0.5	1.1	1.2	1.3	1.4	5.5
Open access passenger	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: numbers may not reconcile due to rounding.

16.220 There is significant uncertainty in forecast future energy prices and hence this could impact the actual income level. If Network Rail's actual expenditure changes (due to changes in energy prices or indeed other factors) then under the charging arrangements, this will be reflected directly in the charge levels. For example, if Network Rail's electricity costs fall then charges paid by operators will reduce by a commensurate amount, and the converse will apply if electricity costs rise. Network Rail's is largely unaffected if actual income is ultimately different from the level that we determine. In terms of Network Rail's own use of traction electricity, it will gain or lose if electricity costs in CP5 are lower or higher than we have assumed in our determination.

### **Our assessment of Network Rail's SBP forecast**

16.221 We are content with the general approach taken by Network Rail in calculating EC4T charges income. However, its forecast costs and charges are underpinned by DECC projections from 2011. For the final determination, we have used the most recent DECC forecast, dated September 2013.

16.222 On the basis of these updated DECC projections, Table 16.26 shows our determination for traction electricity charges income. These differ from those shown in our draft determination because we have used updated DECC projections. The increase from CP4 is due to higher forecast electricity prices (though lower than that used in the Network Rail SBP) and increased levels of electrified traffic mileage (consistent with Network Rail's SBP).

**Table 16.26: Our forecast traction electricity charge income for CP5 (with growth in traffic)**

£m (2012-13 prices)	2013-14 (CP4)	2014- 15	2015- 16	2016- 17	2017- 18	2018- 19	Total CP5
<b>Great Britain</b>							
Franchised passenger	221.2	228.8	315.5	333.4	365.8	426.4	1,670.0
Freight	5.7	6.2	9.0	10.1	11.2	12.6	49.0
Open access passenger	3.6	3.7	5.0	5.2	5.4	5.6	25.0
<b>England &amp; Wales</b>							
Franchised passenger	207.9	214.5	293.2	310.0	341.4	399.9	1,558.9
Freight	5.2	5.7	8.2	9.2	10.2	11.5	44.7
Open access passenger	3.6	3.7	5.0	5.2	5.4	5.6	25.0
<b>Scotland</b>							
Franchised passenger	13.3	14.3	22.3	23.4	24.4	26.5	111.0
Freight	0.5	0.5	0.8	0.9	1.0	1.1	4.2
Open access passenger	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: numbers may not reconcile due to rounding.

## Network Rail's conclusions on charges for EC4T

16.223 As part of its PR13 work on setting charges, in September 2012, Network Rail published a consultation on traction electricity & electrification asset usage charges (which covered AC losses) and in November 2012 it published another consultation which covered DC losses<sup>366</sup>. Network Rail published its conclusions on these consultations in February 2013<sup>367</sup>. It concluded:

- (a) to retain CP4 modelled consumption rates for all operators;
- (b) to make metered billing mandatory for all new electric rolling stock;
- (c) to discontinue the Transitional Risk Sharing Mechanism (TRSM);
- (d) to retain the CP4 regenerative braking discounts for modelled operators;
- (e) to introduce provisions to the EC4T Metering Rules to allow Network Rail to verify that regenerative braking is being used correctly;
- (f) to charge freight operators on the basis of the actual electricity costs rather than a price index;

<sup>366</sup> *Network Rail consultation on charging for losses and regenerative braking for metered operators on the dc network*, Network Rail, November 2012. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064784066>.

<sup>367</sup> *Traction Electricity and Electrification Asset Usage Charges in CP5 – Conclusions of Network Rail's Consultation*, Network Rail, February 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064784907>.

- (g) to change the cost wash-up formula to better reflect tariff structure including the EC4T delivery charge; and
- (h) to move the volume and cost year-end wash-ups and definitions of ESTAs from Schedule 7 to the EC4T Metering Rules, which would be renamed the 'Traction Electricity Rules' (TER).

16.224 Network Rail also concluded on a number of items which we wished to consult on further as part of our April 2013 consultation on EC4T, in particular in relation to the DSLF (the transmission losses uplift). We set these out in the next section.

## **Our consultation on EC4T charges and the responses we received**

- 16.225 We issued a consultation on EC4T in April 2013<sup>368</sup>. We consulted on aspects relating to the charges for transmission losses, on which Network Rail had previously consulted. We also consulted on changes to the volume wash-up. We explained that we had decided not to require an uplift to be levied on modelled rates to incentivise metering. We concluded on this consultation as part of the draft determination.
- 16.226 A number of stakeholders supported our proposition to fix the DSLF for the whole of CP5 though subject to some form of re-opener during the period if new and material evidence emerged. There was a mixed response to our proposal that ORR, rather than industry, should set the value of the DSLF. Although it was inconsistent with Network Rail's conclusions, there was strong support among operators for our proposals to set the DSLF by ESTA. Stakeholders, including Network Rail, were supportive of our proposal that Network Rail charge for transmission losses so that the DSLF is applied to gross metered consumption, and not net of metered regenerative braking.
- 16.227 In CP4, metered operators have been excluded from the year-end volume reconciliation where less than 90% of an ESTA has been metered. We proposed to entirely exclude metered operators from the volume wash-up even when metering exceeded 90% in an ESTA. This was broadly supported by stakeholders.
- 16.228 There was strong support from a majority of stakeholders for our proposal to expose Network Rail to a greater share of the volume wash-up.
- 16.229 There were a wide variety of views offered on our proposals on the way in which partially metered fleets (PFM) should be charged and the extent to which they should be exposed to the volume wash-up. For example, some respondents questioned our suggested formula/approach for allocating the volume wash-up to services with PFM. Network Rail questioned the appropriateness of PFM as a whole.

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<sup>368</sup> ORR letter of 10 April 2013, *PR13: consultation on electricity for traction charges for control period 5 (CP5)*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/ec4t-consultation-apr-2013.pdf>.

## Our draft determination

- 16.230 Following our consideration of the responses to our April 2013 consultation on EC4T, in our draft determination we accepted most of Network Rail's February 2013 conclusions.
- 16.231 We did however make a number of changes with respect to the basis for charging for transmission losses for metered consumption. In particular we concluded that:
- (a) the DSLF should be applied to gross metered consumption rather than metered consumption net of regenerative braking;
  - (b) the DSLF should be set by ESTA (differentiating between AC and DC for mixed ESTAs);
  - (c) the ability to change a DSLF outside a periodic review should be restricted, with scope for amendments to be made by ORR within our existing right to modify the rules; and
  - (d) the change process in the EC4T Metering Rules relating to the definitions of each ESTA should be modified to give modelled train operators the same rights as metered operators.
- 16.232 We also confirmed and specified our earlier conclusion on exposing Network Rail to the year-end volume reconciliation. In addition, we set out how we would expect any partially metered fleet to share the volume reconciliation, and treatment of Network Rail's own consumption of EC4T.

## Developments since our draft determination

### Consultation responses

- 16.233 A number of operators expressed concern that there appeared to be no funding mechanisms to reduce EC4T consumption in CP5, and that this did not support the industry target to reduce CO<sub>2</sub> emissions by the end of CP5. Go-Ahead argued for the Safety & Environment (S&E) fund to be rolled over to CP5 to maximise opportunities for further metering. We have subsequently engaged extensively with ATOC, Network Rail and operators on this.
- 16.234 ATOC and many of the operators commented on Network Rail's incentives associated with the volume wash-up. For example, they argued that the incentives were too weak, or may not work. Some operators argued that Network Rail, rather than operators, should pay for transmission losses.
- 16.235 ATOC, First Capital Connect, East Coast, South West Trains and Go-Ahead argued that there should be an adjustment to modelled consumption rates so that the change whereby Network Rail shared the volume wash-up did not result in a windfall for Network Rail. Respondents particularly focused on ESTA U, the large DC third rail ESTA, for which adjustments to DC modelled rate could readily be made.

16.236 Several respondents made comments on PFM. Several TOCs asked for more certainty in the final determination with respect to whether such fleet would share the volume wash-up. Other TOCs thought that the industry should make proposals for allocation of the volume wash-up through the Traction Electricity Rules (TER). Freightliner supported the implementation of PFM in the ESTA U but expressed concerns about the resulting complexity to billing and the associated IT development cost for AC.

16.237 We address these points in our conclusions below.

### **The fund for on-train metering**

16.238 In PR08 we concluded that Network Rail could carry forward around £8.75m from its CP3 safety and environment fund (S&E fund) to fund on-train metering. We made it clear that the fund would not be rolled over into subsequent control periods and confirmed in our April 2012 framework document that we had no plans to extend this funding for on train metering beyond 1 April 2014<sup>369</sup>. As of April 2013, only around £1m of the fund had been used to facilitate on train metering.

16.239 In 2013 there has been considerable interest among operators in using the fund to invest in on train metering, but some operators are unable to complete the meter fitment in full in CP4. As of October 2013, our understanding is that operators have requested a £5.6m funding for CP4, over and above the amount already funded, and £3.6m funding for CP5.

16.240 ATOC and operators have made a strong case to Network Rail and to us for a limited extension, to allow for the completion of various operators' programmes of metering which are already well advanced and will commence in CP4. We understand that Network Rail has been seeking to secure such funding for CP5 with DfT.

### **Consultations on contractual wording**

16.241 We have consulted on EC4T extensively in the context of our consultations on contractual wording. We jointly consulted with Network Rail on treatment of the cost reconciliation provision on 2 October 2013<sup>370</sup>. We consulted on all other proposed changes to other contractual wording relating to charges for EC4T as part of our July 2013 implementation consultation.

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<sup>369</sup> See paragraph 5.109 of *Setting the financial and incentive framework for Network Rail in CP5*, Office of Rail Regulation, May 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/publications/financial-incentives.php>.

<sup>370</sup> *Periodic review 2013: consultation on implementing the EC4T cost reconciliation*, ORR and Network Rail, October 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/consultations/implementing-ec4t-cost-reconciliation.php>.



## Our conclusion on charges for EC4T

16.242 Our conclusions are summarised in Table 16.27 and set out below. These changes are directed at supporting increases in electricity efficiency and reductions in CO<sub>2</sub> emissions by:

- (a) refining the EC4T charging framework in order to support expansion of on-train metering (and potentially partially metered fleet); and
- (b) introducing financial incentives for the first time for Network Rail to manage transmission losses by exposing it to electricity volume risk through the volume wash-up.

**Table 16.27: Summary of our conclusions on the charging framework for EC4T**

Paragraph	Our determination	Consistent with	
		Network Rail's conclusions	Draft determination
16.243	Moving the volume and cost year-end wash-ups and definitions of ESTAs from Schedule 7 to the EC4T Metering Rules <sup>371</sup> , which would be renamed the 'Traction Electricity Rules' (TER).	✓	✓
16.249 & 16.265	With the exception of ESTAs established during CP5, DSLFs for existing ESTAs will be set for CP5, with only ORR retaining the flexibility to propose changes to these.	N/A	Some changes
16.252	Discounts for regenerative braking for modelled services will not change from those in CP4.	✓	✓
16.252	Audit provisions to enable verification that regenerative braking is being used correctly.	✓	✓
16.254	Metered services will be exempted from the volume wash-up. The Transitional Risk Sharing Mechanism (TRSM) <sup>372</sup> , intended to apply for CP4 only, will not apply in CP5.	✓	✓
16.257	Network Rail share volume reconciliation to reflect its ability to manage transmission losses.	✗	✓
16.263	Freight operators being charged on basis of actual electricity costs rather than a price index.	✓	✓

<sup>371</sup> Further information on the EC4T Metering Rules can be found here <http://www.networkrail.co.uk/using-our-network/on-train-metering/>

<sup>372</sup> This temporary mechanism was introduced in CP4 to offer protection to modelled operators who were concerned about the impact of OTM on their modelled bills.

Paragraph	Our determination	Consistent with	
		Network Rail's conclusions	Draft determination
16.263	Contractual provisions for EC4T procurement strategy to move from track access contracts to the Traction Electricity Rules.	N/A	N/A. Consulted on in July 2013
16.264	Change to cost reconciliation to better reflect tariff structure including EC4T delivery charges.	✓	✓
16.265	DSLRF set for each ESTA individually, rather than network wide.	✗	✓
16.266	Metered operators charged for transmission losses as an uplift on gross metered consumption, and not consumption net of metered regenerative braking.	✗	✓
16.269	Rollover of some funding for OTM into CP5.	✗	✗
16.282	Modelled consumption rates (other than potentially rates charged through partial fleet metering) will not change for CP5.	✓	✓
16.290	Confirm share of wash-up for 30% partially metered fleet, with scope for industry to make case for lower share.	N/A	Some changes

### The Traction Electricity Rules and change process within the rules

16.243 We confirm that, on 1 April 2014, the EC4T Metering Rules will be replaced by the Traction Electricity Rules (TER). The TER will incorporate a number of changes from the existing EC4T Metering Rules, including the following which we discuss below:

- (a) incorporating the provisions for year-end volume reconciliation and cost reconciliation;
- (b) incorporating the descriptions of the ESTAs;
- (c) modifying the rules change provision, including in respect of the DSLRF and ESTA boundary changes; and
- (d) incorporating provisions relating to discounts on passenger services' modelled rates for regenerative braking.

This approach means that all the multilateral elements pertaining to traction electricity charges are contained in one multilateral document. We consider that this will reduce the administrative burden of the same provisions being in many contract and the process associated with amending them.

- 16.244 The TER will incorporate the provisions for year-end volume reconciliation and cost reconciliation. These are multilateral provisions and therefore are better suited to the multilateral TER than in Schedule 7 of bilateral track access contracts.
- 16.245 Similarly, we confirm that the definition of ESTAs will move from Schedule 7 of each track access contract to the TER. This will provide a much more efficient way to amend ESTAs during control periods (e.g. where electrification takes place), using a change mechanism within the TER.
- 16.246 However, we are aware it has been suggested that changes to ESTAs should instead be treated as a network change under Part G of the Network Code. We consider that, as contractual changes, the process for amending definitions sits better in the TER (along with the ability to amend the DSLF) – not least because ESTA definitions relate primarily to charging, which is a contractual matter. We are discussing this further with industry parties ahead of implementation. At the same time, we are discussing and refining the change mechanism within the TER for changes to ESTA boundaries.
- 16.247 Our presumption will be that major new pieces of electrified infrastructure will be established as one or more new ESTAs for CP5 (with ESTA definitions revisited as part of PR18), unless there are sound engineering or practical reasons to conclude otherwise. We are asking Network Rail to improve its evidence on transmission losses associated with regenerative braking, to inform the setting of the DSLF for any new ESTA created in CP5 and for PR18.
- 16.248 In our April 2013 consultation, we proposed amending the TER so that any decision to amend the AC and DC DSLF for metered operators would be restricted to ORR, and take place as part of an access charges review. We received a wide variety of responses on this point. There was some support, for example from ATOC, for retaining the current or similar change provision (so that in principle the DSLF could be changed through a majority-endorsed proposal). While several respondents supported retaining the same DSLF for the entire control period, others argued strongly for one or more reopeners in various forms.
- 16.249 The calculation of the DSLF is highly complex and requires an impartial examination of the evidence, and we conclude that this is best achieved for existing ESTAs through ORR taking forward such amendments. We will do this in accordance with our existing right to modify the rules (set out in the rules at paragraph 11.21 and following).
- 16.250 In terms of how we will implement this, we have decided that:
- (a) train operators should be prevented from being able to propose amendments to DSLFs, through a restriction in the TER; and
  - (b) Network Rail should not propose amendments to DSLFs established for existing ESTAs through this determination. However, we recognise that with the advent of new ESTAs, it is may be desirable for it to be able to propose DSLFs for new

ESTAs established during CP5 (underpinned by robust evidence) at the same time that it proposes a definition for each ESTA. We are mindful that a contractual prohibition on Network Rail proposing changes to DSLFs may lead to a less efficient process for the establishment of new ESTAs. We are considering the detail of how this process might best work as we finalise the TER ahead of the implementation of PR13.

16.251 For clarity, should we conclude that we should not impose a contractual restriction on Network Rail proposing DSLF changes, we confirm as a principle that if Network Rail were to propose changes to DSLFs for pre-existing ESTAs, we would expect to refuse to consent to these; only ORR should take forward changes to these DSLFs. We consider that this reduces uncertainty (by removing the possibility of a succession of operator or Network Rail-led proposals to change the DSLF in individual or all ESTAs), thereby promoting metered billing. This adds greater certainty compared to the CP4 position, while retaining some flexibility, thus addressing some of the concerns that stakeholders raised.

### ***Regenerative braking discounts***

16.252 In CP4, passenger operators have been able to apply for discounts on their modelled rates in return for using regenerative braking. There were generic provisions in Schedule 7 to provide for this. For CP5, we are changing these arrangements so that the provisions for applying these discounts are included in the TER. The new provisions will make the process much clearer, as well as enabling greater transparency of the discounts that are in place along with the ability for regenerative braking systems to be audited to give assurance that the discounts being claimed are warranted (consistent with Network Rail's February 2013 conclusions). We confirm that the CP4 regenerative braking discounts for modelled operators will be retained for CP5.

16.253 There are currently no equivalent provisions for freight operators and no mainline registered locomotives used for freight services have an enabled regenerative braking capability. As the provisions for regenerative braking discounts will sit within the TER, should it become technically possible and worthwhile to implement regenerative braking for freight services, the industry would be able to propose a change to the TER to enable an appropriate discount factor for freight services to be applied. Otherwise, this is something that could be reviewed at the next periodic review.

### **Volume reconciliation**

16.254 We confirm that metered services will be exempt from the volume wash-up even in ESTAs where more than 90% of consumption is metered. There was broad support for this proposal. We consider that this reform could help to support business cases for OTM. We are making this change in tandem with the allocation to Network Rail of a share of the volume wash-up, noting that this latter change mitigates the risk to

modelled operators of the DSLF being set too low. We also confirm that the TRSM, introduced for CP4 only, will not be continued in CP5.

- 16.255 In CP4, Network Rail's consumption and that of third parties has not been reflected explicitly in the volume reconciliation, though in practice Network Rail has treated such modelled consumption on a consistent basis to other modelled consumption in the reconciliation. We are now contractualising these forms of consumption explicitly in the volume reconciliation provision.
- 16.256 Network Rail has metered much of its own consumption during CP4. But its accountability with respect to its metered consumption is not yet comparable to that of services with OTM billing, even recognising that its consumption is on a smaller scale. We are therefore on an interim basis changing the contractual formulation so that all of Network Rail's consumption is included in the volume wash-up (comparable to modelled services). When provisions have been added to the TER that put Network Rail's metered consumption on an equivalent footing to that of metered services, we will approve its removal from the volume wash-up (reflecting that we have consulted on this basis and received wide support from the industry). We expect that, under Network Rail's leadership, this can be achieved before April 2015 (in time for the 2014-15 volume reconciliation), so that in practice Network Rail's metered consumption is exempted from the volume wash-up for the whole of CP5.
- 16.257 We conclude, however, that entirely independently of its own consumption, Network Rail will have an additional allocation of the volume reconciliation in each ESTA. In particular, the additional allocation will reflect the proportion of costs for which it has control through its management of transmission losses.
- 16.258 This reform is important because it means that we have ceased to treat the transmission losses arising from EC4T consumption associated with operators or third parties as a non-controllable cost, and Network Rail will be financially incentivised for the first time to look to improve the efficiency of these costs. We think that it continues to be appropriate for operators to pay for transmission losses, because these are largely incurred as a result of running trains; but that the risk associated with the size of these losses is shared with Network Rail.
- 16.259 The change also serves to share risk associated with errors in the estimation of transmission losses between modelled services and Network Rail.
- 16.260 This proposal had widespread support from operators in response to our April 2013 consultation. We understand Network Rail's concerns with this reform, particularly around the reduced incentive properties with respect to OTM. However, we consider that these risks are outweighed by the benefits such as increased focus on managing electricity consumption (including that of third parties) and transmission losses, greater certainty for metered operators and mitigated risk for modelled operators.
- 16.261 We take the proportion of costs for which Network Rail has control to be equal to the total estimated level of losses in each ESTA (which is the total consumption, gross of

losses  $\times \text{DSLFL} / \{1 + \text{DSLFL}\}$ ), and we have proposed changes to the volume reconciliation formula that mean that Network Rail's share of the volume reconciliation is approximately this amount when all services are modelled (rising to 100% when all services are metered). This formulation, as a function of the DSLF, would apply for the whole of CP5. This is a pragmatic proposal, reflecting the difficulty in calibrating the incentives in the context where most of the electricity consumed is not metered.

16.262 We note that some operators have argued that Network Rail should have a greater exposure to transmission losses, thereby strengthening its incentives. In ESTAs where most EC4T is metered, Network Rail will gain financially from the reductions in transmission losses that its own actions deliver. Therefore we consider Network Rail to be incentivised effectively in ESTAs with high levels of metering. Even in ESTAs with low levels of metering, Network Rail will be incentivised to conserve electricity where it can readily do so, whereas in CP4 it had no such incentive.

### **Electricity procurement and cost reconciliation**

16.263 We confirm Network Rail's conclusions that freight operators be charged on the basis of actual electricity costs rather than an index, thereby improving the cost-reflectivity of the charge for freight services and bringing them into line with passenger services. Complementary to this, in July 2013 we consulted on contractual wording concerning the process by which Network Rail engages with freight operators in order to prepare its EC4T procurement strategy, mirroring existing wording in the passenger contract. We also sought views from all parties on moving these provisions from bilateral Schedule 7s to the TER. There were no objections to this and we plan to make this change. This will enable the contractual arrangements relating to the procurement strategy process to be amended more easily by the industry, should it be appropriate to do so.

16.264 We also confirm Network Rail's conclusions that the cost reconciliation in the TER be changed to better reflect tariff structure, in particular to reflect the geographical differences of charges<sup>373</sup>.

### **Metered consumption**

16.265 We confirm that we will set the DSLF as part of PR13 by ESTA (differentiating between AC and DC). Network Rail had argued for a single AC DSLF network wide, on the basis that estimates by ESTA were not sufficiently robust for billing purposes. Our understanding is the differences in estimates by ESTA are based on sound engineering rationale (rather than measurement error), and therefore disaggregated rates should inherently be more cost-reflective than a single aggregate rate. We do

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<sup>373</sup> We consulted jointly with Network Rail on the contractual wording to effect these changes on 2 October 2013. This consultation may be accessed at: <http://www.rail-reg.gov.uk/pr13/consultations/implementing-ec4t-cost-reconciliation.php>.



not think that this introduces billing complexity over and above that inherent in electricity prices.

16.266 We confirm that we will approve changes to the TER so that the DSLF is applied with respect to the gross metered consumption, rather than metered consumption net of metered regenerative braking, as it is currently. Our original proposal was widely endorsed in consultation responses. This change in approach better reflects the interaction between regenerated energy and electrical losses.

16.267 We are setting the DSLF on the basis of Network Rail's median estimates in its February 2013 conclusions, as shown in Table 16.28. The definition of ESTAs to which this table applies was set out in Annex B of our April 2013 consultation<sup>374</sup>.

**Table 16.28: ORR approved DSLF, for application from 1 April 2014**

ESTA letters	ORR confirmed DSLF (to be applied on gross metered consumption)
<b>AC system</b>	
D, F	4.89%
A, B, C, E, I, J, N, S	4.23%
G, H, Q, V	3.86%
O, P, R	3.21%
T	3.41%
<b>DC system</b>	
M	11.56%
P, R, T, U	17.01%

Note: the ESTAs are as defined in Annex B of our April 2013 consultation on electricity for traction charges.

### Funding on-train metered billing

16.268 We agree with responses made to our draft determination that argued for a limited rollover of funds to CP5 for the purpose of funding on train metered billing that is already well developed.

16.269 We therefore confirm our support for such funding in the first year of CP5 (to 1 April 2015). We understand that Network Rail is seeking to secure such arrangements with DfT, but these arrangements are not yet finalised. We are keen to avoid a hiatus in operators' progression to meter fitment and billing. Hence, we confirm that Network Rail will have the funding available as part of PR13. This funding will be for completion of on-train metering, for the purpose of billing, for those vehicles for which ATOC / Network Rail have already received expressions of interest from the relevant

<sup>374</sup> We used slightly different definitions in our July 2013 implementation consultation, and Network Rail will be consulting on some changes to the ESTA definitions, notably with respect to ESTA J, which is affected by electrification.



operators, under the current process and governance arrangements, provided that the relevant operator makes the investment within the first year of CP5. This CP5 funding is for up to £5m.

## Modelled consumption

- 16.270 Network Rail consulted on retaining CP4 modelled rates (kWh per vehicle mile or per kgtm) in September 2012, and confirmed its conclusions in Feb 2013. In responses to our draft determination, operators argued for adjustments to the modelled rates to prevent the apparent risk of Network Rail gaining a windfall from our conclusion that it share a proportion of the volume wash-up.
- 16.271 We know that the modelled rates are a highly imperfect proxy for electricity consumption, not only because the year-end wash-up for individual ESTAs with unmetered services can be large, but also because the size of the wash-up can vary substantially, as a proportion of total consumption, year by year. For example, between 2009-10 and 2012-13, the wash-up in ESTAs with negligible metered billing has varied from -12.0% to -4.6% (ESTAA) to -15.8% to -8.5% (ESTA U, the DC ESTA) and 0.4% to -6.0% (ESTA M). ESTAs with a high proportion of metered billing have seen larger fluctuations in the wash-up, in part reflecting errors in the setting of the DSLF which our determination should address.
- 16.272 That metered billing addresses this issue is one of its key advantages. However, we are content with Network Rail's conclusion, supported by operators at the time they were consulted on this, not to change the modelled rates: we think that the focus of analytical work should be on enabling metered billing and improving its cost reflectivity.
- 16.273 Operators have argued that the modelled rates are shown to be wrong, on the basis of the size of recent volume wash-ups, and would result in a windfall gain to Network Rail.
- 16.274 Although it is clear that the modelled rates are inaccurate, and too high overall, it is less clear how they could be improved through a simple adjustment, not only because the wash-up is highly volatile but because the substantial programme of metering that is now ongoing means that the average error associated with modelled rates may well change significantly during CP5, not least as a result of PFM. For example, while recognising that there are a number of reasons whereby operators opt-in particular fleets for metered billing, we would expect operators to prioritise those fleets that are over-charged using modelled rates for metered billing, while not opting-in those fleets that are undercharged using modelled rates for metered billing.
- 16.275 We have undertaken analysis to test the financial impact of these changes on Network Rail and on operators. Aside from changes in behaviour to increase energy efficiency prompted by changes to incentives, the financial impact for Network Rail will take the form of:

- (a) errors in modelled rates. In particular if modelled rates are too high, and they are not offset by other effects, there will be windfall gains for Network Rail because it will share the volume reconciliation; and
- (b) errors in the estimation of DSLF. In particular, if the DSLF for a particular ESTA is too low, and they are not offset by other effects, there will be windfall losses for Network Rail and modelled services.

16.276 While the estimation of DSLF is much improved relative to the time when the EC4T Metering Rules were established, considerable uncertainty in their estimation remains. When setting the DSLF, we think it is important to be deliberately conservative within the range of uncertainty (i.e. setting the DSLF at the lower end of the possible range), because to do otherwise would risk disincentivising metering and in our view be perverse.

16.277 A consequence of exempting metered services from the volume reconciliation is that there are associated financial risks for Network Rail and modelled services. These risks are accentuated as metered billing increases, as we expect to be the case in ESTA U where the potential error associated with the DSLF is particularly high (because transmission losses in DC ESTAs are less well understood).

16.278 Overall, our assessment is that the financial impact for Network Rail may potentially be positive or negative (and hence a windfall for Network Rail or operators respectively). We outline potential impacts for DC and AC below.

16.279 For DC ESTA U, under current levels of metering, operators could see an increase in their EC4T bill of up to 1.3% as a result of sharing the volume wash-up with Network Rail (around £1.2m in 2014-15). When the committed programmes of metering billing are taken into account, however, this change may result in a decrease (or increase) in EC4T bills (as the wash-up may become negative as a result of, for example, under estimating the DSLF).

16.280 In AC ESTAs with negligible metering occurring during CP5, Network Rail sharing the volume wash-up would result in on average a 0.3% increase in the EC4T bill for modelled operators (calculated by taking the product of 3%, Network Rail's approximate share of the wash-up, and 10%, the size of the wash-up). For ESTAs with a high level of metering, statistically we would expect the volume wash-up to be close to zero, but negative, with a small associated cost to Network Rail.

16.281 For modelled operators, the risk associated with the DSLF being set too low is mitigated first by their ability to opt in for metered billing, and second through sharing the volume wash-up with Network Rail.

16.282 On this basis, we confirm that we are content with Network Rail's conclusion to retain the CP4 modelled rates into CP5.

### **Partial fleet metering (PFM)**

16.283 We then needed to consider the issue of partial fleet metering.

- 16.284 The industry has investigated some of the implications of metering only a sample of a train fleet with the aim of reducing the costs associated with OTM. Under this system, the consumption from the services that were not metered would be billed by an equivalent amount to those metered. We refer to this proposed system of billing as partial fleet metering (PFM).
- 16.285 We have asked the industry to devise the contractual framework for PFM, and are pleased that some progress has been made. But we will still have to approve the contractual framework, and as part of that approval, we will approve a share of the volume reconciliation (wash-up) for PFM within the TER.
- 16.286 In our April 2013 consultation we set out a particular formulation that would meet these criteria. The formulation took the form of a share of the volume reconciliation as a function of the proportion of the fleet that were metered. We said that we would be open to considering other formulations. ATOC in its response stated that it endorsed the conclusion from analysis of metered data undertaken by Birmingham University that 30% fleet metering should be seen as the level necessary to achieve a reasonable degree of accuracy for energy usage (this was an ATOC-commissioned study shared with the industry on the statistical validity of partial fleet metering). It said that incentives should be built around achieving this level of PFM.
- 16.287 In response to our draft determination, some operators argued that the industry should propose how partially metered fleet should share the wash-up. We are content with this proposal.
- 16.288 We recognise that PFM should be a substantial improvement on current modelled rates. It is also less accurate and may have weaker incentives towards energy efficiency than metered billing. Reflecting this, we are concluding that:
- (a) PFM at a level that produces an estimate to a high level of accuracy should have substantially reduced exposure to the volume wash-up; and
  - (b) the incentives to meter all services (for example for new rolling stock) should not be undermined, and therefore full metering should have less exposure to the volume wash-up than PFM.
- 16.289 We agree that it makes sense to consider incentives with respect to 30% fleet metering (though, perhaps because of differences in the heterogeneity and scale of services, that may not be an appropriate level of fleet metering in all cases). In our April 2013 proposed formulation, with 30% of the fleet metered, the share of the wash-up would be 24% of that which it would be for equivalent wholly modelled services (i.e. a service with no meters). We confirm that we think that this achieves the right balance of reduced risk exposure for 30% fleet metering. We are not concluding on a particular formula, by which we mean how the share of the wash-up should vary as the proportion of the proportion of fleet metered, as part of PR13.

16.290 Consistent with this, and to give the industry greater certainty in development of PFM, we conclude that the share of the wash-up in the case where 30% of the sample is metered would be at most 24% of that which it would be for equivalent wholly modelled services.

## Electrification asset usage charge

16.291 The electrification asset usage charge (EAUC) recovers the maintenance and renewal costs of electrification assets that vary with traffic. It is a separate charge to that of the VUC because it is only levied on services using electricity for traction.

16.292 Network Rail's electrification assets comprise the AC and DC overhead lines and the DC conductor rail (third rail) systems supported by additional distribution infrastructure. These assets are used by trains to draw traction electricity.

### EAUC in CP4

16.293 In CP4 there have been four EAUCs: DC and AC for each of passenger and freight. The charge has been levied per electrified vehicle mile for passenger traffic and per electrified kgm for freight traffic, reflecting the fact that there is a stronger relationship between electrification costs and vehicle mileage rather than with the amount of traction electricity used.

### Calculating the charge in CP5

16.294 Network Rail issued a consultation on its proposals for the EAUC in September 2012<sup>375</sup>, and then concluded, including in relation to price lists, in February 2013<sup>376</sup>. These price lists were consistent with those assumed in its SBP. The SBP and consultation explained Network Rail's methodology for calculating the charge and the former provided data on total EAUC income in CP5.

16.295 Network Rail's SBP outlined that the EAUC income forecast was based on:

- (a) EAUC cost estimates for AC and DC electrified assets; and
- (b) forecast electrified vehicle kilometres for passenger and electrified kgm for freight by AC and DC.

16.296 The SBP further explained that variable maintenance and renewals costs associated with electrification assets were forecast by Network Rail's engineering teams. Network Rail then calculated the electrification asset usage rates by dividing the cost estimates

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<sup>375</sup> *Periodic Review 2013: Network Rail consultation on traction electricity & electrification asset usage charges in CP5*, Network Rail, September 2012. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064783482>.

<sup>376</sup> *Periodic Review 2013: Traction Electricity and Electrification Asset Usage Charges in CP5 – Conclusions of Network Rail's Consultation*, Network Rail, February 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064784907>.

by forecast electrified traffic for the base year 2014-15. These rates were multiplied by the corresponding electrified traffic forecasts for each year of CP5.

16.297 In its SBP, Network Rail forecast higher EAUCs in CP5 compared to CP4 because of:

- (a) a longer run approach to estimating costs which meant basing cost estimates on a 35 year average rather than a five year average, consistent with the methodology used for the VUC. This approach smoothed out renewal costs that would otherwise potentially fluctuate markedly due to the age and condition of the electrification equipment;
- (b) updating variability assumptions, including a much more granular approach to assessing costs, which resulted in a marked increase in the estimated maintenance and renewal costs that vary with traffic; and
- (c) increasing unit cost rates due to, for example, higher metal prices.

16.298 We reviewed and challenged the basis of Network Rail's SBP cost estimates and asked Network Rail to make changes to its methodology following concerns we had about the calculations. In particular:

- (a) we identified a number of inconsistencies, both in the total expenditure and in the way the renewals expenditure was allocated, between the EAUC model and other models Network Rail used to support the SBP;
- (b) we had concerns about how total AC maintenance costs were calculated, particularly on the approach taken to OLE maintenance and changes in utilisation;
- (c) Network Rail calculated the costs over 35 years, as an average. In its consultation it divided these costs by forecast 2014-15 traffic to derive the EAUC. In its conclusions it instead divided by forecast CP5 average traffic to derive the EAUC. However, as the cost estimates were 35 year average, we were concerned by this inconsistency. We asked Network Rail to calculate the EAUC using average forecast traffic over 35 years instead; and
- (d) we noted additional computational errors related to, for example, the way in which Network Rail converted miles to km.

16.299 We also appointed the independent reporter AMCL to review Network Rail's methodology<sup>377</sup>. The reporter made a number of technical recommendations following its review. We asked Network Rail to update its work to take account of our concerns and the reporter's recommendations.

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<sup>377</sup> *Asset Management Consulting Limited (AMCL) (2013), Assessment of EAU charge proposals: PR13 review*, June 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

16.300 Given that the methodology for calculating the EAUC changed significantly subsequent to its February 2013 conclusions, Network Rail issued an addendum to its conclusions in May 2013<sup>378</sup>.

## Draft determination

16.301 Following Network Rail's re-submission. Table 16.29 shows our draft determination of the EAUC for CP5, including an adjustment for efficiency, as set out in the relevant section of this chapter.

**Table 16.29: Comparison of EAUC in CP4, Network Rail's SBP, Network Rail's May 2013 update and our draft determination for CP5**

(2012-13 prices)	Passenger		Freight	
	DC (third rail) Pence per electrified vehicle mile	AC (OLE) Pence per electrified vehicle mile	DC (third rail) £ per kgm	AC (OLE) £ per kgm
CP4	0.47	1.12	0.063	0.118
CP5 Network Rail SBP	2.08	1.96	0.230	0.366
CP5 Network Rail May 2013 update	0.77	1.74	0.053	0.266
ORR draft determination	0.72	1.62	0.050	0.248

## Consultation responses

16.302 We did not receive responses to the draft determination that were specific to the EAUC.

## Final determination

16.303 Table 16.30 shows our determination of the EAUC for passenger and freight operators. There are changes in the rates between the draft determination and final determination that are too small to show in the table. These are a consequence of small changes to our CP5 efficiency assumptions, and are not due to changes in the underlying estimates of costs directly incurred. The charges shown are our estimates, accurate to the number of decimal places shown: Network Rail will publish actual charges, to a greater number of decimal places, in its price lists.

<sup>378</sup> *Periodic Review 2013: Electrification asset usage charges in CP5 – addendum to Network Rail's conclusions*, Network Rail, May 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064786321>.



16.304 During this process we have established that there is an important difference in the definition of electrified miles between passenger and freight vehicles. In particular:

- (a) for passenger vehicles using EC4T, the EAUC is levied per electrified vehicle mile for each vehicle on the train (e.g. locomotive, carriage or multiple unit); whereas
- (b) for freight vehicles using EC4T, the EAUC is only levied (per kgm) on the electrified locomotives.

16.305 We have satisfied ourselves that this discrepancy does not result in incorrect charges, because the measurement of electrified vehicle miles and electrified kgm has been consistently applied in the estimation of the EAUC. We think that this discrepancy is confusing, however, and there is therefore a risk that the charge may be incorrectly applied in the future, which is why we are explaining the difference here.

**Table 16.30: Our determination of EAUC prices for CP5**

(2012-13 prices)	Passenger		Freight	
	DC (third rail) Pence per electrified vehicle mile	AC (OLE) Pence per electrified vehicle mile	DC (third rail) £ per electrified kgm	AC (OLE) £ per electrified kgm
Draft determination	0.72	1.62	0.050	0.248
Final determination	0.72	1.62	0.050	0.248

16.306 Table 16.31 shows our determination of EAUC income for CP5. The forecast for passenger traffic is higher than that for our draft determination, due to a correction in the traffic forecast. The forecast is marginally lower for freight due to the lower EAUC.

16.307 We set out the process for auditing this and other income forecasts above. The EAUC for charter operators is shown further below.

**Table 16.31: Our forecast of EAUC income for CP5 (with growth in traffic)**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>							
Franchised passenger	8.2	13.4	13.7	13.9	15.0	17.1	73.1
Freight	0.3	0.7	0.7	0.8	0.8	0.9	3.9
<b>England &amp; Wales</b>							
Franchised passenger	7.9	12.4	12.6	12.7	13.7	15.7	67.0
Freight	0.3	0.6	0.7	0.7	0.8	0.8	3.6



£m (2012-13 prices)	2013-14 (CP4)	2014- 15	2015- 16	2016- 17	2017- 18	2018- 19	Total CP5
<b>Scotland</b>							
Franchised passenger	0.3	1.0	1.1	1.1	1.3	1.4	6.0
Freight	0.0	0.1	0.1	0.1	0.1	0.1	0.3

Note: numbers may not reconcile due to rounding.

## Coal spillage charge

16.308 The coal spillage charge and coal spillage reduction investment charge (CSRIC) were introduced as part of PR08. Prior to CP4, these costs were recovered through a 20% uplift on the VUC for vehicles transporting coal. The charges have been levied on freight operators carrying coal and were designed to:

- (a) reflect the cost to Network Rail of spilt coal on the network; and
- (b) incentivise freight operators, the coal industry and supply chain to reduce the level of coal spillage on the network.

16.309 The costs attributed to coal spillage consist of the clean-up and delay costs of point failures, clean-up to reduce the frequency of points failures and the reduced service life for track affected.

16.310 Currently spillage is not a material problem for other commodities and so there are no analogous charges. We consider it is appropriate to levy a distinct charge for coal spillage, rather than incorporate it in the VUC, so that there is greater transparency regarding this industry cost.

### Charges for coal spillage in CP4

16.311 In CP4 the coal spillage charge recovered costs associated with coal spillage on the network, whereas the CSRIC revenue was used to fund investment in equipment at coal terminals to reduce such coal spillage.

16.312 For CP4, we incorporated an annual review mechanism into track access contracts for both the coal spillage charge and the CSRIC. The purpose of this review mechanism was to incentivise operators more effectively to reduce coal spillage. This mechanism adjusted the coal spillage charge annually in proportion to the number of points failures in the preceding year where coal spillage was recorded as being a contributory factor to the failure (“relevant points failures”). This is set out in Table 16.32.

16.313 Although the number of relevant points failures fell sharply in the first two years of CP4, thus reducing the charge for 2010-11 and 2011-12, in the third year a substantial increase was recorded. In the fourth year the number was broadly stable so the coal spillage charge for year five was the same as for year four with the RPI uplift for all charges. These trends in points failures have broadly tracked coal traffic volumes.

**Table 16.32: Coal spillage charges for each year of CP4 (2012-13 prices)**

Year	Relevant points failures <sup>379</sup>	Coal spillage charge (p/kgtm)	Coal spillage reduction investment charge (p/kgtm)	Combined charges (p/kgtm)
2009-10	203	29.06	2.75	31.81
2010-11	154	22.05	2.75	24.80
2011-12	150	21.47	-	21.47
2012-13	231	25.27	-	25.27
2013-14	224	25.27	-	25.27

16.314 The CSIRC was discontinued from April 2011 on the basis that surplus unspent funds had accrued, at that point, as a result of the charge.

## Network Rail's calculation of the charges in PR13

### Coal spillage charge

16.315 The coal spillage charge methodology was originally derived from a detailed assessment conducted by the independent reporter Halcrow as part of PR08. Network Rail consulted on its proposed coal spillage cost estimates in December 2012. In its consultation, it proposed retaining much of the PR08 methodology for estimating coal spillage costs.

16.316 Network Rail's consultation document detailed the methodology used to estimate the impact of coal spillage and the assumptions used to estimate each cost category and subsequent coal spillage charge. The cost categories it used are shown in Table 16.33.

**Table 16.33: Coal spillage cost categories and metrics**

Cost category	Metrics applied to calculate costs
Preventative intervention to reduce the frequency of points failures from coal spillage	Frequency of CP4 interventions; deployment costs
Clean-up costs associated with points failures	Relevant points failures recorded in CP4
Delays due to points failures (Schedule 8 performance regime costs)	Relevant delay costs in CP4
The costs associated with the reduced service life of plain line track	Length of affected track miles taken from Halcrow recommendations and adjusted in the conclusions to take account of investment
The costs associated with the reduced service life of point ends	Number of affected point ends calculated based on affected track miles per loading and unloading site

<sup>379</sup> Based on the recorded number of relevant points failures from the previous financial year, except for 2009-10 where it was based on the number of recorded points failures occurring in 2007-08.

16.317 In its December 2012 consultation, Network Rail's estimates of coal spillage costs were substantially higher than those that we determined in PR08. This was principally due to:

- (a) the list of coal loading/unloading locations in PR08 appearing to have been substantially incomplete. Freight operators were consulted on the list of locations in PR13 (as they were for PR08), which had increased from 23 in PR08 to 38 in PR13. This substantially increases the estimate of coal spillage costs associated with reduced track service life; and
- (b) some costs relating to preventative clean-up were omitted in PR08. The PR08 estimate did not include the costs associated with manual interventions to clean coal spillage off the network. Network Rail's PR13 estimates included these costs, and also the costs of Tube Cube<sup>380</sup>, reflecting CP4 experience.

16.318 Freight operators and the Rail Freight Group (RFG) were concerned that the coal spillage charge on which Network Rail had consulted had increased considerably since PR08, despite investment undertaken during CP4 to reduce coal spillage on the network.

16.319 Operators also argued that Network Rail had provided insufficient evidence to support its cost estimates and assumptions, and that they were disappointed in the lack of progress made in understanding the costs associated with coal spillage.

16.320 We commissioned the independent reporter Arup to review Network Rail's methodology and estimates. The reporter made a number of points including:

- (a) confirmation, with photographic evidence, that coal spillage remained a significant issue on the network, despite the investment in CP4;
- (b) a detailed review of the evidence and data available, and recommendations to improve recording of coal spillage incidents;
- (c) support for Network Rail's proposal to include the new preventative clean-up categories in Network Rail's cost estimates; and
- (d) recommendations regarding increasing the efficiency of the deployment of some clean-up interventions.

16.321 The reporter also investigated the impact of investment on coal spillage. During CP4, coal wagon rave cleaners had been installed at 7 out of 38 coal loading and unloading locations. The cleaners were designed to brush coal off the raves of wagons, reducing coal spillage onto the network outside the terminals. Network Rail's methodology did not directly take the impact of this investment into account, and hence the reporter considered that these costs were overstated. The reporter recommended certain changes to the methodology which had the result of reducing

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<sup>380</sup> A road-rail vehicle attachment for cleaning ballast, introduced in CP4.

the estimated impact of coal spillage on track service life by 75% at locations fitted with coal wagon rake cleaners, and banded the costs associated with different point ends depending on their traffic levels.

- 16.322 Network Rail accepted the changes proposed by the reporter and made other changes to take account of consultation responses. It published updated coal spillage charge estimates in its April 2013 conclusion document. The net effect of these revised estimates was a reduction in the coal spillage charge from 64.97 pence per kgm, as proposed in Network Rail's consultation document, to 52.78 pence per kgm (2012-13 prices).
- 16.323 However, following the reporter review, a stakeholder argued that Network Rail's methodology for estimating track renewal costs at point ends contained substantial double counting of track costs. In May 2013 Network Rail revisited its estimates to address these concerns. Network Rail revised the affected mileages associated with each coal loading and unloading location and in some cases proposed a reduction in track mileage affected by coal spillage to reflect this double counting issue. This amendment reduced Network Rail's estimate of the coal spillage charge further to 43.13 pence per kgm. This compares to a charge of 31.81 pence per kgm in CP4.
- 16.324 Table 16.34 shows the coal spillage cost estimates of PR08, Network Rail's consultation and its conclusions. All costs are shown at end of CP5 efficiency, which, as explained in the discussion on the efficiency overlay, was the basis of the charge for CP4, and will also be for CP5.

**Table 16.34: Coal spillage costs and charges**

Cost category	PR08	Network Rail December 2012 consultation	Network Rail May 2013 updated conclusions
<b>Coal spillage costs (£m a year, 2012-13 prices)</b>			
Cost of clean-up and delay minutes	0.21	0.11	0.11
Preventative intervention to reduce the frequency of points failures from coal spillage (Cost of Rail Vac & Tube Cube & Manual interventions on points failures)	0.57	1.58	1.14
Cost of point end service life reductions	1.03	1.79	0.99
Cost of Plain Line service life reductions	1.08	1.46	1.04
<b>Total</b>	<b>2.88</b>	<b>4.95</b>	<b>3.28</b>
<b>Coal spillage charges (pence per kgm, 2012-13 prices)</b>			
Coal spillage charge	29.06	64.97	43.12
CSRIC	2.75	-	-
<b>Total coal spillage charges</b>	<b>31.81</b>	<b>64.97</b>	<b>43.13</b>

Note: numbers may not reconcile due to rounding.

## CSRIC and the annual review mechanism

- 16.325 In its April 2013 conclusions, Network Rail concluded that it would discontinue the CSRIC in CP5, subject to our approval. It did this on the basis that there were surplus funds available from the CP4 charges for future investment, and that cleaning equipment had already been installed at the busiest coal loading locations (e.g. Port of Immingham). The majority of respondents to Network Rail's consultation agreed with this change.
- 16.326 Network Rail also argued for the removal of the annual review mechanism of the coal spillage charge for CP5, on the basis that it was flawed and imposed a disproportionate administrative burden on the industry. A number of respondents disagreed with Network Rail's proposal, suggesting that it would remove an important incentive for operators to implement measures aimed at reducing coal spillage on the network.

## Our draft determination

- 16.327 We proposed to accept Network Rail's revised May 2013 methodology for estimating the coal spillage charge, and its associated estimates, subject to adjustment to reflect our determination of Network Rail's efficiency. We agreed to remove the annual review mechanism with respect to the CSC.
- 16.328 We did however express concern, about what appears to be missed opportunities to record incidents of coal spillage, and in our draft determination we asked Network Rail to improve its records of such incidents in CP5.
- 16.329 We agreed with Network Rail's conclusion to roll any remaining CSRIC funds into CP5, and to suspend the CSIRC during CP5. As with the annual review mechanism, we committed to revisiting this decision in the next access charges review, recognising that both mechanisms provide incentives to reduce costs of coal spillage.
- 16.330 In July 2013, Network Rail published draft price lists for the coal spillage charge consistent with our draft determination<sup>381</sup>. Accepting Network Rail's revised methodology as concluded in May 2013 resulted in the coal spillage charge increasing from 0.2448 to 0.3925 pound per thousand gross tonne miles including our end of CP5 efficiency assumptions.

## Consultation responses

- 16.331 Network Rail responded to our consultation acknowledging the benefits of improving the recording of incidents of coal spillage and committed to looking at potential ways of improving this during CP5.

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<sup>381</sup> *Cover note for draft price list for CP5 consistent with ORR's draft determination*, Network Rail, July 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064786915>.

16.332 The points raised by other respondents were largely the same as those raised prior to publication of our draft determination. Specifically, a number of stakeholders had argued strongly that the methodology was subjective and insufficiently evidence-based. There was also concern raised that this increase in charge will not incentivise any further investment in reducing coal spillage.

## **Our determination of coal spillage charges**

### **Coal spillage charge**

16.333 The coal spillage charge is set to reflect the costs of spilt coal on the network. It allows Network Rail to recover these costs and incentivises the coal supply chain, including freight operators, to reduce the level of coal spillage. We continue to think it appropriate to have a separate charge for this cost item, as the associated transparency should help incentivise the coal industry to reduce these costs, reduce its impact on the network, improving efficiency and the service received by users.

16.334 After careful consideration of the responses to our consultation we have decided to implement Network Rail's methodology as set out in May 2013<sup>382</sup> for estimating the coal spillage charge. This will mean that much of the methodology used in PR08 for calculating coal spillage costs will remain, with refinements suggested by Arup.

16.335 The coal spillage charge for CP5 will therefore be around £0.39 per kg<sub>tm</sub>. Our estimate uses Network Rail's May 2013 coal spillage charge which we have adjusted to account for our determination of Network Rail's efficiency, as set out in the relevant section of this chapter. Network Rail will publish the actual rate, to a greater number of decimal places, as part of its price lists. The CP5 rate compares to Network Rail's December 2013 consultation estimate of £0.65, PR08 determined coal spillage charges of £0.32, and coal spillage charge in 2012-13 (adjusted under the annual review mechanism) of £0.24.

16.336 Whilst we acknowledged concerns around this methodology, this methodology was established by the reporter Halcrow in PR08 and was based on a detailed assessment of the incidence of coal spillage on track in relation to loading and unloading points. In PR13 the reporter used expert judgement to recommend changes to this approach to take account of investment in rake cleaners and to reflect the fact that the investment has tended to occur on busier routes. While we recognise that more detailed empirical research may increase the accuracy of these estimates, we consider the work conducted in both PR08 and PR13 to be proportionate to the scale of the charge.

16.337 As expressed in our draft determination, we are however concerned about what appears to be missed opportunities to record incidents of coal spillage. We agree with

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<sup>382</sup> *Periodic Review 2013 – Conclusions on the Coal Spillage Charge and Coal Spillage Reduction Investment Charge*, Network Rail, April 2013. This may be accessed at <http://www.networkrail.co.uk/CSC-and-CSRIC-conclusions.pdf>.



the reporter's observation that in CP4 there was little systematic recording of evidence relating to volumes of work and costs directly attributable to coal spillage. We support its recommendation that steps be put in place by Network Rail to improve recording of such evidence during CP5 to ensure a more robust evidence base in the future.

16.338 Table 16.35 presents our forecast of coal spillage charge income for CP5.

**Table 16.35: Our forecast of the coal spillage charge income for CP5 (with growth in traffic)**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>							
Coal spillage charge income	1.9	3.0	3.0	3.0	3.0	3.0	15.0
<b>England &amp; Wales</b>							
Coal spillage charge income	1.5	2.4	2.4	2.4	2.4	2.4	11.8
<b>Scotland</b>							
Coal spillage charge income	0.4	0.6	0.6	0.6	0.6	0.6	3.2

Note: numbers may not reconcile due to rounding.

16.339 Coal spillage charge income is almost identical to what we proposed in our draft determination with the only change being that the totals for England & Wales and Great Britain as a whole increase by £0.1m over the whole of CP5. This change is due to overall adjustments to our efficiency assumptions.

### CSRIC and the annual review mechanism

16.340 Network Rail has argued for the removal of the annual review mechanism and the removal of the CSRIC in CP5. We have reviewed its reasoning and that of respondents to its consultation carefully.

16.341 We are concerned in general to reduce administrative burden associated with contractual mechanisms and with this in mind we agree with Network Rail that the CP4 annual review mechanism imposed disproportionate administrative costs to the industry, and have concluded on that basis to remove the mechanism for CP5. We plan to revisit this decision in the next access charges review (PR18), with a view to introducing an equivalent mechanism that takes account of traffic volumes and that is less administratively burdensome if we consider investment in cost-effective mechanisms to reduce coal spillage during CP5 has been insufficient.

16.342 We agree with Network Rail's conclusion to roll any remaining CSRIC funds into CP5, and to suspend the CSIRC during CP5. As with the annual review mechanism, we will



revisit this decision in the next access charges review, recognising that both mechanisms provide incentives to reduce costs of coal spillage.

## Freight only line charge

16.343 The freight only line (FOL) charge was introduced as part of PR08. It was calculated to recover the fixed costs of FOL for the commodities on which it is levied<sup>383</sup>. In legal terms, it represents a mark-up on charges for costs directly incurred on those market segments which we determine to be subject to the charge. Coal for the electricity supply industry (ESI) and spent nuclear fuel are the two commodities that have paid a FOL charge in CP4.

16.344 In PR13, we have consulted on another mark-up, the FSC which we describe in the next section. We consulted on the basis that the FSC would recover all costs that Network Rail could avoid if freight services did not use its infrastructure, which we referred to as freight avoidable costs. In principle the FSC and FOL charge could be treated as a single charge. For reasons of transparency, during the phasing in of the FSC, we agree with Network Rail's conclusion that they should be kept as separate charges for CP5, but we will revisit this at PR18.

16.345 In CP4 the FOL charge has been levied as a flat rate, by commodity, per kgm on all ESI coal and spent nuclear traffic irrespective of its location on Network Rail's infrastructure: even though the costs relate to FOL only, the charge has applied nationwide<sup>384</sup>.

## Network Rail's consultation on freight caps (including FOL)

16.346 As part of its November 2011 consultation on freight caps, Network Rail presented its initial estimates of FOL costs<sup>385</sup>, to be used as the basis for calculating the FOL charge in CP5. Network Rail estimated the total cost to be recovered for ESI coal and spent nuclear fuel FOL using broadly the same methodology as that which it developed in PR08. Network Rail based its FOL costs estimates on these two commodities because at the time of its November 2011 consultation these were the only commodities we had assessed as being subject to a FOL charge. To estimate FOL costs, Network Rail:

- (a) prepared a list of FOLs;

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<sup>383</sup> For the purpose of this charge, Network Rail defines freight only lines as being lines that would close if freight services ceased to operate. They include segments of branch lines used only by freight traffic and terminal lines.

<sup>384</sup> With the exception of the year-end reconciliation of EC4T costs and volumes, all variable charges in CP4 were levied nationwide; principally the rationale for this was to mitigate the complexity of billing.

<sup>385</sup> Network Rail letter of 29 November 2011, *Freight caps – consultation on variable use charge (VUC) and freight only line charge initial cost estimates*. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064779042&cd=2>.

- (b) estimated the total cost of these lines using Network Rail's infrastructure cost model (ICM);
- (c) apportioned the costs to each commodity in proportion to the gross tonne miles transported on the FOL by that commodity; and
- (d) deducted variable usage costs associated with traffic on the FOL, on the basis that these would be recovered through the VUC.

16.347 We mandated the reporter Arup to review the calculations that Network Rail presented in its freight caps consultation, including that of the FOLs. Arup's report is published on our website<sup>386</sup>. Network Rail took the findings into account in its March 2012 conclusions.

16.348 Network Rail's March 2012 conclusions on FOL costs were presented in 2011-12 prices and end of CP4 efficiency, whereas the numbers in this chapter are presented in 2012-13 prices and end of CP5 efficiency, so are not directly comparable.

### **Estimating freight avoidable costs**

16.349 In May 2012 we consulted on introducing a new charge that we called a FSC (as well as consulting on setting a cap on the average freight VUC). This charge would recover what we referred to as freight avoidable costs that were not recovered from other charges. As part of this work, we reviewed Network Rail's estimates for FOL costs, taking account of the independent reporter's review, and said that we were broadly content with Network Rail's approach and estimates of FOL costs.

16.350 As part of the work on the FSC, Network Rail commissioned consultants L.E.K to estimate freight avoidable costs. L.E.K's report was published by Network Rail in October 2012, and included refined estimates of costs for FOLs<sup>387</sup>. Network Rail used L.E.K's refined estimates in its forecasts of income from the FOL charge in its SBP.

### **Calculating and phasing in changes to the FOL charge**

16.351 In January 2013 we concluded on our consultation on the FSC and a cap on the VUC. As part of this, we concluded on a cap on a FSC. On the basis of a detailed assessment of the markets for different commodities, we concluded that the mark-up would apply to ESI coal, spent nuclear fuel and iron ore. We also announced that we would consult on an equivalent charge for biomass, and went on to do so in February 2013.

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<sup>386</sup> AO/027: *Review of Analysis in Network Rail's 'Freight Cap' Consultation*, Arup, March 2012. This may be accessed at <http://www.rail-reg.gov.uk/upload/pdf/review-analysis-nrs-freight-cap-consultation.pdf>.

<sup>387</sup> *Estimating Freight Avoidable Costs Final Report*, L.E.K., October 2012. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064784085>.

- 16.352 Network Rail issued a consultation in February 2013<sup>388</sup> with the purpose of updating its charging calculations to take account of our January 2013 conclusions.
- 16.353 The cost estimates took account of L.E.K's refinements (which had already been used in the SBP income forecasts), but Network Rail also stated its intention to update the cost estimates for some further changes that followed the SBP, and had commissioned L.E.K to undertake an update of its freight avoidable cost estimates.
- 16.354 Network Rail presented the FOL charges, as opposed to estimates of total FOL costs, for the first time. Network Rail calculated these by dividing its cost estimates by its forecast of average CP5 traffic levels for the relevant traffic.
- 16.355 Network Rail highlighted an error in the PR08 calculation of the FOL charge for spent nuclear fuel, resulting from incorrect assumptions it had made regarding traffic levels in CP4. Correcting this error, Network Rail calculated that the CP5 FOL charge should be around seven to eight times higher than the CP4 charge of £5.34 per kgm.
- 16.356 To give the nuclear industry time to adjust to such a significant increase, Network Rail proposed phasing in the increase in the charge for spent nuclear fuel in line with its proposal for phasing in the FSC, no increase for the first two years of CP5, and then with the charge rate increasing to 20%, 60% and 100% of the full charge rate over the last three years of CP5.
- 16.357 In its consultation, Network Rail proposed to phase in the FOL charge for iron ore and potentially biomass over the same time frame and using the same profile as for the FSC, i.e. the charge would be introduced in April 2016 for the last three years of CP5 (2016-17 to 2018-19), with the charge increasing to 20% of the full charge rate, to 60% and 100% respectively. Network Rail published its conclusions to its February consultation in April 2013<sup>389</sup>.

## **Our draft determination and Network Rail's price list**

- 16.358 Network Rail's methodology for calculating FOL costs was established in PR08, and subject to independent reporter review in 2012. In our draft determination we said we were content with this approach. We were satisfied with the way Network Rail had used its CP5 freight forecast to calculate freight only line charge rates. We used Network Rail's revised April 2013 estimate as the basis of our determination of forecast income for this charge.

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<sup>388</sup> Network Rail letter of 8 February 2013, *Network Rail consultation on the phasing in of the freight-specific charge, applying the variable usage charge cap, updating our estimate of freight avoidable costs and updating / phasing in the freight-only line charge*. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064784848>.

<sup>389</sup> Network Rail letter of 23 April 2013, *Network Rail conclusion letter on the 'phasing-in' profile of the freight-specific charge, applying the variable usage charge cap, updating our estimate of freight avoidable costs and updating / phasing in the freight-only line charge*. This may be accessed at <http://www.networkrail.co.uk/Conclusions-on-the-phasing-of-freight-specific-charge.pdf>

16.359 In our draft determination we stated it was appropriate that Network Rail increase the charge rate for spent nuclear fuel to correct a significant error in the rate set at CP4 and that given the scale of the increase it should be phased in over CP5.

16.360 Following our decision not to levy a FSC on biomass we decided not to levy a FOL charge on biomass.

### Network Rail's draft FOL price list

16.361 In July 2013, Network Rail published its draft freight only line price list taking account of our draft determination<sup>390</sup>. These charges are summarised in Table 16.28.

**Table 16.28 Network Rail's draft freight only line prices**

Commodity (£ per kgm, 2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19
ESI Coal	0.51	0.51	0.51	0.51	0.51
Spent nuclear fuel	5.34	5.34	5.51	16.53	27.54
Iron ore	0.00	0.00	0.16	0.50	0.83

16.362 Network Rail converted FOL costs into prices by dividing these costs by forecast relevant traffic for CP5. We had been concerned that the costs and traffic levels might have been calculated on an inconsistent basis, leading to a distortion in the charge, but have now satisfied ourselves that this is not a material consideration. In particular, Network Rail's cost estimates were based on FOL traffic at a particular point in time (start of CP5), whereas its traffic forecast is the CP5 average. As the forecast Network Rail used for CP5 traffic (the SBP forecast) has been flat, however, this is not material.

### Responses to our draft determination

16.363 We did not receive responses to the draft determination with respect to the FOL charge.

### Our determination of the freight only line charge

16.364 The FOL charge will continue to be levied on ESI coal and spent nuclear fuel traffic in CP5. In addition it will be levied on iron ore traffic. For each year, the charge will be flat rate per kgm, irrespective of the location of the traffic on the GB rail network.

16.365 It is regrettable that the correct traffic levels for spent nuclear fuel were not applied in PR08 to calculate the appropriate charge, resulting in a substantial error in the scale of the CP4 charge. We think it is appropriate to correct the error now, in order to ensure that the charges send the correct signals to Network Rail and to those hauling spent nuclear fuel.

<sup>390</sup> Draft price lists for CP5 consistent with ORR's draft determination, Network Rail, July 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064786915>.

- 16.366 But the scale of the increase means that, in order to allow time for users to adapt to it, we consider Network Rail's approach to phasing in the large increase in charge which results from correcting this error to be appropriate. We have also phased in the FOL charge for iron ore to give train operators time to adjust.
- 16.367 We have decided not to levy a FOL charge on biomass in CP5. The commodities to which the FOL charge applies are consistent with those to which the FSC applies, and, as explained, we have decided not to levy a FSC for biomass in CP5. As part of our wider work in the beginning of CP5 to improve our understanding of costs and how they should be reflected in the structure of charges, we will ensure we involve biomass stakeholders.
- 16.368 We are content with the way in which Network Rail calculated its freight only line prices and we have used these estimates as the basis of our determination of forecast income for this charge.
- 16.369 Table 16.37 shows our determination of the estimated FOL charges for CP5, accurate to the number of decimal places shown. Network Rail will publish actual charges, to a greater number of decimal places, in its price lists. Table 16.38 shows our determination of forecast FOL charge income for CP5, including adjustment for our determination of efficiency, as set out in the relevant section of this chapter.
- 16.370 In addition to changes in our efficiency assumptions as discussed above, the FOL charges increased slightly relative to our draft determination following our decision to approve lower rates for the VUC. This is because the FOL charge is calculated net of income from the VUC.

**Table 16.37: Our determination of FOL charges for CP5**

Commodity (£ per kg <sub>tm</sub> , 2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19
ESI Coal	0.52	0.52	0.52	0.52	0.52
Spent nuclear fuel	5.34	5.34	5.54	16.63	27.72
Iron ore	0.00	0.00	0.17	0.50	0.84

**Table 16.38: Our forecast of FOL charges income for CP5 (with growth in traffic)**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>							
Freight	4.2	3.8	3.8	3.8	4.2	4.5	20.1
<b>England &amp; Wales</b>							
Freight	3.3	3.0	3.0	3.0	3.3	3.7	16.0
<b>Scotland</b>							
Freight	0.9	0.8	0.8	0.8	0.8	0.9	4.1

Note: numbers may not reconcile due to rounding.

## Freight specific charge

### Background

- 16.371 We are keen to improve the extent to which the charges that Network Rail's customers pay reflect the costs they impose on the network. More cost reflective prices help to drive efficiencies and send better signals to Network Rail and its customers for the efficient provision and use of access to the network, which is itself a scarce resource. More cost reflective charges also improve transparency – making it clearer who pays for what and what they receive in return. In our view, the new freight specific charge (FSC) on which we concluded in January 2013<sup>391</sup> is an important step in improving value for money.
- 16.372 Some of the public financial support for the rail industry benefits rail freight. All train operators pay a variable usage charge for each vehicle they run on the network. But only franchised passenger train operators pay FTAC, which contributes to infrastructure costs beyond the costs generated simply by running additional vehicles. In 2011-12 passenger train operators paid £887m (£913m in 2012-13 prices) to Network Rail in fixed charges. The comparable charge that freight operators pay (the FOL charge) amounted to around £4m in 2011-12.
- 16.373 There are good reasons to subsidise rail freight. This is because there are wider economic and social benefits of moving freight by rail rather than road. Without rail freight, there would have been an additional 7.56m road journeys in 2012-13. Switching from road to rail reduces CO<sub>2</sub> emissions by 70% per tonne moved and generates benefits in terms of reduced road congestion equivalent to 28 pence per HGV mile avoided. This is why the UK and Scottish Governments have consistently supported rail freight, and have funded substantial investments to improve rail freight infrastructure – for example gauge enhancements on Felixstowe to Nuneaton and Southampton to West Midlands to allow large containers to be carried by intermodal traffic and the Grangemouth branch improvement.
- 16.374 But the wider economic and social benefits that underlie the subsidy to rail freight are generated principally when freight that would otherwise have travelled by road travels by rail. To date, rail freight has benefited from subsidy, even where, as is the case for ESI coal, spent nuclear fuel and iron ore, it cannot easily or economically switch to road. By introducing a FSC for these commodities, we will increase the extent to which they contribute to the costs that freight imposes on the rail network. And in doing so, we will reduce the overall size of the subsidy that Network Rail receives

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<sup>391</sup> *Periodic Review 2013 Rail freight: conclusion on the average variable usage charge and a freight specific charge*, Office of Rail Regulation, January 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/freight-conclusions-jan-2013.pdf>.



(through grant directly from government in lieu of franchised passenger operators FTAC) and the FTAC paid by franchised passenger train operators.

## **Our January 2013 decisions on the FSC and Network Rail's conclusions**

- 16.375 Following extensive consultation with our stakeholders, we concluded, in January 2013, that we would introduce a new charge, the FSC, in CP5. The purpose of the charge is to recover infrastructure costs caused by freight operating on the network that are not currently recovered through other freight charges. The introduction of this charge means that rail freight will make a greater contribution to the costs that it imposes on the network.
- 16.376 The FSC is to be levied as a mark-up on the VUC and recover freight avoidable costs. The Access & Management Regulations establish the legal framework for levying a mark-up. In addition to this legislation, we also must consider any proposed mark-up against our statutory duties which are primarily set out in section 4 of the Railways Act 1993. We set out the legal test that we applied in reaching our decision on the FSC in our January 2013 decisions document.
- 16.377 The FSC improves the extent to which the charges that freight operators pay reflect the costs they impose on the network. To be consistent with the Access & Management Regulations the charge is recovered from the commodity markets assessed by us to be able to bear a mark-up on the variable usage charge. We undertook extensive market analysis to inform our decision making process.
- 16.378 In 2012, Network Rail commissioned consultants L.E.K to estimate freight avoidable costs. L.E.K engaged extensively with the rail freight industry and used Network Rail modelling and analysis in order to estimate freight avoidable costs. L.E.K also developed an allocation of these costs between freight commodities (or market segments). We used this work as an input to our decisions on capping the FSC in January. The caps were set to reflect the low end of the range of our estimate of freight avoidable cost, which consisted of L.E.K's analysis adjusted by us following our own analyses and input from the reporter.
- 16.379 Our January 2013 conclusions document did not set FSCs as such, rather it set a cap on the FSC i.e. the maximum level of the charge to be levied in CP5, by commodity. We also concluded that the unit of the charge would be a charge per thousand gross tonne mile (per kg<sub>tm</sub>), reflecting the fact that the two principal drivers of freight avoidable costs are weight and distance travelled. The caps are shown in Table 16.39.



**Table 16.39: January 2013 conclusions document FSC cap by commodity (2011-12 prices)**

Commodity	FSC cap (per kg/m)
ESI coal	4.04
Spent nuclear fuel	11.64
Iron ore	2.96
Biomass	We consulted on whether to levy a FSC on biomass
Other commodities	No FSC

16.380 We indicated in January 2013 that further work would be required in order to set charges and asked Network Rail to take this work forward.

16.381 In order to address concerns raised during our extensive stakeholder engagement, in particular about the ability of some users to cope with the imposition of this new charge, we also determined that the FSC would be phased in over the course of CP5 to allow freight businesses time to adapt.

16.382 In our January 2013 document, we concluded that the charge would not be introduced until 2016 and then would be phased in gradually over the course of the remainder of CP5. We provided an indicative profile for phasing and asked Network Rail to consult on the phasing in of the charge which it did in February 2013.

16.383 Network Rail's conclusions were published on 23 April 2013<sup>392</sup>. In this document Network Rail confirmed its proposals to levy no charge in the first two years of CP5 and then to phase in the FSC at 20%, 60% and 100% over the last three years of CP5 (i.e. no change in 2014-15 and 2015-16 and phasing in between 2016-17 and 2018-19). This would have had the effect of setting the charge to equate to the annual caps as set out in Table 16.40 consistent with our conclusions in January 2013.

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<sup>392</sup> Network Rail letter of 23 April 2013, *Network Rail conclusion letter on the 'phasing-in' profile of the freight-specific charge, applying the variable usage charge cap, updating our estimate of freight avoidable costs and updating / phasing in the freight-only line charge*. This may be accessed at <http://www.networkrail.co.uk/Conclusions-on-the-phasing-of-freight-specific-charge.pdf>.

**Table 16.40: Network Rail’s annual caps on the FSC in CP5 following our January 2013 conclusions (2011-12 prices)<sup>393</sup>**

Commodity	FSC cap, 2014-15	FSC cap, 2015-16	FSC cap, 2016-17	FSC cap, 2017-18	FSC cap, 2018-19
Phasing	0%	0%	20%	60%	100%
ESI coal	0.00	0.00	0.80	2.40	4.04
Spent nuclear fuel	0.00	0.00	2.15	6.98	11.64
Iron ore	0.00	0.00	0.59	1.77	2.96

## Extending the FSC to biomass

16.384 As part of the market assessment undertaken ahead of our January 2013 conclusions we began the process of considering whether or not the charge should apply to trains carrying biomass. We had previously said we would not levy a charge on biomass but would revisit the policy to coincide with DECC’s recalculation of subsidy from 2017. We changed this stance in our January 2013 decision document because respondents to the May consultation had explained that investments made now would be subject to the existing subsidy regime, not a 2017 revision, and they wanted certainty about the charging regime to inform imminent investment decisions. We subsequently consulted on a proposal to introduce the FSC for biomass, setting out what this could be.

## Further work carried out by Network Rail following our January 2013 decisions

16.385 The aim of the FSC is to recover freight avoidable costs (FACs). We define FACs as the infrastructure costs that would be foregone if commercial freight services were no longer to use the network (where commercial freight services are those run for third party customers, as opposed to the infrastructure trains providing services to Network Rail).

16.386 Following our January 2013 conclusions, Network Rail re-commissioned L.E.K to update its earlier work to take account of our comments and in particular to:

- (a) incorporate changes in the underlying growth forecasts to reflect the SBP traffic forecasts;
- (b) incorporate Network Rail’s latest VTISM run in line with Arup’s recommendations;
- (c) update for the latest view on enhancements; and
- (d) consider incorporating other changes as recommend by ORR / reporters where appropriate.

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<sup>393</sup> This table sets out the caps on which we concluded in January 2013, using the phasing on which Network Rail concluded.

16.387 As part of re-commissioning L.E.K., Network Rail consulted on its proposed approach to the update as part of an industry letter in February 2013 on various freight charges (including a possible approach to calculating FOL charges for biomass). L.E.K's updated report can be accessed via Network Rail's periodic review 2013 webpage<sup>394</sup>.

16.388 A key concern about the original estimate of FACs reported by L.E.K previously was that the range of potential costs was extremely wide. The effect of the adjustments made in the final report was to narrow the range significantly; the low end increased by 41% and the high end increased by 14%. L.E.K's revised estimate of gross FACs (prior to revenue from other charges being netted off) was £215-£428m per annum. This was a 35 year average figure, and accounted for forecast freight traffic<sup>395</sup>.

16.389 The principal drivers of the increase in L.E.K's FAC estimates were:

- (a) increases in track maintenance and renewal cost estimate as a result of new VTISM results supplied by Network Rail, following recommendations from the independent reporter: this increased the track variable usage cost estimate by £78m at the low end of the range and £36m at the high end; and
- (b) the inclusion of redundant freight property assets cost estimate: this increased the redundant freight property asset cost range by £22m at the high end of the freight avoidable cost estimate range.

16.390 Other updates that had a less significant impact on the FAC estimate included updating the analysis with Network Rail's SBP traffic forecast; revisions to FOL costs and variable usage costs, updates to Network Rail's review of freight enhancement projects, and refinement of the estimation of Schedule 4 costs with respect to spent nuclear fuel.

16.391 L.E.K's updated estimate of gross freight avoidable costs is provided in Table 16.41.

**Table 16.41: L.E.K's updated estimated gross freight avoidable cost over 35 years (2011-12 prices)**

Cost category	L.E.K. initial estimates (£m)		Updated estimates (£m)		Change (£m)		Change (%)	
	Low	High	Low	High	Low	High	Low	High
FOL costs	14	21	11	19	(3)	(3)	(21%)	(16%)
Redundant freight assets costs	6	12	5	32	(1)	20	(21%)	175%

<sup>394</sup> This may be accessed at <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/pr13-closed-consultations/>.

<sup>395</sup> This is consistent with the calculation of costs for other charges, so that renewal costs are averaged over a long time period.

Cost category	L.E.K. initial estimates		Updated estimates		Change (£m)		Change (%)	
	(£m)		(£m)					
Variable usage costs	96	215	173	249	77	35	80%	16%
Redundant enhancement costs	64	87	56	86	(7)	(1)	(12%)	(1%)
Consequential costs reductions	58	77	55	78	(3)	1	(5%)	1%
Consequential cost increases	(88)	(39)	(88)	(39)	0	0	0%	0%
Network Rail staff costs	4	5	4	5	0	0	0%	0%
<b>Total</b>	<b>152</b>	<b>377</b>	<b>215</b>	<b>428</b>	<b>63</b>	<b>51</b>	<b>41%</b>	<b>14%</b>

Note: numbers may not reconcile due to rounding.

16.392 From its updated estimate of gross FACs L.E.K deducted revenue accruing from other charges on the freight industry. The most significant current charge is the variable usage charge which generates £63m p.a. of revenue from freight operators. After adjustment for revenue generated by all other charges the Network Rail / L.E.K updated estimate of net FACs was £130m to £311m per annum.

16.393 Many of the changes made by L.E.K in the final version of its report reflected suggestions and/ or adjustments that we made to its work previously. We note however that L.E.K had not adopted all of the changes that we proposed e.g. the changes that we suggested relating to the costs of acquiring additional engineering trains to support Network Rail's own maintenance renewal and enhancement of the network had not been adopted.

16.394 In addition, there are inevitably some discrepancies between these estimates of costs and charges and those assumed in our determination, simply because work has been carried out subsequent to L.E.K's report.

16.395 However, taking the changes made in the report in the round, we have concluded that the analysis is sufficiently robust to inform the setting of charges. Using the estimates of net FACs Network Rail/ L.E.K's analysis suggested that the FSC should be set at: £2.08 per kgm for coal, £1.53 per kgm for iron ore and £5.99 per kgm for spent nuclear fuel.

## Our draft determination on the FSC and Network Rail's price lists

16.396 In our draft determination we approved FSC rates considerably below our January 2013 caps and below the charges implied by L.E.K's assessment of costs. They amounted to approximately 25% of the January 2013 caps and 50% of a low-end estimate of L.E.K's costs. In concluding on these rates we were very conscious of the

point made by many freight stakeholders that freight charges must be viewed in their entirety not on a charge by charge basis. In addition, we concluded not to levy a FSC on biomass. In July 2013 Network Rail published its draft FSC price list taking account of our draft determination.

## Responses to our draft determination

- 16.397 Rail freight operators welcomed our decision not to levy a FSC on biomass in CP5, as well as our decision to phase in the charge on those commodities on which we have decided to levy the charge on, and at a lower level than we proposed in January 2013. Freightliner said it considered that there was considerable merit in reviewing the metric of the charge in CP6, in particular so that it be levied on a per tonne basis.
- 16.398 The Freight Transport Association (FTA) expressed concern about ORR's decision to increase charges so that rail freight would pay more of its costs of operating on the network, stating that this represented a departure from previous periodic reviews which had reduced freight track access charges. It also expressed freight customers' concern about ORR's apparent policy of increasing charges on "captive markets" which was leading customers to question whether ORR would increase charges in other markets should in future reviews ORR determine these markets able to support higher charges. FTA stated both these issues created uncertainty, potentially affecting decisions to invest in rail freight and putting customers off increasing their use of rail freight.
- 16.399 We consider it is important that rail users pay, as far as practicable, the costs of using the network. Over the long-term this will encourage users to make more efficient use of the network as well as, through greater costs transparency, help rail users to challenge Network Rail to reduce its costs.
- 16.400 Freightliner and RFG asked ORR to improve on the work undertaken by Network Rail to determine FAC. Freightliner and GB Railfreight set out a number of areas where they wished to see improvements, for example the use of VTISM to estimate the impact of large incremental changes in traffic levels, cost estimates based on 35-year averages and the inclusion of some enhancement schemes as freight avoidable costs.
- 16.401 Freightliner, GB Railfreight and RFG also highlighted the need for care in how any freight avoidable cost estimate might be interpreted and presented, as the current estimates were already being interpreted as the level of freight subsidy. They also said the avoidable cost estimate should be presented alongside estimates of the benefits of rail freight to provide a balanced context in which to present freight's costs.
- 16.402 The work to estimate freight's avoidable costs was commissioned by Network Rail with consultation and input from the rail freight industry and other key stakeholders. We understand there is significant uncertainty associated with estimates of FAC. This has informed our decisions to approve charges with reference to the low end of the range. We agree there is a need to improve our understanding of freight's costs of

operating on the network and we aim to do this through our work to improve the cost reflectivity of charges as part of our track access charges review during CP5.

## **Our determination of the FSC**

- 16.403 Our decision on the FSC is the same as that for our draft determination. We explain our reasoning below.
- 16.404 In January 2013 we set the caps on the FSC on a conservative basis i.e. at the low end of the adjusted range of net FACs. Consistent with this decision, charges for CP5 will also be set on a conservative basis. Our start point for this has been the revised estimate of net FACs calculated for Network Rail.
- 16.405 However we are very conscious of the point made by many freight stakeholders that freight charges must be viewed in their entirety not on a charge by charge basis. In reaching our decision we have had regard to the cumulative impact on freight stakeholders of the various changes to freight charges. In reaching our conclusion on the FSC we have had regard to the requirements of the Access & Management Regulations and also considered our broader statutory duties.
- 16.406 In this context, our review of charges for CP5 has resulted in a significant number of changes many of which increase the overall quantum of charges imposed on the freight sector.
- 16.407 We have reviewed the overall package of changes to freight charges and the likely impact of this package on freight operators and those of their customers who would be most affected. As part of this we have considered whether the package in the round alters the analysis of the FSC that we undertook ahead of our January 2013 conclusions document. In this context we consider that the increase in variable usage charges implied by the work that Serco undertook for Network Rail is material to the levying of the FSC. This is because the freight commodities that we are levying the FSC on will also face larger than average increases in variable usage charge. Although we anticipate that the FSC will, in large part, be passed on to freight customers, we have given weight to the fact that the freight commodities subject to the FSC will need time to adapt to the increases in the VUC and FSC as a package.
- 16.408 Taking into account the changes to variable charges, we have concluded that even introducing the FSC on the basis of the latest estimates of FAC and a gradual profile would have an unacceptably high impact on some users. We have considered whether we should phase the FSC in over a 10 year period (through CP5 and CP6) but concluded that we should not seek to constrain our thinking in PR18 in this way. We therefore concluded that by the time it is fully implemented in CP5 (and we discuss phasing below) the FSC should represent around 50% of what its full level would be based on a conservative assessment of the latest Network Rail/ L.E.K analysis. This amounts to 25% of the caps we set out in our January 2013 conclusions.

16.409 The FSC which we approve for CP5 is set out in Table 16.42. In our January 2013 conclusions, we explained that the FSC would apply to ESI coal, iron ore, spent nuclear fuel and potentially biomass. As explained in Annex B of our draft determination, we subsequently concluded not to levy a FSC on biomass for CP5.

**Table 16.42: Our determination of the FSC for CP5, prior to phasing (2012-13 prices)**

Commodity	FSC charge ( £/kgtm)
ESI Coal	1.04
Spent nuclear fuel	3.00
Iron Ore	0.76
Other commodities	0.00

16.410 Setting the FSC at this level reflects movement towards greater cost reflectivity; freight will pay a greater share of the costs it imposes on the railway. However, the increase in the share of its costs that are recovered through charges is set to reflect our judgement of the appropriate balance of our statutory duties. On the one hand we have considered the need to promote efficiency and economy and have had regard to the funds available to the Secretary of State; on the other we have considered the need to both protect the interests of freight operators and their customers, to enable them to plan their businesses and our desire, and that of the governments (reflected in their guidance to us), to facilitate a strong freight sector.

16.411 When we announced our intention to introduce the FSC earlier this year we also concluded that the charge should be phased in over the course of CP5. Network Rail's conclusions on phasing are that it will follow the profile zero percent in years one and two, 20% in year three, 60% in year 4 and 100% in year 5. We have decided that this phasing profile should be retained in order to allow businesses time to adapt to the introduction of the charge. But as noted above 100% implementation now refers to full implementation of the CP5 level of the charge, which represents only around 50% of the full charge implied by the latest Network Rail/ L.E.K analysis. The FSC will therefore be phased in as outlined in Table 16.43 (subject to Network Rail's calculations).

**Table 16.43: Our determination of the FSC by year for CP5**

Commodity (£ per kgkm, 2012-13 prices)	FSC charge, 2014-15	FSC charge, 2015-16	FSC Charge, 2016-17	FSC Charge, 2017-18	FSC Charge, 2018-19
Phasing	0%	0%	20%	60%	100%
ESI coal	0.00	0.00	0.21	0.62	1.04
Spent nuclear fuel	0.00	0.00	0.60	1.80	3.00
Iron ore	0.00	0.00	0.15	0.46	0.76



16.412 A significant benefit of our analysis to support the FSC is that it has given us a much clearer picture of the level of subsidy that the governments provide to freight which can then be weighed against the broader benefits that the freight sector delivers.

16.413 We have worked with freight operators to secure commitment to reducing the avoidable costs that they impose on the network, including insufficient use of capacity. We expect to do more work with Network Rail, with freight operators and freight customers early in CP5 to get a better understanding of freight costs, to better inform PR18. In our forthcoming review of the structure of charges, working with the industry, we expect to consider how best to reflect the impact of freight traffic on the network in charges. We will also seek to move further towards our goal of greater cost reflectivity and understand more clearly the range of options that the freight sector has to reduce its impact on the network.

16.414 Table 16.44 sets out our forecast revenues from the FSC using Network Rail's SBP traffic forecast.

**Table 16.44: Our forecast of FSC income in CP5 (with growth in traffic)**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Great Britain</b>						
Freight	0.0	0.0	1.5	4.6	7.6	13.7
<b>England &amp; Wales</b>						
Freight	0.0	0.0	1.2	3.6	6.0	10.8
<b>Scotland</b>						
Freight	0.0	0.0	0.3	1.0	1.6	2.9

Note: numbers may not reconcile due to rounding.

## Fixed track access charge

16.415 The fixed track access charge (FTAC) recovers Network Rail's net revenue requirement. The net revenue requirement is the revenue required by Network Rail to run its business, after accounting for the income received from variable track access charges, regulated station charges, other single till income and the network grant; it is explained further in chapter 14. The FTAC is only paid by franchised passenger train operators.

16.416 We consider that the way in which the fixed charge is allocated between franchised passenger operators is important, because if Network Rail makes the charge as cost reflective as possible, so that costs are recovered from those who cause them, it has important incentive properties.

## Calculating the charge in CP4

- 16.417 The framework for calculating and allocating the FTAC was last reviewed as part of PR08 when we accepted Network Rail's proposal to disaggregate the net revenue requirement on a more cost reflective basis.
- 16.418 In calculating the FTAC for CP4, we calculated the net revenue requirement for England & Wales and separately for Scotland. In Scotland, the net revenue requirement, less the network grant from Transport Scotland, became the total FTAC which was then allocated to the Scottish franchised operator.
- 16.419 For England & Wales, the same approach was applied; the net revenue requirement, less the network grant from DfT, became the total FTAC which was then allocated to the franchised passenger operators in England & Wales.
- 16.420 Network Rail allocated FTACs to operators using the following steps:
- (a) the infrastructure cost model (ICM) was used to calculate and allocate the relevant costs and income to each of the Strategic Route Sections (SRS). Some common costs types, for example British Transport Police costs, continued to be allocated between franchised passenger operators at a national level;
  - (b) the most relevant traffic metrics (e.g. train km, vehicle km, tonne km, electric train km) were used to divide each cost item between the operators using, or expected to use, that SRS;
  - (c) appropriate metrics were used to allocate national level costs to individual franchised passenger operators;
  - (d) any elements that should be ring-fenced and recovered from specific franchised operators, for example, costs related to particular enhancement projects were identified; and
  - (e) the elements for each franchised operator were summed to give the level of FTAC by franchised operator.
- 16.421 Regulatory Asset Base (RAB) related costs, such as amortisation and rate of return, also contribute to Network Rail's net revenue requirement and therefore are required to be allocated to franchised operators for recovery through the FTAC. For CP4, we accepted Network Rail's suggestion that the allocation of the RAB related costs should remain high level based on SRS level percentage splits of the long run renewals forecast. These costs, for CP4, were then allocated to operators based on the appropriate traffic metric.
- 16.422 The above approach resulted in the net revenue requirement for Scotland, recovered through the FTAC, being allocated to the Scottish TOC only. Similarly, the net revenue requirement for England & Wales, recovered through the FTAC, was allocated to franchised passenger operators specified by DfT only i.e. excluding ScotRail since it is specified by Transport Scotland.

16.423 An effect of the CP4 allocation approach was that ScotRail paid no FTAC for usage of the network in England & Wales and cross-border services running into Scotland paid no FTAC for their use of the Scottish network.

## Calculating the charge in CP5

16.424 As part of the process for calculating charges in CP5, we indicated to Network Rail that further progress should be made towards cost reflective allocation<sup>396</sup> and transparency. Network Rail therefore developed proposals, specifically in relation to the FTAC allocation, for consultation with stakeholders<sup>397</sup>. In this FTAC consultation we asked Network Rail to:

- (a) explore greater transparency in the allocation process e.g. through an increased level of disaggregation at route level<sup>398</sup>; and
- (b) improve transparency by explaining the allocation of the charge between England & Wales and Scotland.

16.425 In its consultation, Network Rail proposed to build upon the approach taken to calculate the FTAC for CP4. The key proposed difference for CP5 is that, the majority of cost and income forecasts have been developed at a route level, consistent with Network Rail's newly devolved structure. Network Rail included a new step in its methodology to split the FTAC by route before allocating it to franchised passenger operators.

16.426 In relation to the RAB, Network Rail suggested that the approach should remain high level with allocation to routes based on route level percentage splits of the long run renewals forecast. In its consultation, Network Rail also made the following proposals:

- (a) to retain the current approach to the allocation between England & Wales and Scotland;
- (b) to calculate FTACs based on vehicle kms for remapped franchises in CP5;
- (c) that facility charges should remain in place until the end of the agreed period as opposed to being incorporated into FTACs at control period changes;
- (d) that the Welsh Valley Lines electrification project be funded through a facility charge via the operators benefitting from the investment rather than through an increased FTAC;
- (e) that Crossrail costs be treated as a franchise re-mapping in order that FTAC is paid by Crossrail services upon their introduction;

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<sup>396</sup> *Setting the financial and incentive framework for Network Rail in CP5*, Office of Rail Regulation, May 2012. This may be accessed at <http://www.rail-reg.gov.uk/pr13/publications/financial-incentives.php>.

<sup>397</sup> *Fixed track access charges consultation*, Network Rail, November 2012. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064784245>.

<sup>398</sup> Route refers to Network Rail's ten devolved operating routes.

- (f) to deduct TOC-specific facility charges and stations' long term charges from the specific operators' FTACs, to which they relate; and
- (g) to provide an indicative split of the England & Wales RAB by route, which Network Rail expected to include as a memorandum item to the regulatory accounts in CP5.

## Stakeholder responses to Network Rail proposals

16.427 The key points raised in response to the FTAC consultation<sup>399</sup> are outlined below.

16.428 FirstGroup and Transport Scotland questioned retaining the current approach to cross border services where the Scottish franchised passenger operator pays no FTAC for usage of the network in England & Wales, and English cross-border services running into Scotland pay no FTAC for their usage of the Scottish network. They suggested that Network Rail should consider an approach which allocates FTAC to operators in line with actual usage of the track.

16.429 Transport Scotland outlined its intention that the Caledonian Sleeper service be let as a new franchise. For a number of reasons, it suggested that the franchise could be treated in a manner broadly comparable with an open access operator on both sides of the border i.e. the operator would pay VUCs but no FTAC.

16.430 Go-Ahead suggested that given the proposal to create indicative route-based RABs, it would also be a positive step to calculate matching route-based single tills to improve transparency.

16.431 PTEG outlined its view that the FTAC proposals did not go far enough in improving cost reflectivity or transparency. For example, it felt that a full avoidable cost approach should be adopted and that moving to a route based approach from SRS was a backward step. TfL also took the latter view and felt that FTAC should be calculated at SRS and then aggregated to route level as required.

16.432 More generally, Northern Rail took the view that the proposed approach for CP5 was not significantly different from CP4.

## Network Rail conclusions

16.433 Network Rail's conclusions<sup>400</sup> broadly reflected the proposals it consulted upon with two minor exceptions:

- (a) small refinements to the allocation metrics for apportioning costs to operators; and

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<sup>399</sup> For more information on the responses, see *Conclusions on fixed track access charges consultation*, Network Rail, March 2013. This may be accessed at <http://www.networkrail.co.uk/fixed-track-access-charges-consultation.pdf>.

<sup>400</sup> *Fixed charges in CP5 – conclusions*, Network Rail, March 2013. This may be accessed at <http://www.networkrail.co.uk/fixed-track-access-charges-consultation.pdf>.

- (b) remaining open to different options for how a new Caledonian Sleeper franchise might be charged.

## **Our draft determination and consultation responses**

16.434 In our draft determination we welcomed the progress that Network Rail made in CP4 in significantly improving the approach to FTAC allocation by disaggregating costs and income at SRS level. We further welcomed the development of route based FTACs for CP5 which is necessary to bring the approach in line with Network Rail's newly devolved structure. Our draft determination set out our view on each of the above Network Rail proposals.

16.435 Transport Scotland provided the only response on the FTAC included in any of the consultation responses on the draft determination. Its response was focused on two issues:

- (a) the approach to the allocation of the FTAC to cross-border services; and
- (b) the charging treatment of the Caledonian Sleeper service.

16.436 On the former issue, Transport Scotland is of the view that a change in the approach i.e. the allocation of a portion of the Scottish FTAC to England & Wales TOCs running services north of the border and vice versa would bring Scotland into line with the rest of the GB rail network and would better align with the ORR's overall objectives for cost reflective charging and allocation. It made clear that it considers that any change to the current arrangements is a matter for ORR to determine on and that it does not consider that it requires prior agreement between the governments i.e. DfT and Transport Scotland. While Transport Scotland is clear that this is not an issue that can be deferred in full until the next periodic review, it stated that it is not its intention to destabilise current arrangements for the smooth transition into CP5 and that it would support a transitional arrangement through CP5.

16.437 On the latter issue, Transport Scotland stated that its position remains that the characteristics of the Caledonian Sleeper franchise are such that it may be more appropriate to treat it in a manner broadly comparable with an open access operator. However it was equally clear that this should in no way compromise the rights of the Caledonian Sleeper franchisee to overnight paths and station access.

## **Our final determination**

16.438 Our final determination is unchanged from our draft determinations as set out below. However, we have provided more detailed positions in relation to the issues of cross border services and the treatment of the new Caledonian Sleeper franchise.

### **Cross border services**

16.439 As noted above, concerns have been expressed by Transport Scotland around the current approach to FTAC allocation to cross border services. Under the current arrangements, Scottish specified franchise operators do not pay FTACs for their

usage of the English network and DfT specified franchised operators do not pay FTACs for their usage of the Scottish network.

- 16.440 A more cost reflective allocation to cross-border services could improve alignment with our charging objectives and create better incentives for more efficient provision and use of the network.
- 16.441 Since publication of the draft determination we have discussed this issue with Transport Scotland, DfT and Network Rail.
- 16.442 We note Transport Scotland's response stated that determining on this issue is a matter for us and that it requested transitional arrangements for CP5 be put in place.
- 16.443 From our recent discussions with Transport Scotland, DfT and Network Rail we understand that the current approach is consistent with the transitional arrangements put in place, agreed between the then Scottish Executive (now Scottish Government) and DfT and approved by us in 2005-06 when devolution of functions took place under the Railways Act 2005.
- 16.444 We consider that it is important that we, the governments and the industry understand fully the options for changing the current approach to allocation and their implications, and that we do this work as part of the overall PR18 work programme.
- 16.445 Therefore, we will lead the work with the governments and industry on this, starting early in 2014. Our role under the Access & Management Regulations is to set the specific charging framework and charging rules and we will take the decision on any change.

### **Franchise re-mapping**

- 16.446 We support the principles of Network Rail's proposal for adopting an approach to calculating FTAC for any re-mapped franchised services. The approach should be straightforward, should reflect changes in network usage and should ensure consistency between re-mappings over the control period.
- 16.447 As noted above, Transport Scotland has suggested that the Caledonian Sleeper franchise could be treated in a manner broadly comparable with an open access operator i.e. the operator would pay VUCs but no FTAC. In its conclusions document Network Rail said that it remained open to different options for how a new Caledonian Sleeper service might be charged.
- 16.448 However, our role under Schedule 3 of the Access & Management Regulations is to set the specific charging framework and charging rules. We have decided that the new Caledonian sleeper service will be subject to a FTAC. This reflects the outcome of our recent discussions with Transport Scotland which concluded that correct and consistent application of the charging principles in the Access & Management Regulations means that if the sleeper is to be let as a separate franchise then it must be required to pay the fixed track access charge. To do otherwise would be to



discriminate not just between the sleeper and ScotRail but all other franchises let across the network (as the charging principles apply across the network as a whole).

### **Facility charges**

16.449 Network Rail has proposed that facility charges should remain in place until the end of the recovery period rather than rolled into FTAC at the beginning of new control periods. Consistent with the investment framework, facility charges should continue to be paid by a new franchisee when a current franchise ends to reflect the benefit transferred to operators that run services on areas of the network that have been enhanced.

### **Welsh Valley Lines electrification**

16.450 In its consultation response, the Welsh Government stated that it and DfT would provide us with a joint agreement on the principles of funding that have been agreed in relation to the Welsh Valley Lines electrification project. We understand that DfT will pay the costs in CP5 during construction, with relevant operators paying a facility charge once the enhancement comes into operation. DfT will recover its CP5 costs from the Welsh Government from the start of CP6. The agreement will therefore have no impact on the level of FTAC allocated to, and payable in, Wales during CP5.

### **Crossrail**

16.451 We understand that some Crossrail services will start in CP5. For example, in March 2013, TfL announced the letting of a concession for the operation of existing rail services between London Liverpool Street and Shenfield from May 2015. This will result in the successful bidding operator taking over the stopping services currently operated by Greater Anglia. We would expect this transfer of services to Crossrail, and any other subsequent transfers, to be treated as a franchise re-mapping in order that FTAC is paid by Crossrail services upon their introduction.

### **Deductions**

16.452 We agree with the proposal to deduct station long term charges and facility charges from the specific operator's FTAC to which they relate, as it improves cost reflectivity and incentives.

### **Indicative RAB split**

16.453 We set out our approach to disaggregation in our May 2012 'Setting the financial and incentive framework for Network Rail in CP5' document. Greater disaggregation of price controls is in line with our desire to increase transparency of costs and revenues, support better whole-industry incentives and will in particular facilitate more local decision making (localism). Greater disaggregation, especially when combined with the increasing autonomy of routes under Network Rail's 'devolution' strategy, could also, in CP6, allow us to move towards a more comparative approach to regulation. Further disaggregation is also a key enabler for facilitating change in the rail industry, e.g. through devolution, alliances and potentially concessions.



16.454 Consistent with our approach, in our determination in Annex G we have included calculations of Network Rail's revenue requirement (including charges), debt and RAB by operating route. This will aid transparency and provide a basis for further development.

## Our decision

16.455 Tables 16.45 to 16.48 show our determination of FTAC income for CP5 under a range of scenarios<sup>401</sup> given Network Rail's net revenue requirement:

- (a) FTAC based on the adjusted WACC<sup>402</sup> approach after network grant is taken into account (this is our decision)<sup>403</sup>;
- (b) FTAC based on the cost of capital approach after network grant is taken into account (provided for information since the adjusted WACC is a 'short-term' change for CP5);
- (c) FTAC based on the adjusted WACC approach assuming zero network grant (provided for information to illustrate the contrast if network grant were not paid); and
- (d) FTAC based on the cost of capital approach assuming zero network grant (provided for information since the adjusted WACC is a 'short-term' change for CP5 and to illustrate the contrast if network grant were not paid).

16.456 It should be noted that the equivalent values for the FTAC included in the draft determination were significantly higher. For example, FTAC based on the adjusted WACC approach after network grant for GB included in the draft determination was £4.4bn. The equivalent final determination amount is £2.4bn. This difference can be accounted for by the following factors:

- (a) the draft determination FTAC value did not split out Schedule 4 income – this has now been corrected for (reducing the FTAC by approximately £1bn over CP5). This did not affect the calculation of Network Rail's revenue requirements; and
- (b) variable charges income has gone up, mostly accounted for by the increase in capacity charge income from franchised passenger operators, which has more than doubled between the draft and final determination.

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<sup>401</sup> Our determination does not include any possible changes to the cross-border approach to paying FTAC.

<sup>402</sup> WACC is weighted average cost of capital. Please refer to chapter 12 for more information.

<sup>403</sup> Please refer to chapter 17 for our decisions on network grant.

**Table 16.45: Our determination of fixed track access charge income for CP5 based on the adjusted WACC approach after network grant is taken into account (our decision)**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>Great Britain</b>						
Fixed track access charge	406	326	343	449	855	2,379
<b>England &amp; Wales</b>						
Fixed track access charge	319	242	257	308	635	1,760
<b>Scotland</b>						
Fixed track access charge	88	84	86	141	221	620

Note: Numbers may not reconcile due to rounding.

**Table 16.46: Our determination of fixed track access charge income for CP5 based on the cost of capital approach after network grant is taken into account (provided for information)**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>Great Britain</b>						
Fixed track access charge	501	428	362	462	1,579	3,331
<b>England &amp; Wales</b>						
Fixed track access charge	388	319	263	234	1,257	2,462
<b>Scotland</b>						
Fixed track access charge	112	109	98	228	322	870

Note: Numbers may not reconcile due to rounding.

**Table 16.47: Our determination of fixed track access charge income for CP5 based on the adjusted WACC approach assuming zero network grant (provided for information)**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>Great Britain</b>						
Fixed track access charge	4,358	4,311	4,376	4,486	4,434	21,966
<b>England &amp; Wales</b>						
Fixed track access charge	3,866	3,811	3,863	3,962	3,919	19,421
<b>Scotland</b>						
Fixed track access charge	492	500	513	525	515	2,545

Note: numbers may not reconcile due to rounding.

**Table 16.48: Our determination of fixed track access charge income for CP5 based on the cost of capital approach assuming zero network grant (provided for information)**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>Great Britain</b>						
Fixed track access charge	4,995	5,038	5,041	5,084	5,157	25,315
<b>England &amp; Wales</b>						
Fixed track access charge	4,425	4,450	4,446	4,472	4,541	22,334
<b>Scotland</b>						
Fixed track access charge	570	588	595	612	616	2,981

Note: numbers may not reconcile due to rounding.

16.457 Once the network grant is established for CP5, Network Rail should continue to present the fixed track access charges on a gross basis (as if there were no network grant) as well as on an actual basis (with the network grant).

## Station long term charge (LTC)

### Background

16.458 Network Rail is responsible for the maintenance, repair and renewal of most of the stations it owns. The Station Facility Owner (SFO) is responsible for the day-to-day management and operation of the station. Network Rail is the SFO for a small number of its larger stations, known as managed stations. For the majority of stations, the SFO is a franchised train operator.

16.459 Network Rail is to continue to receive regulated income from stations in CP5 in the form of the station long term charge (LTC). This allows Network Rail to recover its efficient maintenance, renewal and repair costs associated with the franchised stations and managed stations that it owns.

16.460 Network Rail also receives income from managed stations qualifying expenditure (QX) and from franchised stations leases. However, with the exception of the management fee element of QX<sup>404</sup>, these charges are not regulated by ORR. QX covers the cost of the SFO's day-to-day running and operation of its stations. It also covers the reasonable costs incurred by the SFO for procuring or providing the services and

<sup>404</sup> The SFO may levy the QX management fee on train operators using its stations. The management fee is set to recover two elements: central overheads in respect of operating, or procuring the operation of, the station, and a percentage profit that is applied to the entire QX charge. In CP4, it amounted to around £2.5m income to Network Rail in total for the whole control period.

amenities, which all users share. These charges are covered in more detail in Annex C.

### **Franchised station LTC for CP4**

- 16.461 The franchised station LTC has been set separately for each station but has been designed to reflect a long run efficient maintenance, repair and renewal (MRR) spend over the course of the control period at the level of the group of stations operated by each SFO, referred to as the portfolio of stations.
- 16.462 Individual station charges are not intended to be fully reflective of the specific spend at each station within the control period. They are instead designed to represent the proportion of the MRR expenditure for the portfolio of stations that would be spent on each station in the long run (over 35 years). It is therefore important to emphasise that it is unlikely that for an individual franchised station, the LTC revenue will be equal to MRR expenditure at that station. We are of the view it would not be helpful for train operators to link the two.
- 16.463 With the exception of managed stations, the SFO at the majority of stations is a franchised train operator. Other railway undertakings (Beneficiaries) using a station pay the SFO a proportion of the station LTC and a QX charge (covering a proportion of the costs incurred by the SFO in running the station). The proportion of the station LTC payable by a Beneficiary is usually based on its proportion of vehicle departures at that station, calculated in accordance with the methodology set out in the Station Access Conditions.
- 16.464 Until recently Network Rail was responsible for the MRR of all its stations. In February 2012, Abellio Greater Anglia became SFO at stations previously operated by London Eastern Railway Limited. Abellio Greater Anglia has taken over the management and operation of the stations (with the exception of Stratford station) on a full repairing lease and pays only a peppercorn rent to Network Rail. There is a possibility that a similar reallocation of responsibility may take place for other new franchises, and in these instances charges may need adjusting to reflect reallocation of responsibility within the control period. The effect of these transfers of responsibilities would be neutral for Network Rail as we would adjust for them and log them up through the opex memorandum account and RAB as appropriate.

### **Managed station LTC for CP4**

- 16.465 The managed station LTC has been calculated separately for each managed station. It has been calculated as the annual average of long run efficient MRR expenditure projected over a long time period (100 years). This was longer than for franchised stations in order to even out some of the extremes of spend found at these very large facilities. These extremes are more material for managed stations due to the scale of renewals costs at each station and the fact that there is no possibility to average across a larger portfolio.

## Methodology for calculating the charge in CP5

- 16.466 In September 2012, Network Rail consulted with the industry on the structure of the station LTC at both franchised and managed stations in CP5. In January 2013, it concluded on this consultation.
- 16.467 Network Rail concluded that it would retain the station LTC structure in broadly its current form in CP5. This included continuing to:
- (a) base the franchised station LTC on total MRR expenditure in CP5 at SFO portfolio level;
  - (b) calculate separate charges for each franchised station within each portfolio to reflect long term (35 year) average spend at individual station level;
  - (c) calculate the managed station LTC based on the annual average of long run efficient MRR expenditure projected over 100 years;
  - (d) levy the annual station LTC (for both franchised and managed stations) at a constant level for each year in CP5, albeit with uplifts for RPI; and
  - (e) exclude the cost of capital associated with stations from the station LTC. This was to give a more meaningful cost reflective charge, i.e. reflective of expected expenditure across the relevant SFO's stations portfolio during CP5.
- 16.468 The main change to the methodology for CP5 was that Network Rail concluded that it would recover Stations Information and Security Systems (SISS) maintenance, renewal and repair costs from the station LTC for franchised stations rather than FTAC.
- 16.469 Network Rail also proposed to include SISS maintenance, renewals and repair expenditure in the station LTC in CP5 for managed stations. In CP4 the maintenance and repair costs in relation to SISS assets at managed stations have been captured through the stations QX charge and FTAC respectively. It proposed this change in an e-mail to stakeholders in October 2012, shortly after the publication of its consultation letter.
- 16.470 In its consultation document, Network Rail proposed to charge at the portfolio level, rather than by station. This would involve each SFO receiving a bill for a single regular charge, reflecting the agreed settlement figure across its entire portfolio, rather than a charge for each station. In recognition that an SFO may need to recover some of the proposed portfolio station LTC from beneficiaries at some or all of its stations, Network Rail proposed providing a percentage breakdown of portfolio costs by station. As a result of stakeholder responses to its consultation, in its January 2013 conclusions, Network Rail stated it would not adopt this proposal. Instead, as with CP4, it concluded to levy a charge for each individual station.

## **Our assessment of Network Rail's methodology for calculating the station LTC**

- 16.471 We are content with Network Rail's conclusions regarding its methodology for the station LTC for CP5. In particular we agree with Network Rail's conclusion that:
- (a) the structure of the station LTC should remain broadly the same in CP5 as in CP4. This is a view shared by the majority of stakeholders that responded to Network Rail's consultation;
  - (b) SISS expenditure should be included within the station LTC. This is more transparent and cost reflective than recovering SISS expenditure through the FTAC, since SISS expenditure can accurately be allocated to individual stations;
  - (c) SISS maintenance and repair at managed stations is treated as a landlord responsibility. This will result in the SISS expenditure categories captured in the managed station LTC being consistent with those captured in the franchised station LTC; and
  - (d) it continues to charge SFOs at station level, rather than at a portfolio level. The reason Network Rail gave initially for proposing to bill at portfolio level was to simplify charging arrangements. Responses from stakeholders suggested that it would instead result in an increase in the administrative burden on stakeholders.

### **Network Rail's SBP station LTC income forecast**

- 16.472 The station LTC income forecasts Network Rail proposed in its SBP were based on its forecasts of stations MRR expenditure on buildings and SISS. Network Rail applied a 16.1% efficiency overlay to the element of its pre-efficient station LTC income forecast relating to the recovery of buildings expenditure. This was inconsistent with the buildings expenditure efficiency overlay Network Rail submitted in its high-level strategic planning model (which it refers to as its 'Tier 0' model), as part of the SBP, which was 16.6%. Network Rail later confirmed that an efficiency overlay of 16.6% should have been applied, and on 23 April 2013, Network Rail published its draft station LTC price lists on this basis.
- 16.473 Network Rail applied an efficiency overlay of 15.0% to the element of its pre-efficient station LTC income forecast that is to recover SISS expenditure. This was consistent with the efficiency overlay in its high-level strategic planning model.
- 16.474 Network Rail's SBP forecast only included SISS renewal costs. Network Rail has advised that it also intended to include SISS maintenance and repair costs. It was unable to correct this error in time for inclusion in our draft determination. We agreed we would take this into consideration in our final determination. Network Rail stated that it did not believe that this error would result in a material increase to LTC income.

## Our draft determination

- 16.475 In our draft determination we set stations LTC income so it was consistent with our view of efficient CP5 stations MRR expenditure on buildings and SISS. We calculated this by adjusting Network Rail's SBP submission on station LTC income to reflect adjustments we made to pre-efficient stations expenditure and our draft determination efficiency assumptions.
- 16.476 Since Network Rail had not at this stage identified the SISS maintenance and repair expenditure for the stations where it carries out these activities, our station LTC income figures did not include the element of station LTC that recovers this expenditure.

## Work done since draft determination

- 16.477 Network Rail has now identified the SISS maintenance and repair expenditure for those stations where it is contractually responsible for carrying out these activities, and reflected these in its July 2013 draft determination consistent price lists.
- 16.478 Since publishing our draft determination, we identified a mistake in the modelling used to calculate Network Rail's draft price lists, for both the buildings and the SISS elements of station LTC. While it did not impact on the draft CP5 annual average LTC at the portfolio level, it did have an impact on the allocation of expenditure across each SFO's portfolio of stations on a given route. Network Rail corrected this mistake when it published its draft determination-consistent draft price lists in July 2013. Network Rail also made a few other minor adjustments to where expenditure had been classified in its SBP in respect to some stations. We have incorporated these adjustments into our final determination of stations income.

## Responses to our draft determination

- 16.479 We received a response from First Capital Connect (FCC) stating that it understood that in the absence of us determining any station LTC rates for stations where Greater Anglia is SFO (with the exception of Stratford station), there would be no station LTC for these stations and therefore no figure to form the basis of the calculation of FCC's contribution towards the LTC in respect of the stations where FCC is a beneficiary. FCC considered that this is because the National Stations Access Conditions (NSACs) tie a beneficiary's common charges under a Station Access Contract (SAC) to the quoted Qualifying Expenditure and an LTC.
- 16.480 As discussed above, Network Rail no longer has MRR responsibilities at stations for which Greater Anglia is SFO (with the exception of Stratford station). We are therefore not determining the station LTC for these stations as part of PR13. We do not agree with FCC that there would be no station LTC to form the basis of the calculation of FCC's contribution towards the station LTC in respect of the Greater Anglia stations where it is a beneficiary. In December 2008, ORR issued a review notice (the "LTC review notice") specifying the relevant changes which it proposed to make to give



effect to our conclusions on a review of (a) the amount of the Long Term Charge payable in respect of each Station, and (b) the manner in which, and the dates by which, those amounts became payable. In March 2009, ORR issued a review implementation notice, which directed each of the parties to each of the Relevant Access Agreements (as defined in the earlier LTC review notice) to amend those Access Agreements so that the relevant changes specified in the LTC review notice came into operation on and from 1 April 2009. Those notices contained an effective date for the commencement of the LTC, but did not contain an end date.

- 16.481 In 2012, when Greater Anglia became SFO for the stations for which Network Rail no longer has MRR responsibilities in respect of the Greater Anglia franchise, the LTC for these stations continued as directed by ORR at PR08.
- 16.482 In light of this, and in the absence of new station LTCs being set by us in respect of these Greater Anglia stations, the LTC which is in the station access agreements between Abellio Greater Anglia and FCC will continue. As matters stand, it is for Greater Anglia and DfT to establish the station charges for the Greater Anglia stations. If the charges do change from the current station LTCs, beneficiaries at Greater Anglia stations will have to calculate their contribution to the revised station LTCs in accordance with the station access conditions and will need to amend their relevant station access agreements under section 22 of the Act to reflect the revised station LTC, and submit these for our approval.

## **Our determination**

- 16.483 We have adjusted Network Rail's SBP submission on station LTC income to reflect our view of efficient CP5 stations MRR expenditure on buildings and SISS.
- 16.484 We did this by making an adjustment to reflect our assessment of pre-efficient expenditure on stations buildings and SISS, and applying our efficiency overlay for the final year of CP5. This is in order for the station LTC to reflect post-efficient expenditure on stations.
- 16.485 The efficiency overlays we applied are stated in Table 16.14. These have changed since our draft determination. Our assessment of efficient buildings and SISS MRR expenditure is described in chapter 8 in our assessment of maintenance and renewals expenditure.
- 16.486 In addition to these we incorporated the corrections Network Rail has made between the SBP submission and its July 2013 draft price lists, for example in relation to the inclusion of SISS maintenance and repair costs within the LTC - SISS expenditure figures.
- 16.487 Tables 16.49 to 16.51 show our forecast station LTC income for CP5. The figures are accurate to the number of decimal places shown: Network Rail will publish actual charges, to a greater number of decimal places, in its price lists.

**Table 16.49: Our forecast of station LTC income for CP5 – Great Britain**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Managed stations</b>							
LTC – buildings expenditure	22	25.5	25.5	25.5	25.5	25.5	127.6
LTC – SISS renewals	-	4.8	4.8	4.8	4.8	4.8	23.8
LTC – SISS maintenance and repair	-	1.5	1.5	1.5	1.5	1.5	7.5
<b>LTC – total</b>	<b>-</b>	<b>31.8</b>	<b>31.8</b>	<b>31.8</b>	<b>31.8</b>	<b>31.8</b>	<b>159.0</b>
<b>Franchised stations</b>							
LTC – buildings expenditure	134	102.8	102.8	102.8	102.8	102.8	514.0
LTC – SISS renewals	-	15.9	15.9	15.9	15.9	15.9	79.5
LTC – SISS maintenance and repair	-	0.7	0.7	0.7	0.7	0.7	3.4
<b>LTC – total</b>	<b>-</b>	<b>119.4</b>	<b>119.4</b>	<b>119.4</b>	<b>119.4</b>	<b>119.4</b>	<b>596.9</b>

Notes:

1. In CP4 SISS expenditure was not recovered through the stations long term charge. It is therefore only possible to compare CP5 stations buildings expenditure with CP4. CP4 amounts are as per our PR08 Determination.
2. Stations long term charge income for Greater Anglia stations has been removed from the CP4 figures, so CP4 and CP5 can be compared on a like for like basis.
3. Numbers may not reconcile due to rounding.

**Table 16.50: Our forecast of station LTC income for CP5 – England & Wales**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Managed stations</b>							
LTC – buildings expenditure	20	23.8	23.8	23.8	23.8	23.8	118.9
LTC – SISS renewals	-	4.3	4.3	4.3	4.3	4.3	21.3
LTC – SISS maintenance and repair	-	1.3	1.3	1.3	1.3	1.3	6.6

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>LTC – total</b>	-	<b>29.4</b>	<b>29.4</b>	<b>29.4</b>	<b>29.4</b>	<b>29.4</b>	<b>146.9</b>
<b>Franchised stations</b>							
LTC – buildings expenditure	120	92.7	92.7	92.7	92.7	92.7	463.7
LTC – SISS renewals	-	15.2	15.2	15.2	15.2	15.2	76.0
LTC – SISS maintenance and repair	-	0.4	0.4	0.4	0.4	0.4	2.1
<b>LTC – total</b>	-	<b>108.4</b>	<b>108.4</b>	<b>108.4</b>	<b>108.4</b>	<b>108.4</b>	<b>541.9</b>

Notes:

1. In CP4 SISS expenditure was not recovered through the stations long term charge. It is therefore only possible to compare CP5 stations buildings expenditure with CP4. CP4 amounts are as per our PR08 Determination.
2. Stations long term charge income for Greater Anglia stations has been removed from the CP4 figures, so CP4 and CP5 can be compared on a like for like basis.
3. Numbers may not reconcile due to rounding.

**Table 16.51: Our forecast of station LTC income for CP5 - Scotland**

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>Managed stations</b>							
LTC – buildings expenditure	2	1.7	1.7	1.7	1.7	1.7	8.7
LTC – SISS renewals	-	0.5	0.5	0.5	0.5	0.5	2.5
LTC – SISS maintenance and repair	-	0.2	0.2	0.2	0.2	0.2	0.9
<b>LTC – total</b>	-	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>12.1</b>
<b>Franchised stations</b>							
LTC – buildings expenditure	15	10.1	10.1	10.1	10.1	10.1	50.3
LTC – SISS renewals	-	0.7	0.7	0.7	0.7	0.7	3.5
LTC – SISS maintenance and repair	-	0.3	0.3	0.3	0.3	0.3	1.3

£m (2012-13 prices)	2013-14 (CP4)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
<b>LTC – total</b>	-	<b>11.0</b>	<b>11.0</b>	<b>11.0</b>	<b>11.0</b>	<b>11.0</b>	<b>55.1</b>

Note: In CP4, SISS expenditure was not recovered through the stations long term charge. It is therefore only possible to compare CP5 stations buildings expenditure with CP4. CP4 amounts are as per our PR08 Determination.

16.488 Included within Network Rail's July 2013 draft price lists were draft stations charges consistent with our draft determination of stations charges income. We agree with the methodology used to allocate its charges across stations and estimate the following stations LTCs based on Network Rail's allocation, but adjusted so they are consistent with our final determination of stations charges income.

16.489 Table 16.52 shows our estimate of the station LTC for each managed station.

**Table 16.52: Our forecast of managed station LTCs, broken down by station**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
London Fenchurch Street	0.7	0.7	0.7	0.7	0.7	3.3
London Liverpool Street	3.3	3.3	3.3	3.3	3.3	16.4
London St. Pancras (low level)	0.5	0.5	0.5	0.5	0.5	2.5
London Charing Cross	0.9	0.9	0.9	0.9	0.9	4.7
London Bridge	1.3	1.3	1.3	1.3	1.3	6.4
London Cannon Street	0.5	0.5	0.5	0.5	0.5	2.5
Leeds	3.2	3.2	3.2	3.2	3.2	15.9
London King's Cross	1.9	1.9	1.9	1.9	1.9	9.6
Birmingham New Street	2.5	2.5	2.5	2.5	2.5	12.3
Liverpool Lime Street	1.0	1.0	1.0	1.0	1.0	5.1
Manchester Piccadilly	1.7	1.7	1.7	1.7	1.7	8.5
London Euston	1.6	1.6	1.6	1.6	1.6	8.1
Edinburgh Waverley	1.2	1.2	1.2	1.2	1.2	6.0
Glasgow Central	1.2	1.2	1.2	1.2	1.2	6.2
London Victoria	4.5	4.5	4.5	4.5	4.5	22.6

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
London Waterloo	2.7	2.7	2.7	2.7	2.7	13.3
London Paddington	3.1	3.1	3.1	3.1	3.1	15.6
<b>Total</b>	<b>31.8</b>	<b>31.8</b>	<b>31.8</b>	<b>31.8</b>	<b>31.8</b>	<b>159.0</b>

Note: Numbers may not reconcile due to rounding.

16.490 Table 16.53 shows our estimate of the station LTC totals by SFO.

**Table 16.53: Our forecast of franchised station LTCs, broken down by SFO**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
Arriva Trains Wales	8.1	8.1	8.1	8.1	8.1	40.3
c2c	2.4	2.4	2.4	2.4	2.4	12.0
Chiltern Railways	2.7	2.7	2.7	2.7	2.7	13.6
East Coast	2.6	2.6	2.6	2.6	2.6	12.8
East Midlands Trains	3.2	3.2	3.2	3.2	3.2	16.0
First Capital Connect	4.1	4.1	4.1	4.1	4.1	20.4
First Great Western	10.6	10.6	10.6	10.6	10.6	53.1
First ScotRail	11.0	11.0	11.0	11.0	11.0	55.0
First/Keolis Transpennine	1.4	1.4	1.4	1.4	1.4	7.2
Greater Anglia	0.01	0.01	0.01	0.01	0.01	0.1
London Midland	6.8	6.8	6.8	6.8	6.8	33.8
London Overground	3.0	3.0	3.0	3.0	3.0	14.9
London Underground	1.1	1.1	1.1	1.1	1.1	5.5
Merseyrail	7.1	7.1	7.1	7.1	7.1	35.4
Northern Rail	11.3	11.3	11.3	11.3	11.3	56.5
South West Trains	11.3	11.3	11.3	11.3	11.3	56.4
Southeastern	15.0	15.0	15.0	15.0	15.0	74.8
Southern Railway	12.4	12.4	12.4	12.4	12.4	62.0

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total CP5
Virgin (West Coast)	5.4	5.4	5.4	5.4	5.4	26.9
<b>Total</b>	<b>119.4</b>	<b>119.4</b>	<b>119.4</b>	<b>119.4</b>	<b>119.4</b>	<b>596.9</b>

Note: Numbers may not reconcile due to rounding.

## Decision on charges and on-rail competition

### Draft determination

16.491 In the draft determination we explained our plans to issue a further consultation about on-rail competition. We subsequently published this<sup>405</sup> on 14 June 2013.

16.492 On-rail competition is direct competition between rival train operating companies competing against each other to attract passengers. Our consultation outlined options for change in allowing access to open access operators, who must presently pass a test that their access will not be primarily abstractive (NPA), i.e. that it will generate new-to-rail business rather than merely abstracting business from existing operators. Under our current approach we would not expect to approve applications with ratios of generation to abstraction below 0.3 to 1.

16.493 The options we proposed in our consultation paper involved increasing the opportunities available to open access operators, but at the cost of their bearing additional charges in the form of a mark-up over and above the variable access charges they currently pay to Network Rail.

16.494 We presented two options for reform (Options 2 and 3) which were compared with Option 1, where we would not impose mark-ups on open access services and consequently would retain the NPA test in broadly its current form. Options 2 and 3 differ in the method of calculation of the mark-up as follows:

- (a) under Option 2 an open access operator would, in return for a partial relaxation of the NPA test, pay a mark-up as a contribution to Network Rail's fixed costs calculated on the basis of the level of abstraction that its services would bring over and above the permitted level; and
- (b) under Option 3 an open access operator would, in return for a partial relaxation of the NPA test, pay a mark-up calculated in a similar manner to the way that charges are currently calculated for franchised passenger services and/or similar to the ways in which we envisage these charges evolving in the future on all of its services. Two potential variants of Option 3 were discussed. They involved aligning the charging structure for open access operators failing the NPA test

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<sup>405</sup> *Periodic review 2013: on-rail competition: consultation on options for change in open access*, Office of Rail Regulation, June 2013. This may be accessed at <http://www.rail-reg.gov.uk/pr13/consultations/open-access.php>.

with, in the case of 3A, the charging regime that franchised passenger operators currently face and, in the case of 3B, an estimate of the avoidable costs caused by open access.

## Related issues

- 16.495 Several other issues are likely to affect developments in open access in CP5.
- 16.496 Open access is limited, less than 1% of train km, in part because there are substantial other barriers to entry including the governments' current approach to the quantity of franchise services, uncertainty about factors including future access rights and levels of charges, and the way in which Network Rail manages network capacity and the timetabling process.
- 16.497 Secondly, as described earlier in this chapter there has been a recalculation of the rates of the capacity charge, which are paid by operators on train kilometres to compensate Network Rail for the increase in the Schedule 8 performance payments it is likely to have to make if traffic increases. If this recalculated capacity charge were applied in full to existing open access operators their combined annual bill would increase several fold. We have put arrangements in place to protect existing open access operators (OAOs) and to assist new entrants but the new rates may still act as a deterrent to open access entry or to expansion of existing services in CP5.
- 16.498 Also, as described earlier in this document, following PR13 there will be an extensive review of the structure of charges in the early part of CP5 with a view to improving cost reflectivity. This review will address a number of issues of importance to open access but it may mean both that a new open access system could be rapidly superseded and that uncertainty over the future of the charging regime would tend to deter open access entry while the review is taking place.
- 16.499 Lastly, changes are likely at the European level. Earlier this year, the European Commission published proposals for its fourth railway package. We expect the final text of the fourth package to require the opening up of domestic passenger services with a view to encouraging increased competition, albeit Member States would have the option of limiting such rights of access where they would compromise the economic equilibrium of public service contracts. We will be monitoring these developments and reviewing our policies during CP5 to ensure consistency with any final measures.

## Responses to our consultation

- 16.500 We met with key stakeholders during July 2013 and received 21 written responses to our on-rail competition consultation early in August 2013. We were particularly keen to establish whether the possible changes would create real commercial opportunities and how they interacted with other changes that will affect open access.
- 16.501 The responses fell into three main groups. First, a small number of responses made general pro-competition arguments, urging us to promote open access. These



included detailed analysis of the benefits of competition by the Centre for Policy Studies and a letter of support for more open access from a group of MPs.

- 16.502 The second group were broadly supportive of on-rail competition and mainly from members of the industry (including actual or potential open access operators). They directly addressed the detailed consultation questions. This group showed little enthusiasm for major changes now in advance of a review of the structure of charges, but some support for more cost-reflective charges. For existing OAOs, FirstGroup (the parent company of Hull Trains) said it would prefer the retention of the current system pending the forthcoming structure of charges review while Arriva (the parent company of Grand Central/Alliance) was the main advocate of significant change now, arguing in favour of a modified version of the consultation's Option 3 based on a mark-up equivalent to the volume incentive plus a margin on the variable track access charge. OAOs also wanted us to reconsider certain technical aspects of our approach to the NPA test. They argued that the present method underestimates the true generation to abstraction ratios and that the test should also consider other factors, such as differences in customer benefit. They were also concerned that the EU's proposed economic equilibrium test, which could replace the NPA test, may be too narrowly defined, focussing on the cost to public service contracts and ignoring wider economic benefits.
- 16.503 The third group consisted of a number of responses that expressed concerns about relaxation of the NPA test and expansion of open access. These included arguments from funders and others that the risk of additional abstraction may reduce franchise revenue and so the funds available, arguments that the present system of charges understates the costs of open access and that open access has pre-empted other more advantageous options, and responses supportive of central management and/or public funding and opposing increased open access on principle.
- 16.504 Only TfL favoured Option 2, but on the basis that the mark-up should be 100% of the value of the excess abstraction and paid to the funders affected. Most other respondents were opposed to Option 2, FirstGroup calling it a "non-starter". Consultees said it was complex and unpredictable, placed too much weight on the precise outcome of uncertain NPA test modelling, would involve them in bilateral negotiation with Network Rail, would make OAO business planning more difficult and would not necessarily fit with a transition to a new charging structure.
- 16.505 Consultees were generally more receptive to cost based mark-ups (Option 3) but there was considerable variation in views as to how this option should work. There was some support for the idea of OAOs and franchisees paying the same charges but with different interpretations as to what that meant, e.g. whether it included covering a franchise premium. Some thought that comparable charges might emerge from the review of the structure of charges and that the review might result in higher variable charges that depended on the features of particular paths. Doubts were expressed about the use of the FTAC as a mark-up because it varies from year to year, is an

"artificial construct" resulting from decisions on other factors, and is not paid by franchisees on additional trains. However, some supported a mark-up of some kind, partly because it would help incentivise Network Rail to provide capacity.

## Assessment of the options

- 16.506 The criteria we apply in assessing the options were set out fully in the consultation paper. We consider them in the light of our strategic objectives - such as supporting a better service for customers, securing value for money from the railway and promoting an increasingly dynamic and commercially sustainable sector - and in the light of our statutory duties. Relevant duties include those to promote competition, to have regard to the funds available to ministers, to provide efficiency and economy on the part of railway service providers and to enable those providers to plan their services.
- 16.507 Since both options 2 and 3 involve adjustment to access charges we also need to consider the Access & Management Regulations and their requirements that a mark-up should promote efficiency, be transparent and non-discriminatory, ensure optimum competitiveness and not exclude the market segment.
- 16.508 While other considerations are also relevant the core question is whether any change would:
- (a) meet the legal requirements;
  - (b) create real commercial opportunities for the benefit of consumers;
  - (c) be practical and capable of being implemented with a burden that is proportionate to the benefit; and
  - (d) without being unduly damaging to the resources of funders of franchises.
- 16.509 Option 2 does not appear to be likely to create real commercial opportunities. OAOs have told us that they consider it to be uncertain, subjective and not transparent. It would make their planning more difficult and they fear that it would result in a lengthy and uncertain process of negotiation. Even if we were able to specify the process to make it more transparent and allay some of these concerns, we think it likely that Option 2 would not create more opportunities and could not be simply implemented.
- 16.510 The various forms of Option 3 differ in complexity of calculation and implementation of the mark-up. They might create commercial opportunities particularly if the charge was set at a relatively low level, as it might be if it was based (as possibly in 3B) on a narrow definition of open access avoidable costs. However, such opportunities might well involve high abstraction rates, the risk of which could deter bidders for franchises and lead them to lower the premia they were willing to pay significantly. Indeed, given the need for a new project to fund both a mark-up and variable charges (including the capacity charge), it may be the case that projects would need to have particularly high abstraction to be viable.

16.511 We are not in a position to predict accurately the degree of abstraction that might take place if the NPA test is completely removed when an OAO is willing to pay the mark-up. It is possible that it might include considerable abstraction or, at least, that potential franchisees might fear that that could be the case. This could have a substantial impact on the governments' revenue from franchising. If we did not relax the test to that extent, but said that there may still be degrees of abstraction or particular cases that would be excessive, we should need to set up an additional, cost benefit, test to determine whether that was the case. That would be difficult to specify, introduce uncertainty and hinder transparency.

## Decision

16.512 On balance we consider that it would not now be appropriate to introduce a mark-up that potential OAOs could opt to pay in exchange for a relaxation of the NPA test. The options for the form of the mark-up both have drawbacks and we cannot be confident that they would provide significant commercial opportunities. They would require further specification and there is a risk that they may not be transparent. Any change introduced now would be likely to be seen as temporary, pending the review of the structure of charges during CP5. There is a potential concern about operators' ability to bear any mark-up, particularly given the potential increases in the capacity charge.

16.513 In these circumstances we are deciding to maintain option 1 but in the context of:

- (a) reviewing the operation of the NPA test;
- (b) the CP5 review of the structure of charges; and
- (c) continuing work to promote the efficiency of use of capacity and transparency in decisions about its provision.

16.514 We intend to review the operation of the NPA test and consider the criticisms that have been made of it by OAOs and others. This is likely to include consideration of whether:

- (a) it adequately captures the effects of the increase in advance ticket purchases that are tied to a particular operator;
- (b) the likely competitive reaction of franchisees to open access entry should be taken into account;
- (c) the models being used are the most appropriate;
- (d) the forecasting record of NPA tests can be assessed;
- (e) differing customer or social benefits associated with a particular scheme might warrant access with differing NPA test results; and
- (f) adaptation might be required in the light of likely developments related to the proposed EU equilibrium assessment.

- 16.515 As noted above, as part of the development work for PR18, we will be working with the industry to review the existing structure of charges and to consider how it might be improved, including how the incentive properties of charges might be strengthened. The project will have a number of aspects but one will be consideration of the scope for charges to send better signals for efficient provision and use of network capacity. This is likely to have implications for the allocation of capacity to open access.
- 16.516 As described elsewhere including chapters 3 and 19, this determination includes measures to promote the efficiency of use of capacity and transparency in decisions about its provision. In particular, Network Rail's volume incentive is being strengthened and an illustrative dashboard to measure its system operator performance has been drawn up and is being developed with Network Rail and the wider industry.

## Miscellaneous charges

### Freight incremental costs provision

- 16.517 In our July 2013 consultation on implementation, we noted that the incremental costs provision in paragraph 2.8 of Schedule 7 of freight track access contracts required updating to reset the date for the baseline capability of the network (which is currently listed in the contract as 1 April 2001). No consultee objected to this being updated and we will amend this date to be consistent with the baseline capability of the network we set through PR13.

## Charter services

### Introduction

- 16.518 Our conclusions on charges for charter operators will improve consistency between charter track access contracts and those of other passenger and freight operators, and ensure that the prices charter services will pay to Network Rail are more reflective of cost. On average, our analysis shows that this package will result in charter operators being marginally better off financially than they have been in CP4.
- 16.519 Charter services generally consist of excursion trains or privately hired trips which do not carry passengers at ordinary fares and which operate on a bespoke basis. The structure of charges for these operators is consistent with that for other operators, but takes account of the scale of charter operations so that the administrative burden associated with billing track access charges is not disproportionate. This is set out in the model charter passenger track access contract.
- 16.520 In 2013, five train operators holding charter passenger track access contracts operate charter services: DB Schenker, West Coast Railway Company, Direct Rail Services, GB Railfreight and First Great Western.

- 16.521 Charter services run approximately 410,000 train miles per year on Network Rail infrastructure. That represents less than 0.2% of total passenger (franchised and open access) mileage. Network Rail's income from these operators in 2012-13 was approximately £1m.
- 16.522 The ORR is responsible for developing the charging framework, including consulting on changes to charging policy. Network Rail is responsible for calculating all existing track access charges, including charges for charter operators, in accordance with the charging objectives and general guidance that we specify. As part of this, it consults on its charging proposals and then concludes on them. We review all Network Rail's charging proposals and conclusions.
- 16.523 Network Rail consulted on the structure of charges for charter operators on 28 May 2013<sup>406</sup>.
- 16.524 We published our draft determination on 12 June 2013, and in this document we discussed some proposals in relation to charter operators. On 24 June 2013 we hosted a workshop with charter operators and Network Rail, to discuss some of these issues in more detail.
- 16.525 On 1 August 2013, Network Rail published its conclusions on the structure of charges for charter operators<sup>407</sup>. Subsequently, we hosted another workshop with charter operators and Network Rail on 8 August 2013.
- 16.526 On 23 August 2013 we published a letter outlining our draft conclusions on the structure of charges and Schedule 8 regime for charter operators in CP5<sup>408</sup>.
- 16.527 We also published a charter implementation consultation on 13 September 2013, which outlined the specific changes we would need to make to charter track access contracts to implement our August 2013 proposals<sup>409</sup>.
- 16.528 The rest of this section is structured as follows:
- (a) charges for charter services in CP4;
  - (b) Network Rail's conclusions on charges for charter operators;

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<sup>406</sup> *Network Rail consultation: Structure of charges for charter operators in CP5*, Network Rail, May 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064786015>.

<sup>407</sup> *Network Rail conclusions: Structure of charges for charter operators in CP5*, Network Rail, August 2013. This may be accessed at <http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064787226>.

<sup>408</sup> ORR letter of 23 August 2013, *Draft conclusions on structure of charges and Schedule 8 performance regime for charter operators*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/consultations/charter-operators.php>.

<sup>409</sup> ORR letter of 13 September 2013, *Proposed contractual provisions to implement our draft conclusions on structure of charges and Schedule 8 performance regime for charter operators*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/charter-implementation-2013-09-13.pdf>.

- (c) our draft conclusions;
- (d) responses to our draft conclusions; and
- (e) our determination.

## **Charges for charter services in CP4**

16.529 The regulated track access charges for charter operators in CP4 have consisted of the following:

- (a) variable usage charge (VUC);
- (b) traction electricity charge (EC4T);
- (c) electrification asset usage charge (EAUC);
- (d) slot charges; and
- (e) cancellation charges.

16.530 The VUC is designed to recover Network Rail's operating, maintenance and renewal costs which vary with traffic. While the VUC for scheduled passenger services has been charged per vehicle mile, for charter services it has been charged per train mile in order to reduce the administrative complexity of the charge.

16.531 In CP4, three VUC rates applied to charter operators according to the following categories:

- (a) non-steam-hauled charter train;
- (b) steam-hauled charter train; and
- (c) light locomotive movements (to which no charge applied).

16.532 These were consistent with other VUCs, but reflected the mixture of vehicles used in charter traffic. This simplification was intended to reduce administrative burden.

16.533 Light locomotive movements were defined as the movement of a single locomotive or two coupled together before working, or after having worked a relevant service. In CP4, light locomotive movements were not charged. If a locomotive carried one or more support coaches, however, they were no longer classified as light locomotives for the purposes of charging the VUC.

16.534 EC4T charges are used to recover the costs of traction electricity supplied by Network Rail to train operators. In practice, only around 1% of total charter traffic mileage is run with electric trains. In CP4, the charter model contract included provisions for EC4T charging on the basis of modelled rates and, as with freight services, an indexed electricity price. It did not include provisions for the year-end volume reconciliation applied in the case of other operators (passenger and freight).

16.535 In CP4, Network Rail deemed it administratively inefficient to put in place a robust process to charge charter operators for their EC4T, due to the very small amount of electric train miles operated by charter operators.



- 16.536 The EAUC is designed to recover the variable maintenance and renewal costs associated with electrification assets. The charter model contract in CP4 included provisions to collect the EAUC. As with the EC4T charges, however, Network Rail has historically deemed it to be administratively inefficient to levy the EAUC on charter operators.
- 16.537 In CP4, the capacity charge was not levied on charter operators. PR08 did not review the charging framework for charter operators, because at the time of the review, charter operators' track access contracts did not contain an access charges review re-opener to apply any changes to charges to implement PR08. The PR08 work for the CP4 capacity charge therefore did not look at whether and how the charge should be applied to charter operators. When we developed the model charter track access contract during CP4, rather than seeking to include a capacity charge immediately and in isolation outside of a periodic review, we decided it would be better to consider this in the round as part of PR13. We included an access charges review re-opener in the model charter track access contract so that a capacity charge (and other changes to charges) could be levied as part of PR13.
- 16.538 Slot charges recover Network Rail's costs for activities undertaken specifically for charter services for which it is not otherwise funded.
- 16.539 Cancellation charges are designed to recover the proportion of the slot charge that has already been incurred before the decision has been taken to cancel the train.

### **Network Rail's conclusions on charges for charter operators**

- 16.540 As noted above, Network Rail consulted on the structure of charges for charter operators on 28 May 2013, and published its conclusions on 1 August 2013.
- 16.541 In its conclusions document, Network Rail proposed retaining the CP4 approach in a number of areas, namely: slot and cancellation charges, and continuing not to levy the capacity charge and station charges.
- 16.542 The changes it proposed are outlined below, and cover: VUC, EC4T charges and EAUC.
- 16.543 Network Rail concluded on four main changes for calculating the VUC in CP5 compared with CP4:
- (a) updating the rate for all charter coaches, to be consistent with the Mark 1 coach rate on the CP5 published price list. This would replace the approach used in CP4 of averaging the rates for Mark 1, 2 and 3 coaches, due to the overwhelming majority of coaches used by charter operators being Mark 1;
  - (b) significantly amending the methodology for calculating the charge rate for a steam locomotive by updating the charge rate for a steam locomotive to be consistent with the average of the published rates for Class 98/5 and Class 98/8 steam locomotives, with a 2:1 weighting in favour of the Class 98/8, reflecting frequency of use; and



- (c) refining the vehicle characteristics for the Class 98/5 and 98/8 steam locomotives, following engagement with charter operators and Network Rail's own analysis of vehicle characteristic information<sup>410</sup>.
- (d) calculating a VUC rate for charter light locomotive movements consistent with other charter journeys. For steam light locomotive movements, this would include locomotives travelling with a support coach.

16.544 Network Rail concluded that, notwithstanding the very small scale of electric charter traffic, charter services should be charged for EC4T on a consistent basis with other services in CP5. Subject to a sufficiently practical billing mechanism, the new arrangements were to include:

- (a) the billing of charter services based on metered or modelled rates;
- (b) using actual unit electricity rates paid by Network Rail, instead of indexed rates; and
- (c) incorporating charter operators in the volume reconciliation.

16.545 Network Rail also concluded that it would charge the EAUC for charter services in CP5, at the same rates as that which applied to other passenger services. This was on a consistent basis with their conclusions on EC4T outlined above.

## Our draft conclusions

16.546 We published our draft conclusions on the structure of charges and Schedule 8 performance regime for charter operators in our letter of 23 August 2013, where we outlined our conclusions in a number of different areas.

16.547 Our key conclusions were to:

- (a) introduce benchmarks for the charter Schedule 8 regime calibrated on the basis of all delay minutes, and introduce a menu of incident caps and access charge supplements (ACS) options, which would deliver financial neutrality of the regime if performance benchmarks are met (discussed in chapter 20);
- (b) broadly accept Network Rail's conclusions on structure of charges, while considering practicalities of implementing EC4T;
- (c) bring charter services in line with other services with respect to levying a capacity charge; and
- (d) retain CP4 arrangements in relation to Schedule 4.

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<sup>410</sup> The refinements included:

- a) Class 98/5 locomotive: increasing the number of axles from 4 to 6, resulting in an axle load of approximately 20 tonnes; and
- b) Class 98/8 locomotive: increasing the vehicle weight from 142 tonnes to 150 tonnes and increasing the number of axles from 4 to 7, resulting in an axle load of approximately 21 tonnes.

16.548 In our consultation we also set out some initial analysis that indicated that the package of changes proposed would result in charter operators being marginally better off financially than they had been in CP4.

## Responses to our draft conclusions and other developments

- 16.549 We received two responses to our 23 August 2013 consultation, from Network Rail and DB Schenker. These responses raised, amongst other things, certain issues on implementation that Network Rail then addressed in a 10 October 2013 letter to the industry<sup>411</sup>.
- 16.550 The respondents welcomed our proposals in most areas. Some specific comments are outlined below. Our response to the issues raised is outlined in the following section in which we set out our decisions.
- 16.551 With respect to VUC, both Network Rail and DB Schenker were concerned that Network Rail's conclusions regarding billing steam light locomotives may not be feasible from a billing perspective. In Network Rail's October letter, it confirmed that for CP5 it would be able to identify and charge light locomotive movements, including steam light locomotive movements travelling with a support coach, consistent with its August conclusions document and ORR's draft conclusions. Specifically, it would do this through a manual process outside TABS.
- 16.552 With respect to EC4T, both DB Schenker and Network Rail raised concerns regarding the administrative complexity of Network Rail's original conclusions. Then in its October letter, Network Rail stated that the costs of including charter operators into TABS for the purpose of billing EC4T in CP5 would be disproportionately high in the short-term. Instead, Network Rail proposed to charge charter operators for their use of EC4T using modelled rates but not including them in the volume and cost wash-up for CP5. Network Rail planned to bring charging charter operators for EC4T into TABS in CP6.
- 16.553 DB Schenker noted the ORR's proposal in the draft conclusions in relation to the capacity charge, and said it would expect any capacity charge to be introduced in a similar way to the proposal put forward by freight operators in respect of the capacity charge for freight services. DB Schenker also said it would expect the level of flexibility Network Rail has in the timetabling of charter services to be taken into account in the level of any capacity charge rate through an appropriate discount. Network Rail said that it thought there should be a single wash-up for all charter services.

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<sup>411</sup> *Network Rail's revised proposal for EC4T and confirmation of the proposed treatment of light locomotive movements in CP5*, Network Rail, October 2013. The letter may be accessed at: <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/pr13-closed-consultations/revised-proposal-for-EC4T.pdf>.

16.554 DB Schenker also noted the ORR's comments around station charges and said it was pleased to note that Network Rail intended to develop and publish a tariff of standard charges for commonly requested services offered at its managed stations.

## Our determination

### Variable usage charge

16.555 On the VUC we reviewed the changes Network Rail made concerning vehicle characteristics of steam locomotives. Taking account of input from stakeholders, we are satisfied that the values it has used are appropriate with respect to axle load and weight distribution, and also with respect to dynamic forces. As a result, we are content that the refinements in the estimation of VUC which Network Rail has made are an improvement in terms of reflecting the costs that charter trains impose on the network.

16.556 We confirm Network Rail's conclusions (see Network Rail's August 2013 conclusion letter for further details) on three main changes for calculating the VUC in CP5 compared with CP4. These were:

- (a) updating the rate for all charter coaches, consistent with its consultation proposal;
- (b) significantly amending the methodology for calculating the charge rate for a steam locomotive; and
- (c) estimating a VUC for a light locomotive movement that is consistent with other charter journeys.

16.557 We decided to introduce the VUC rates proposed by Network Rail. Our estimates of these rates are given in Table 16.54.

**Table 16.54: Our determination of charter operator VUC rates by service types**

Service type (2012-13 prices)	CP4 VUC rate (£/ train mile)	CP5 VUC rate as per our draft conclusions (£/ train mile)	Final CP5 VUC rate (£/ train mile)
Diesel or electric equipment	1.21	1.05	1.06
Steam equipment	1.45	1.05	1.06
Diesel or electric light locomotive	N/A	0.56	0.56
Steam light locomotive	N/A	0.60	0.61

### Charges for EC4T and EAUC

16.558 We conclude that charter services should be charged for EC4T on a consistent basis with other services in CP5 and therefore confirm Network Rail's conclusions in this regard. We also confirm Network Rail's conclusions in its letter of 10 October 2013

with respect to EC4T, namely not to include charter operators in the volume and cost reconciliations as we agree with it that a pragmatic approach to billing EC4T for charter operators in CP5 is necessary.

16.559 We confirm Network Rail’s conclusions to charge the EAUC for charter services at the same rates as that which applied to other passenger services. This approach brings charter operators into line with other operators. Network Rail has explained that it will charge the EAUC per vehicle mile, unlike other charges for charter which are typically per train mile. Our estimates of these charges are set out in Table 16.55.

**Table 16.55: Our determination of passenger EAUC rates for CP5**

(2012-13 prices)	DC (third rail)	AC (OLE)
CP5 passenger (pence/ electrified vehicle mile)	0.72	1.62

### Capacity charge and links to Schedule 8

16.560 We confirm our draft conclusion to introduce a capacity charge for charter operators, to reflect their impact on capacity utilisation and hence costs they impose on Network Rail in relation to Schedule 8 payments.

16.561 With the introduction of benchmarks in the Schedule 8 charter regime, set out in chapter 20, on the basis of CP4 delays, we expect charter operators to be marginally better off than they are currently (see Table 16.9), even with the introduction of a capacity charge. Through this package of measures we are bringing the charter industry more in line with the other operators, with minimum disruption to charter operators’ businesses.

16.562 As part of PR13, Network Rail has recalibrated the capacity charge. This would result in a very substantial increase in the charge for charter traffic. In light of our statutory duties and our assessment of the cumulative impact of PR13 on charter operators, we think it is appropriate to mitigate the impact of the full CP5 capacity charge rates for charter operators. We agree with consultation responses that it is appropriate to adopt a similar approach to mitigation to that which we have concluded on for freight. We explain this approach below.

#### **Network Rail’s estimate of the capacity charge**

16.563 We asked Network Rail to prepare capacity charges for charter traffic in preparation for our final determination. Network Rail developed a pragmatic approach with reference to the capacity charge for freight operators, recognising the similarities in the use of capacity by the two groups of traffic.

16.564 Network Rail used the freight CP4 capacity charge rate as a starting point for calculating the charter CP4 capacity charge rate. It multiplied the freight rate by the ratio of the CP4 charter operator Schedule 8 payment rate and the CP4 freight operator Schedule 8 payment rate. Because in CP4 the charter operator Schedule 8

payment rate was the same as the freight operator rate, in practice this ratio was one and Network Rail therefore set the charter CP4 capacity charge rate to be equal to the freight CP4 capacity charge rate.

16.565 For the CP5 rate, the freight CP5 capacity charge rate, calculated by Arup as part of the PR13 recalibration, was used as a starting point. This was multiplied by the ratio of the CP5 charter operator Schedule 8 payment rate and the CP5 freight operator Schedule 8 payment rate. The Schedule 8 rates are explained in chapter 20 of this document.

16.566 Table 16.56 sets out the capacity charge rates which would apply for charter operators, based on the approach outlined above. These are estimates and the final values which will be levied on the operators will be set out in Network Rail's price lists which it will publish on 20 December 2013.

**Table 16.56: Our determination of charter capacity charge rates for CP5**

£ / train mile (2012-13 prices)	Weekday rate	Weekend rate
CP4 charter rate (to apply to traffic below baseline)	0.17	0.13
CP5 charter rate (to apply to traffic above baseline and apportioned to all traffic in the wash-up)	1.00	0.67

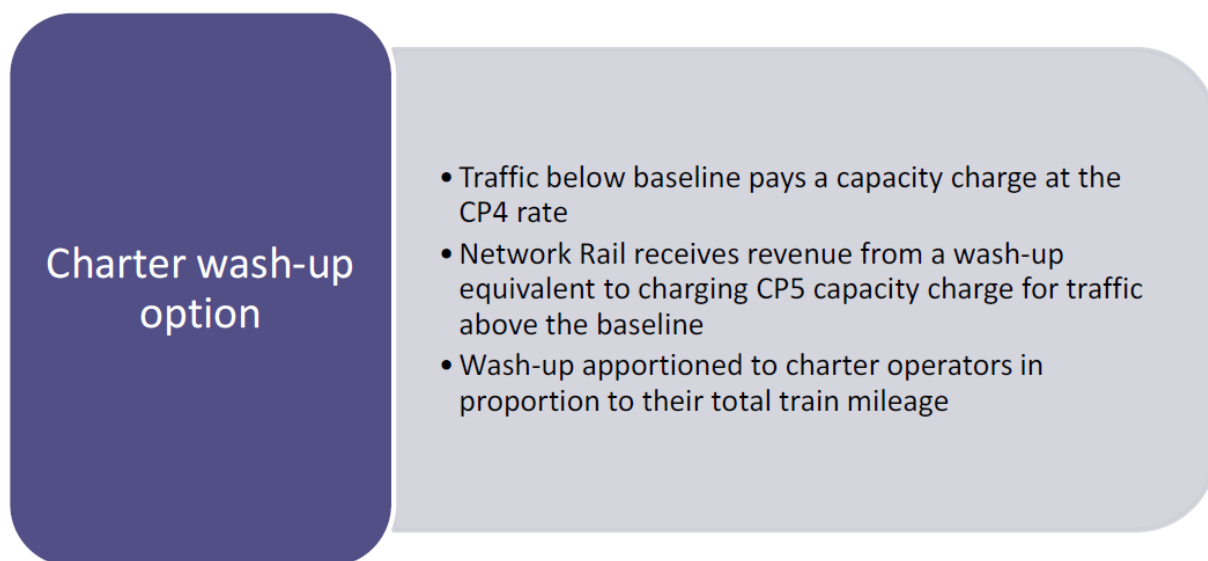
***Our conclusions on implementing the capacity charge for charter traffic***

16.567 We will implement a capacity charge which uses a wash-up as shown in Figure 16.3. This mechanism was included in our 30 September 2013 consultation on contractual provisions to implement options for the capacity charge in CP5<sup>412</sup>.

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<sup>412</sup> ORR letter of 30 September 2013, *Consultation on contractual provisions to implement options for the capacity charge in CP5*. This may be accessed at <http://www.rail-reg.gov.uk/pr13/PDF/implementing-pr13-capacity-charge.pdf>.

**Figure 16.3: Outline of the charter wash-up option for the capacity charge**



16.568 The mechanism means that:

- (a) during the year, charter operators will pay the capacity charge at CP4 rates;
- (b) at the end of the year, a reconciliation (or 'wash-up') will be carried out;
- (c) for the purposes of the reconciliation, a baseline will be set across all charter operators using 2012-13 actual charter train miles;
- (d) the reconciliation will determine the difference between the revenue that Network Rail would have received if full CP5 rates were applied to the actual charter traffic above the baseline and the revenue it has actually received;
- (e) the reconciliation will be apportioned to charter operators, and each charter operator's proportion of the wash-up will be equal to the miles it runs relative to total miles run by all charter services; and
- (f) the reconciliation will work so that where the charter traffic for that year corresponds to or is less than its 2012-13 level, the reconciliation will be zero.

### **Assessment of cumulative impact for charter**

16.569 We have undertaken high level financial analysis to understand the impact of the overall package of changes for charter operators. Our financial analysis is shown in Table 16.49. Table 16.49 shows CP4 income for Network Rail from charter operators, and forecast CP5 annual average income. A positive net difference means a reduction in the total income paid by operators to Network Rail between CP4 and CP5.

16.570 To do this financial analysis, we have made the following assumptions:

- (a) we have assumed CP4 Schedule 8 performance for charter operators;
- (b) we have used average annual charter traffic in CP4 to calculate the values in Table 16.49, both with CP4 and with CP5 charges; and

- (c) the analysis excludes income from slot and cancellations charges, for which no change is proposed.

16.571 Table 16.49 shows that overall we would expect a reduction in the total income received by Network Rail from charter operators, following the changes we have determined with respect to the charter Schedule 8 regime and track access charges. As per the SBP, in our determination of Network Rail's funding, we have included an assumption for charter income, but we have not modelled it in this level of detail.

**Table 16.49: Our forecast of income from charter operators for CP5 (with constant traffic)**

£'000 (2012-13 prices)	VUC	EC4T	Schedule 8	Capacity charge	Total
CP4 income	521	0	174	0	695
Forecast CP5 income	482	30	0	73	585
<b>Net difference between CP4 and CP5 income</b>	<b>39</b>	<b>-30</b>	<b>174</b>	<b>-73</b>	<b>110</b>

Note: with the introduction of benchmarks, the expected financial value of Schedule 8 would be zero at expected levels of performance.

## Implementation

### Implementation through the track access contracts

16.572 We have consulted on the changes to track access contracts that we considered necessary to implement our determination (based on the draft determination)<sup>413</sup>. Alongside taking into account the comments that were raised by stakeholders, in finalising these provisions we will also need to reflect any changes to policy we have made since the draft determination. We do not expect to consult again on the contractual changes that we will make to implement the determination, though we may seek views on specific issues if we consider this to be particularly necessary.

### Price lists and new/amended charges during CP5

16.573 Alongside our review notices, on 20 December 2013, Network Rail will publish its final price lists which will apply for the whole of CP5. These will be consistent with our determination, and will be referenced in the track access contracts

16.574 Inevitably, following the issue of the final price lists for CP5, there will be situations during the control period when new or amended charges need to be set, for example, following the introduction of new rolling stock or where vehicles are modified. The existing model passenger and freight track access contracts currently provide for this, by allowing bilateral supplements to be made to the price lists through a process in Schedule 7.

<sup>413</sup> These consultations may be accessed via the PR13 consultation page: <http://www.rail-reg.gov.uk/pr13/consultations/index.php>.



16.575 We consulted on proposed changes to these price list supplement provisions in July 2013 with the aim of improving the process. We will take into account the comments we received on these (including those raised at the VTAC group) when we finalise the revised provisions for inclusion in the new Schedule 7 for CP5.

## **Implementation through the station access contracts**

16.576 On 20 December 2013, Network Rail will publish a station long term charge price list consistent with our determination. Through our review notices, as part of the changes we make to stations access agreements for PR13, we will direct changes to update the stations long term charge for each station and to reflect the changes to how the costs for SISS are recovered.

## **Adjusting access charges for inflation**

### **Background**

- 16.577 Consistent with our approach to risk and uncertainty, as presented the financial framework chapter (chapter 12), in CP5 Network Rail's track access charges and station long term charges will continue to be adjusted each year for general inflation, as measured by the retail price index (RPI).
- 16.578 Network Rail's access charges, regulated station charges and Schedules 4 and 8 payment rates, caps and thresholds are set in real terms in our determination (i.e. 2012-13 prices for PR13) and are indexed each year in the control period to adjust for general inflation. The methodology used to index access charges is outlined in Schedule 7 of the various freight and passenger track access contracts. It is also set out in Part F of the National Station Access Conditions<sup>414</sup> and Part 6 of the Independent Station Access Conditions in relation to the station long term charge. The methodology used to index Schedule 4 & 8 payment rates, caps and thresholds is also included in the various freight and passenger track access contracts.
- 16.579 In CP4, freight and passenger track access contracts include slightly different indexation methodologies to adjust charges and Schedules 4 and 8 payment rates, caps and thresholds. Passenger track access contracts are adjusted for inflation using a November to November RPI adjustment, whereas freight track access use the average annual (January to December) RPI indexation rate. The indexation methodology used to adjust regulated station charges, as stated in the station access conditions, is consistent with the approach used in the passenger track access contracts.
- 16.580 In our draft determination, we said that we would set out our proposed indexation methodology in our consultation on implementing PR13, published on 12 July 2013.

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<sup>414</sup> National Station Access Conditions (England & Wales) and National Station Access Conditions (Scotland).

- 16.581 In our consultation on implementing PR13, we said that the CP4, simple, indexation methodologies do not create a significant mismatch between the indexation adjustment and actual general inflation when changes in actual general inflation in the control period do not vary significantly. However, when general inflation is not stable, the mismatch between the indexation adjustment and actual general inflation could be more significant. This is because one of the weaknesses in the CP4 approach is that actual general inflation in 2008-09 is counted twice in the indexation factors for CP4 and actual general inflation in 2013-14 is not included. This could have an impact on Network Rail's revenues, particularly when general inflation rates are volatile.
- 16.582 In the consultation, we set out the formula that we proposed to use to index access charges to help address these issues. We proposed two changes to the way we index charges in CP5:
- (a) to use a consistent indexation approach based on an annual average change in the Retail Prices Index (RPI) for all operators (passenger and freight); and
  - (b) to introduce a 'true-up' mechanism to more accurately take account of the general inflation risk that Network Rail faces. A 'true-up' mechanism would adjust forecast inflation assumptions for the actual financial effect that has been experienced.

### Responses to our draft determination

- 16.583 Network Rail welcomed our thinking on the indexation methodology for CP5. It thought that this was an important issue as the choice of methodology would have a material impact on its CP5 income. Network Rail supported our proposal to move to an annual average approach as it thought that this should reduce its exposure to exogenous inflation risk and potential windfall gains / losses, as well as reduce the volatility of its customers' prices. Network Rail's own analysis suggested that the 'true-up' mechanism would typically result in closer alignment between its nominal costs and nominal revenue, over the control period. It also asked that we confirm whether this approach would apply to the network grant.
- 16.584 ATOC's response noted that the simple, RPI-based indexation approach that has operated since privatisation is both transparent and implementable, especially in the context of any changes to the franchising process and the potential exposure of TOCs to changes in charges at future periodic reviews. It also suggested that an RPI approach, based on a specific month before the start of the financial year, was more appropriate. Also, train operators, such as East Midlands Trains, thought that the proposed changes would have significant financial implications for franchisees.
- 16.585 Freight operators were also opposed to our proposals. GB Railfreight considered that the 'true-up' calculation method went against the principle of periodic reviews, i.e. of giving as much certainty as possible to operators and their customers over a five year period. Similarly, Freightliner considered that the 'true up' mechanism would add volatility to charges with a disproportionate increase in risk to operators (who it

considered were less able to bear volatility) from swings in forecast versus actual and that it created a timing mismatch between costs and revenues. Freightliner also thought that there would be an additional administrative cost as a result of the proposal.

### **Our comments on the responses to our draft determination**

- 16.586 Network Rail supported our proposed approach to the indexation of access charges. However, the train operating companies did not support us and they have some concerns about the effects of our proposal on its accounts, e.g. the volatility of their profits.
- 16.587 As a result, we considered an alternative to our proposal, where we would log up the differences between actual inflation and our PR13 inflation assumptions to Network Rail's opex memorandum account. This would have meant that we could have retained the same approach to access charges as in PR08 but still ensured that Network Rail did not unduly gain/lose as a result of how we index its revenues for inflation. However, Network Rail was concerned with the effects of this proposal on its accounts, e.g. potential volatility in reported numbers.
- 16.588 Given the complexity of the effects on the industry of our proposed 'true-up' mechanism, we consider that is better not to use our proposed approach in CP5. However, we still consider there are benefits to the industry from revising the indexation methodology, so we will consider this issue in our PR18 development work.

### **Our determination**

- 16.589 Having had regard to the consultation responses and our statutory duties, we have decided to maintain the existing CP4 approaches to indexation in the access contracts. However, given the tight timescales and difficulties arising from the publication by ONS in mid-December of the RPI November to November index, we will adopt the following arrangement to indexation in access contracts (and in the deed of grant):
- (a) Network Rail will publish its price list in 2012-13 prices on 20 December 2013 (rather than in forecast 2014-15 prices). Access contracts and deeds of grant will then include provisions for prices to be uplifted to 2014-15 prices for the start of CP5<sup>415</sup>;

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<sup>415</sup> In PR08, Network Rail published its CP4 price list in 2009-10 prices (i.e. the price base for the first year of CP4). As such, access contracts did not require provisions to uplift charges from the PR08 determination price base (2006-07 prices) to 2009-10 prices. Instead, this inflation adjustment was done before the price list was published, i.e. outside of access contracts. In CP5, Network Rail will publish its price list in 2012-13 prices and so the inflation adjustment used to calculate charges in 2014-15 prices (the price base for the first year of CP5) will be set out within access contracts. This will make the calculation of inflation adjustments more transparent and should also provide a more direct link back to our PR13 determination.

- (b) to assist its customers, we are asking that Network Rail issue a consolidated version of the price list updated with 2014-15 prices by the start of CP5 for the first year of CP5 (and potentially a similar document for each subsequent year of CP5)<sup>416</sup>; and
- (c) there are no other changes (and no true-up for network grant).

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<sup>416</sup> These documents would have no status in the contract; the official price lists will remain those issued on 20 December 2013.

# 17. Network grant

## Key messages in this chapter

- Network grants are paid directly by DfT and Transport Scotland to Network Rail ‘in lieu of’ some fixed track access charges.
- Our preferred method of funding Network Rail is for all of its income to come from train operators and other customers and not through network grant, but we recognise the governments’ reporting issues and that in their budgets, they classify spend according to whether it is a capital or operating cost (operating spend is also referred to as current or resource) and network grant is treated as a capital cost, so our decision on the level of network grant affects the split between their capital and operating budgets, which could affect affordability.
- Therefore, we have decided to allow part of Network Rail’s income to be provided directly by the governments through network grants, which will be set ex-ante for each year of CP5, as we did in CP4.
- To provide better transparency, we have set out clearly in Annex F, what the level of fixed track access charges would be in the absence of direct network grant payments for each of Network Rail’s operating routes.

## Main changes since our draft determination

- We have considered the responses to our draft determination and had further discussions with Network Rail and the governments and have decided that the network grants should be £17.7bn for England & Wales and £1.9bn for Scotland. In total for Great Britain the network grants will be £19.6bn, which is 3% lower than in CP4. This is substantially below the forecast level of Network Rail’s capital expenditure in CP5 (£24.9bn).

## Introduction

17.1 This section sets out our decisions on the level of network grant payments that we will allow Network Rail to receive from DfT and Transport Scotland in CP5 ‘in lieu of’ some fixed track access charges.

## Background

17.2 A proportion of Network Rail’s revenue requirements have in the past been paid directly by DfT and Transport Scotland in the form of network grants in lieu of some fixed track access charges, on a pound-for-pound basis.

17.3 Our preferred method of funding Network Rail is for all of its income to come from train operators and other customers and not through network grants, but we recognise

the governments' reporting issues and that in their budgets, they classify spend according to whether it is capital or operating (operating spend is also referred to as current or resource) and network grant is treated as a capital cost, so our decision on the level of network grant affects the split between their capital and operating budgets, which could affect affordability.

- 17.4 Therefore, we decided in December 2012, to allow part of Network Rail's income to be provided directly by the governments through network grants, which will be set ex-ante for each year of CP5, as we did in CP4. The policy issues relevant to this decision are discussed in the financial framework chapter (chapter 12) and in our December 2012 financial issues decision document.
- 17.5 In PR08, we set the level of network grants with reference to the governments' reporting rules, which say that direct grants paid to Network Rail are accounted for as capital expenditure in the governments' accounts, whereas the equivalent money paid to train operating companies (who in turn pay track access charges to Network Rail) is accounted for as operating expenditure, i.e. current or resource expenditure. The two relevant financial tests that we used, which relate to the governments' budgeting and statistical reporting, were:
- (a) **investment test:** this states that network grants that are accounted for as capital expenditure in the governments' accounts, cannot exceed Network Rail's capital investment (i.e. renewals and enhancements). Any network grants paid in excess of capital investment are accounted for as resource expenditure. This test applies in respect of the governments in England & Wales and in Scotland separately<sup>417</sup>; and
  - (b) **market body test:** this test requires that to be classified as a market body, Network Rail's annual income from sales (equal to access charges plus other single till income) covers at least half of the company's production costs (equal to operating and maintenance expenditure and statutory depreciation). This test applies to Network Rail as a whole and separate calculations do not need to be made for England & Wales and Scotland.

## Summary of our draft determination

- 17.6 In our December 2012 financial issues decisions document, we said that given the importance of driving more commercial relationships in the industry, we are keen to see the level of network grants decline in CP5. Therefore, we did not strictly apply the governments' reporting rules in identifying the scenarios in the draft determination, but used them as a reference point. In particular, we looked at different approaches to how we can factor headroom into the calculation. The adjustment for headroom

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<sup>417</sup> The level of the network grants in CP4 is similar to our PR08 forecast of Network Rail's capital expenditure.

recognised that Network Rail's actual income and expenditure in CP5 could be different to our forecast and, everything else being equal, the headroom reduces the maximum level of the network grants in our calculations.

- 17.7 In PR08, we only applied headroom to the market body test to increase the threshold required for the test from 50% to 55% (i.e. we applied a headroom of 5%). For PR13, we thought it was more appropriate to apply headroom to both the investment test and the market body test. Therefore, we have shown below the levels of grant that we could allow for England & Wales and Scotland in CP5 based on headroom assumptions of 5%, 15% and 25%. These assumptions were derived from our work on modelling the limits on financial indebtedness and our analysis of the potential variance in Network Rail's expenditure in CP5.
- 17.8 We also said that we were considering how forthcoming changes to the governments' budgeting and statistical reporting, may affect the calculation and use of the market body test<sup>418</sup>.
- 17.9 Tables 17.1, 17.2, 17.3 set out our assessment of the options for the level of network grant payments in CP5, calculated on the basis set out above.

**Table 17.1: Our assessment of the options for CP5 network grant payments in Great Britain**

£m (2012-13 prices)		Great Britain				
PR08	2009-10	2010-11	2011-12	2012-13	2013-14	CP4 total
Network grant	4,127	4,142	4,221	4,016	3,680	20,186
PR13	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Scenario 1: 5%	3,952	3,985	4,034	4,037	3,578	19,586
Scenario 2: 15%	3,549	3,569	3,613	3,613	3,202	17,544
Scenario 3: 25%	3,146	3,152	3,192	3,189	2,825	15,504

**Table 17.2: Our assessment of the options for CP5 network grant payments in England & Wales**

£m (2012-13 prices)		England & Wales				
PR08	2009-10	2010-11	2011-12	2012-13	2013-14	CP4 total
Network grant	3,724	3,746	3,774	3,703	3,398	18,344
PR13	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Scenario 1: 5%	3,547	3,569	3,607	3,654	3,284	17,661
Scenario 2: 15%	3,183	3,194	3,228	3,270	2,939	15,813
Scenario 3: 25%	2,819	2,819	2,849	2,886	2,593	13,966

<sup>418</sup> The European System of Accounts 2010 (ESA10) will replace the European System of Accounts 1995 (ESA95) for reporting of the UK National Accounts from 2014. ESA10 includes a different definition of production costs to ESA95.



**Table 17.3: Our assessment of the options for CP5 network grant payments in Scotland**

£m (2012-13 prices)		Scotland				
PR08	2009-10	2010-11	2011-12	2012-13	2013-14	CP4 total
Network grant	403	396	447	313	282	1,842
PR13	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Scenario 1: 5%	405	416	427	383	294	1,925
Scenario 2: 15%	366	375	385	343	263	1,731
Scenario 3: 25%	327	333	343	303	232	1,538

## Responses to our draft determination

- 17.10 Train and freight operating companies generally considered that network grants being paid to Network Rail in ‘lieu of’ access charges is not a problem. They noted that if access charges increased to replace network grants there would be a structural imbalance with road funding, that may make it more difficult for train and freight operating companies to raise capital and that it may increase regulatory burden.
- 17.11 Railfuture supported replacing network grants with charges from train operators. Chiltern Railways considered that replacing network grants with charges from train operators would help to reinforce the message that train operating companies are Network Rail’s customers.
- 17.12 DfT noted that it wants to come to a shared view with us of the appropriate split between network grants and access charges. Transport Scotland said it strongly preferred our scenario 1 (lower headroom), as any movement towards a higher balance of funding direct through franchise operators will constrain Transport Scotland’s ability to meet Scottish Government accounting and reporting rules and threaten overall programme affordability.

## Our comments on the responses to our draft determination

- 17.13 As we note above, the provision of network grants by the governments, and the lack of clarity over exactly what the governments are buying can undermine Network Rail’s accountability to its customers. This is not consistent with the more commercial relationships we would like to see drive behaviour in the industry. We would like to see more of Network Rail’s funding coming from train operators and other customers, with greater clarity over what the governments’ financial contribution is buying. This is in line with our preference for transparency and cost-reflective charges, which will send better signals for the efficient usage and provision of the network. It would also help avoid blurring the roles and responsibilities of Network Rail and the governments.

17.14 However, we recognise the governments' reporting issues and that in their budgets, they classify spend according to whether it is a capital or operating cost and network grant is treated as a capital cost, so our decision on the level of network grant affects the split between their capital and operating budgets, which could affect affordability.

## Our determination

17.15 In determining the level of network grants, we have to balance our statutory duties including our duty to have regard to the funds available to the Secretary of State and our duty that requires us, in summary, when having regard to guidance from the Scottish Ministers, to have regard to the expenditure that is to be incurred by them.

17.16 It was therefore important to consider the application of the governments' accounting and reporting rules as a reference point in determining our assumptions on the level of network grants but we note that there is uncertainty over the calculation of the market body test. If the governments' approach to reporting changes we can reconsider our own approach.

17.17 Taking into account our general duties and the consultation responses above, we have decided to set the levels of network grants at the levels in scenario 1 of our draft determination, as overall those network grants are smaller than in CP4, which is consistent with our direction of travel on network grants, (i.e. we would prefer lower network grants in the future).

17.18 In the access charges chapter (chapter 16), we discuss how we will improve our approach to the indexation of Network Rail's track access charges in CP5, compared to the approach in CP4. Given that network grants are paid to Network Rail in lieu of track access charges, we consider that the same indexation method used for access charges should be used to calculate annual network grant payments.

17.19 Table 17.4 outlines our final determination of CP5 network grant payments.

**Table 17.4: Our assessment of the CP5 network grant payments in Great Britain, England & Wales and Scotland**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
GB	3,952	3,985	4,034	4,037	3,578	19,586
England & Wales	3,547	3,569	3,607	3,654	3,284	17,661
Scotland	405	416	427	383	294	1,925

17.20 Table 17.5 shows a comparison of the CP5 network grant to CP4.

**Table 17.5: Comparison of our assessment of the CP5 network grant payments in Great Britain, England & Wales and Scotland to CP4**

£m (2012-13 prices)	CP4	CP5	CP5-CP4	%
GB	20,186	19,586	(600)	-3%
England & Wales	18,345	17,661	(684)	-4%
Scotland	1,841	1,925	84	4%

- 17.21 The network grants in CP5 are 61.9% of Network Rail’s gross revenue requirement in Great Britain, 62.1% of Network Rail’s gross revenue requirement in England & Wales and 60.0% in Scotland. This is £600m lower than the PR08 level in Great Britain £684m lower than the PR08 level in England & Wales and £84m higher than the PR08 level in Scotland.
- 17.22 Although the network grant payments represent a significant revenue stream for Network Rail, the company will still receive a large amount of funding directly from train operators as shown in the access charges chapter (chapter 16).
- 17.23 To provide better transparency, we have set out clearly in Annex F, what the level of fixed track access charges would be in the absence of direct network grant payments for each of Network Rail’s operating routes. In this way, it is clearer where the network grants go, and, through our work in setting and monitoring outputs and key performance indicators (KPIs), what taxpayers are getting for their financial contribution.

# 18. Other single till income

## Key messages in this chapter

- The elements of other single till income (OSTI) covered in this chapter mainly relate to Network Rail's property business and income from some enhancements undertaken by Network Rail, such as Crossrail. We also cover non-regulated charges in this chapter. The other elements of OSTI, e.g. freight charges and stations income are included in the access charges chapter (chapter 16). Annex C provides a reconciliation of the elements of OSTI included in this chapter and the elements of OSTI included in chapter 16, to our assumption of OSTI in the calculation of the net revenue requirement in Network Rail's revenue requirement chapter (chapter 14).
- A review of Network Rail's property income forecasts in its SBP shows that Network Rail may be able to generate a higher level of income in CP5 compared to the assumptions in its SBP. For example, in its SBP, Network Rail does not take sufficient account of the potential growth in its income from its property portfolio as a result of forecast passenger growth. Also, Network Rail's SBP forecast of income from property sales and other opportunities was conservative.
- The cost of capital used for the return on investment framework projects has been reduced from 6.00% in CP4 to 4.93% in CP5. This is consistent with our determination of Network Rail's cost of capital as discussed in the financial framework chapter (chapter 12).
- We have included additional income (and the corresponding capital expenditure) in our determination to reflect investments that Network Rail could make in CP5 in its property portfolio as well as on stations. Network Rail's forecast in its SBP was based only on schemes that had been identified at the time it prepared its SBP.

## Main changes since the draft determination

- We have reduced the property income assumption for Great Britain by £92m over CP5 due to concerns about the deliverability of our property income forecasts and in particular our assumptions on projects with low probability but high potential income.
- We have added open access income of £90m over CP5 for Great Britain and England & Wales to our income forecasts, as it was excluded by error in our draft determination.
- We have included our assessment of non-regulated charges in this chapter.

## Introduction

- 18.1 This chapter sets out our assessment of Network Rail's likely income from sources other than regulated access charges in CP5. Other single till income (OSTI) is subtracted from Network Rail's gross revenue requirement pound for pound to calculate its net revenue requirement.
- 18.2 The elements of OSTI that we assess in this chapter are:
- (c) Network Rail's property portfolio (e.g. income from station retail outlets and property sales);
  - (d) income from some enhancements undertaken by Network Rail such as Crossrail; and
  - (e) non-regulated income from managed stations qualifying expenditure, franchise station leases, open access fixed contractual contributions and depots.
- 18.3 This chapter excludes the elements of OSTI related to charges from freight and open access operators and station long term charges which are assessed in the access charges chapter (chapter 16).
- 18.4 Annex C provides a reconciliation of the elements of OSTI included in this chapter and the elements of OSTI included in chapter 16, to our assumption of total OSTI in the calculation of the net revenue requirement in the Network Rail's revenue requirement chapter (chapter 14) and the executive summary.
- 18.5 OSTI as noted in the SBP has been restated in this chapter and in Annex C to improve comparability to our determination. The SBP OSTI assumption in chapter 14 and the executive summary has not been changed because we would also need to change the net revenue requirements. These adjustments are summarised in Table 18.4 and explained in more detail in Annex C.

## OSTI included in Network Rail's SBP

- 18.6 Network Rail's SBP focused on the three main areas of OSTI that are covered in this chapter: property rental and property sales; finance charges for the Crossrail and Welsh Valley projects and facility charges on investment framework schemes. These are summarised in Tables 18.1, 18.2 and 18.3 for Great Britain, England & Wales, and Scotland. All numbers have been rounded to the nearest £100k.
- 18.7 Network Rail's SBP forecasts presented in Tables 18.1, 18.2 and 18.3 have been adjusted to be on a consistent basis with our determination. These adjustments are shown in Table 18.4 and explained in Annex C.

**Table 18.1: Network Rail's SBP forecast of other single till income (non-charge related income and non-regulated income) for Great Britain in CP5**

£m (2012-13 prices)	CP4		CP5				CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Property rental	292.0	267.7	283.1	294.5	306.6	325.1	1,293.0	1,477.1
Property sales		19.7	20.5	20.5	21.0	19.9		101.6
Adjustment for commercial opex <sup>419</sup>	(31.7)	(29.4)	(30.1)	(30.7)	(31.3)	(31.9)	(180.2)	(153.3)
Crossrail finance charge	-	32.1	51.9	70.6	83.4	89.7	-	327.7
Welsh Valleys finance charge	-	0.6	1.6	3.7	8.4	13.5	-	27.8
Facility charges – station depot and track	44.0	50.8	54.1	53.8	53.6	53.3	147.0	265.6
Other	13.0	13.6	9.7	9.7	9.7	9.7	78.0	52.6
<b>Total non-charge related income</b>	<b>317.3</b>	<b>355.2</b>	<b>390.9</b>	<b>422.1</b>	<b>451.4</b>	<b>479.4</b>	<b>1,337.8</b>	<b>2,099.1</b>
Managed stations qualifying expenditure	43.0	43.0	43.0	43.0	43.0	43.0	226.0	215.0
Franchised stations lease income	43.7	44.1	44.1	44.1	44.2	44.7	234.7	221.2
Open access fixed contractual contributions	17.9	17.9	17.9	17.9	17.9	17.9	116.9	89.3
Depots	59.6	59.9	59.9	59.9	59.9	59.9	317.6	299.4
<b>Total non-regulated income</b>	<b>164.2</b>	<b>164.8</b>	<b>164.8</b>	<b>164.9</b>	<b>164.9</b>	<b>165.5</b>	<b>895.2</b>	<b>824.9</b>

<sup>419</sup> This represents income transferred to support costs and maintenance, i.e. it reduces support costs and maintenance.

**Table 18.2: Network Rail's SBP forecast of other single till income (non-charge related income and non-regulated income) for England & Wales in CP5**

£m (2012-13 prices)	CP4		CP5				CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Property rental	274.5	251.6	266.1	276.8	288.1	305.6	1,214.0	1,388.2
Property sales		18.5	19.2	19.2	19.8	18.7		95.5
Adjustment for commercial opex	(28.9)	(27.6)	(28.2)	(28.8)	(29.4)	(30.0)	(169.4)	(144.1)
Crossrail finance charge	-	32.1	51.9	70.6	83.4	89.7	-	327.7
Welsh Valleys finance charge	-	0.6	1.6	3.7	8.4	13.5	-	27.8
Facility Charges –station depot and track	43.3	50.1	53.4	53.1	52.8	52.5	145.0	261.7
Other	12.7	13.3	9.4	9.4	9.4	9.4	77.0	51.0
<b>Total non-charge related income</b>	<b>300.7</b>	<b>338.6</b>	<b>373.4</b>	<b>403.9</b>	<b>432.5</b>	<b>459.4</b>	<b>1,266.6</b>	<b>2,007.8</b>
Managed stations qualifying expenditure	38.6	38.6	38.6	38.6	38.6	38.6	204.6	193.2
Franchised stations lease income	41.6	42.0	42.0	42.1	42.1	42.7	223.6	210.8
Open access fixed contractual contributions	17.9	17.9	17.9	17.9	17.9	17.9	116.9	89.3
Depots	53.0	53.3	53.3	53.3	53.3	53.3	281.0	266.4
<b>Total non-regulated income</b>	<b>151.1</b>	<b>151.8</b>	<b>151.8</b>	<b>151.9</b>	<b>151.9</b>	<b>152.5</b>	<b>826.1</b>	<b>759.7</b>



**Table 18.3: Network Rail’s SBP forecast of other single till income (non-charge related income and non-regulated income) for Scotland in CP5**

£m (2012-13 prices)	CP4		CP5				CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Property rental	17.5	16.1	17.0	17.7	18.4	19.6	79.0	88.9
Property sales		1.2	1.2	1.2	1.3	1.2		6.1
Adjustment for commercial opex	(1.9)	(1.8)	(1.8)	(1.8)	(1.9)	(1.9)	(10.8)	(9.2)
Facility charges –station depot and track	0.7	0.8	0.8	0.8	0.8	0.8	2.0	3.9
Other	0.3	0.3	0.3	0.3	0.3	0.3	1.0	1.6
<b>Total non-charge related income</b>	<b>16.6</b>	<b>16.6</b>	<b>17.6</b>	<b>18.2</b>	<b>18.9</b>	<b>19.9</b>	<b>71.2</b>	<b>91.3</b>
Managed stations qualifying expenditure	4.4	4.4	4.4	4.4	4.4	4.4	21.4	21.9
Franchised stations lease income	2.1	2.1	2.1	2.1	2.1	2.1	11.1	10.4
Depots	6.6	6.6	6.6	6.6	6.6	6.6	36.6	32.9
<b>Total non-regulated income</b>	<b>13.1</b>	<b>13.0</b>	<b>13.0</b>	<b>13.0</b>	<b>13.0</b>	<b>13.0</b>	<b>69.1</b>	<b>65.2</b>

**Table 18.4: Our adjustments to Network Rail’s SBP numbers for consistency with our assessment**

£m (2012-13 prices)	Great Britain	England & Wales	Scotland
Franchised stations lease income	23.5	31.2	(7.7)
Non-Periodic Review income in property income	119.7	112.5	7.2
<b>Total adjustments</b>	<b>143.2</b>	<b>143.7</b>	<b>(0.5)</b>

### Property income (property rental and property sales)

18.8 Network Rail stated in its SBP that its property division’s role is to provide “high quality professional property services to support the railway, delight our customers and stakeholders and help to reduce industry costs”. Network Rail pointed out that although maximising revenue for the property division is important, it should not be seen in isolation from the rail network. For example, if a railway arch tenant causes a

fire, the resulting compensation that is paid is likely to exceed the rental income received. Furthermore, Network Rail stated that the requirement for access to the railway infrastructure limits its ability to securitise rental streams.

- 18.9 Network Rail's forecast of total property income for Great Britain in its SBP has reduced compared to its prior forecasts. It stated that this reflects the contraction in the property market and the subdued economic outlook. The effect of this was:
- (a) a lower baseline at the start of CP5;
  - (b) a reduction in the number of developments to open up revenue streams at major stations; and
  - (c) lower growth assumptions based on long term economic forecasts for CP5.
- 18.10 The SBP included £1,477m of forecast property rental income for Great Britain in CP5. It forecast that income from managed station retail units (which is included in property rentals income) will increase on average by 1.95% per annum. This is driven mainly by property market forecasts, which in Network Rail's view will continue to be subdued during CP5.
- 18.11 Potential property sales in CP5 have been identified by Network Rail on a project by project basis. Network Rail has then applied a probability of success factor to each project to derive total forecast property sales of £102m for Great Britain in CP5.

## **Crossrail and Welsh Valleys finance charges**

- 18.12 Government sponsored investment framework schemes are funded by a finance charge which is levied by Network Rail to compensate it for the capital invested in the project.

### **Crossrail finance charge**

- 18.13 This charge relates to upgrade works (referred to as on-network works) on existing Network Rail track required in order to carry Crossrail trains across the non-tunnel sections of the Crossrail route.
- 18.14 Network Rail's SBP included £1,444m of capital expenditure on the Crossrail project. To ensure that the costs of the project are borne by the co-sponsors (DfT and Transport for London (TfL)), Network Rail will be remunerated by Crossrail Limited by an investment framework "financing charge", which is based upon the project's phased capital profile and Network Rail's WACC for government sponsored investment framework schemes in CP4.
- 18.15 The income forecast in Network Rail's SBP is based on the forecast profile of the capital programme<sup>420</sup>.

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<sup>420</sup> The estimated income from this project of £328m in CP5 is only included in England & Wales and Great Britain.

## Welsh Valley Lines finance charge

- 18.16 In its SBP, Network Rail also used a 4.75% WACC for the Welsh Valley Lines project. The sponsor is the Welsh Government and the project relates to the electrification of the Valleys line and the Great Western Main Line between Cardiff and Bridgend.
- 18.17 The capital cost associated with the Welsh Valley Lines project in CP5 is included in enhancement expenditure in Network Rail's SBP. This forecast is a Network Rail mid-point GRIP 2 estimate, which is based on the Welsh Government's Outline Business Case (OBC). However, as the scheme progresses the forecast is expected to be refined<sup>421</sup>.

## Facility charges (station, depots and track)

- 18.18 Network Rail generates income from investment framework projects where it carries out capital works which are not planned as part of the periodic review process. This income is received through facility charges paid to Network Rail by the project sponsors.
- 18.19 Network Rail's SBP for Great Britain included £266m of income in relation to investment framework projects that had been identified by Network Rail at the time it prepared its SBP<sup>422</sup>. In Great Britain, stations and depots facility charge income was forecast to be £209m and track facility charge income was forecast to be £57m.

## Other charges (HS1 and TOC insurance)

- 18.20 High Speed 1 (HS1) income is received for Network Rail's activities on the HS1 network under a management contract. Network Rail does not own the HS1 network but it carries out the asset management, operation (including timetabling), maintenance and renewal of the HS1 network. Network Rail has assumed in its SBP that net revenues from HS1 will fall from £10.4m to £6.5m per annum. However, this is uncertain as we will not determine HS1's access charges until 2014.
- 18.21 Network Rail purchases some insurance cover on behalf of TOCs and the £3m per annum cost of the cover for Great Britain is re-charged to the TOCs.

## Other non-regulated income

- 18.22 Network Rail receives income to cover managed stations qualifying expenditure (QX), income from franchised stations leases, fixed contractual contributions for open access contracts and depot lease income.

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<sup>421</sup> The estimated income from this project of £28m in CP5 is only included in England & Wales and Great Britain.

<sup>422</sup> Network Rail used a 6% WACC assumption to calculate the charges, which is the rate of return allowed under the CP4 regulatory settlement for these schemes.

- 18.23 QX covers: operations expenditure such as station cleaning, refuse collection and disposal, insurance, utilities, other staff costs, central support costs and a reasonable level of profit that is applied to the QX charge.
- 18.24 The majority of the QX charge covers operations expenditure. We do not regulate this element of the QX charge. However, we do regulate the central support costs and profit elements of the QX charge. Collectively these two elements are known as the QX management fee. We do not determine the QX management fee as part of PR13, but we will approve it before the beginning of CP5.
- 18.25 Franchised stations lease income covers First Reserve Rent (retail car park income, along with some amounts relating to other lease arrangements) and represents a share of the income received under these arrangements. This income stream is not regulated by us.
- 18.26 Network Rail receives fixed contractual contributions for open access contracts from Heathrow Express, Nexus and London Underground. Network Rail also receives depot lease income, which is made up of rents for land & buildings and plant & machinery at depots owned by Network Rail. These income streams are not regulated by us.

## **Our view of the SBP**

### **Property income (rental and sales)**

#### **Summary of our draft determination**

- 18.27 Network Rail's SBP property forecasts for CP5 and the methodology underlying them were reviewed by our consultants, DTZ, to obtain an independent view on the robustness of its assumptions and forecasts of property income.
- 18.28 DTZ found the SBP forecasts to be broadly reasonable. However, overall it considers that the forecasts were too conservative. DTZ considered that:
- (a) as much of Network Rail's property is located within stations, which service the rail network, Network Rail's retail operations should benefit from the considerable growth in the number of railway passengers forecast over CP5 (projected at 4% per annum);
  - (b) Network Rail could improve its tenant mix and make greater use of rents based on the turnover of the lessee. It could increase revenue by reducing the number of protected leases (i.e. leases within the security of tenure provisions of the 1954 Landlord & Tenant Act), which represent 28% of its managed stations units;
  - (c) Network Rail's forecasts for property sales in CP5 were relatively conservative and it considered there was scope to significantly increase the income from property sales. For example, through more use of joint venture agreements; and

(d) Network Rail's SBP forecasts did not include income from projects that have a low probability of happening but that can generate high income. Precedent at Network Rail indicates that, on a portfolio basis, some of these low probability but potentially high income projects can succeed, for example, the Victoria Place project is contributing to Network Rail's income but was not identified in PR08. Also, a proposed acquisition by Network Rail of freight sites has not come to fruition but could become a source of income in the future. Therefore, some income from low probability but potentially high income projects was included in DTZ's property income assumptions.

18.29 DTZ presented a range for Network Rail's property income in CP5 from £1,539m to £1,833m for Great Britain with a base forecast of £1,645m for Great Britain. This compares to Network Rail's SBP assumption for Great Britain of £1,579m (£1,477m property rental and £102m property sales)<sup>423</sup>. Also, DTZ considered that the high end of its range does not represent the limit of what is achievable.

18.30 We agreed with DTZ's reasoning and considered that DTZ's range was based on reasonable adjustments to Network Rail's assumptions although some of those adjustments may have been too cautious.

18.31 Therefore, we decided in our draft determination we would use the "upper" end of DTZ's range of property income for Great Britain. The total income of £1,833m (£1,656m of property rental and £177m of property sales) for Great Britain was 13.9% or £254m higher than Network Rail's SBP.

18.32 Also, Network Rail's SBP forecast income excluded income relating to projects which were not specifically identified by Network Rail at the time it prepared its SBP, but nevertheless based on previous experience, it can be reasonably predicted that some opportunities for future developments will materialise. Therefore, in our draft determination we included an estimate of the future income from these schemes of £122m for Great Britain in our draft determination in Table 18.4 below (based on DTZ's 'high' scenario, which was uplifted from its base forecast of £120m). In our enhancements determination in the enhancements chapter (chapter 9), we included Network Rail's forecast of £231m of capital expenditure required to deliver these projects.

18.33 For our determination numbers to be comparable with the SBP, we have updated Network Rail's SBP assumptions in Tables 18.1, 18.2 and 18.3 to include this income of £120m for Great Britain, £113m for England & Wales and £7m for Scotland.

## Responses to our draft determination

18.34 Network Rail was concerned that our property income assumption is £251m higher than its SBP. This is due to a combination of variances for property rental income

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<sup>423</sup> Both DTZ's and Network Rail's SBP assumptions are shown gross of the commercial opex adjustment (£144m over CP5).

(£97m), property sales income (£75m), managed stations income (£59m) and other differences (£20m).

- 18.35 On property rental income, Network Rail was concerned about the deliverability of our assumptions for income associated with low probability but high potential income projects, especially as we had not provided additional funding for the capital expenditure that may be required for these projects.
- 18.36 On property sales income, Network Rail was concerned with the conversion rate (i.e. the percentage of the schemes that result in a sale compared to the total potential schemes identified in the early stages of a plan) for sales in DTZ's upper end assumption being almost double its SBP assumption. Network Rail argued that the assumptions must take account of the difficulty associated with the physical location and nature of the properties and the current state of the property sales market.
- 18.37 On managed stations income, Network Rail was concerned about its ability to transfer existing lease agreements from protected leases to non-protected leases and that our assumption did not include the additional expenditure needed to buy tenants out of their leases.
- 18.38 We also received a number of responses that stated property sales should not go ahead if they risk impacting future growth of the railway and the current use of the railway.

#### **Our comments on the responses to our draft determination**

- 18.39 Following further discussions with Network Rail about low probability but high potential income projects, we agree with Network Rail that it may be too challenging for Network Rail to deliver all this income in addition to our other income assumptions. We have therefore reduced our income assumption by £92m for these projects.
- 18.40 In relation to the conversion rate on property sales we consider that Network Rail is being too pessimistic on the difficulties associated with the physical location and nature of the properties and the current state of the property sales market.
- 18.41 Network Rail has a more pessimistic view of the property development part of the economy than it does when forecasting interest rates for its financing cost assumptions, where it assumes that the economy in Great Britain will improve over CP5 and that interest rates will therefore rise.
- 18.42 We have discussed this matter further with DTZ who do not agree with Network Rail's views because they consider that:
- (a) Network Rail's property is often located in prime locations and that Network Rail has an ability to create a step change in property income through changing access arrangements and exploiting other key synergies with the railway. Network Rail's database of assets with potential for development and/or sale, only includes sites which have the potential to be disposed of or developed. As an upper estimate it therefore thinks their assumption is a realistic stretch target;



- (b) Network Rail's database only includes sites which either do not impact on the operational railway or can be 'sensibly' arranged not to impact on the operational railway; and
- (c) that the prospects for the property development market (across Great Britain) have improved markedly over the last year. For example, over the next five years, prime headline rents are forecast to rise in all regional markets for office space, with Edinburgh, Leeds and Manchester standing out as having good prospects. This is likely to increase development opportunities.

18.43 We note concerns about the potential impact of property sales on the operational railway. However, we consider that the requirements of condition 7 of Network Rail's network licence adequately ensures that land which may be critical to the continuing operation and future development of the railway remains available.

18.44 We have considered Network Rail's concerns about the assumptions on protected leases in conjunction with the low probability but high potential income schemes issue discussed above. Overall, we think that by reducing our property income assumption by £92m, we have addressed Network Rail's deliverability issues in a reasonable way.

18.45 We still consider that Network Rail can generate some additional income from low probability but high potential income schemes but we recognise that our capital expenditure assumptions do not include additional expenditure to pay tenants a lump sum payment to compensate them for the change in their contract. These potential payments are uncertain but likely to be relatively small and our spend to save framework can be used to fund these payments.

### **Our determination**

18.46 Our determination is a package, which means that not all of our assumptions will be equally hard to achieve and we have also de-risked a number of areas of our determination, e.g. civils renewals and enhancements.

18.47 In particular, there are a number of areas such as VAT rebates, corporation tax, telecoms income, grant income (e.g. Network Rail has received a grant from the European Union of around £45m in CP4) and other de-minimis income, where Network Rail may receive additional income in CP5. For example, in PR08, we assumed that Network Rail would receive no income from VAT rebates in CP4, but it has received £90m.

18.48 We also consider that our facility charge income assumption is conservative. This is because the number of schemes that we assume will go ahead is based on an investment framework cost of capital of 6%, whereas in our determination we are reducing the investment framework cost of capital to 4.93% for CP5. This should mean that more schemes go ahead because the cost of the scheme to the TOC will be lower. A number of TOCs in their responses to our draft determination also noted that a lower cost of capital is likely to mean that more schemes will go ahead.



18.49 Given these issues it is necessary to have challenging assumptions in other areas of the package such as property income in order for our determination to be a balanced package. Overall, we consider that our property income assumption of £1,741m (£1,564m of property rental and £177m of property sales for Great Britain) is appropriate and is within DTZ's range.

## **Crossrail finance charge and Welsh Valley Lines finance charge**

### **Summary of our draft determination**

18.50 In our draft determination we amended the financing charge assumption for the Crossrail project to reflect Network Rail's real "vanilla" WACC of 4.31% for CP5, as described in chapter 13. In comparison, Network Rail's assumed real "vanilla" WACC was 4.75%.

18.51 For the Welsh Valley Lines finance charge, we also used a 4.31% real "vanilla" WACC and we reduced the finance charge assumption in our draft determination to reflect our adjustment to the project's efficient capital expenditure in CP5. This is discussed in chapter 9.

### **Responses to our draft determination**

18.52 TfL noted that we should ensure that Network Rail would not be over-recovering income from Crossrail as TfL will be paying a financing charge to Network Rail during construction of Crossrail and when services commence, TfL will be paying supplementary access charges to Network Rail.

### **Our comments on the responses to our draft determination and our determination**

18.53 We have had a number of discussions with DfT and TfL about a charge that will apply for Crossrail once that service is fully operational, and similarly with DfT and the Welsh Government about the Welsh Valley Lines. As the final form of these charges has not yet been agreed, and the date of any transition from the current charges to the future charges is uncertain, for our final determination we have continued to assume that the existing charges will be applied across the whole control period.

18.54 We note TfL's comment and the consistency between the income that Network Rail recovers through charges for Crossrail and its costs, is one of the issues we are currently discussing with Network Rail, DfT and TfL.

## **Facility charges – station, depots and track**

### **Summary of our draft determination**

18.55 For those projects that generate station, depot and track facility charges which were included in Network Rail's SBP, we used Network Rail's income estimates but adjusted the income to reflect our 4.91% (real, pre-tax) cost of capital assumption, instead of the 6% cost of capital used by Network Rail (which is unchanged from CP4). There are also speculative projects which were not known at the time of Network Rail's SBP and were therefore not included in it. We thought that it is important that our determination reflects as closely as possible Network Rail's likely

income in CP5 and the associated capital expenditure even when the project is not yet specifically known.

- 18.56 We based our facility charge assumptions for Network Rail's speculative projects on Network Rail's "central" scenario, which was based on £185m (2012-13 prices) of capital expenditure in CP5 for Great Britain. This is a reasonable assumption given the uncertainty involved in this forecast and is based on the level of capital expenditure in CP4 but excludes large one-off projects like Evergreen 3 and the Nottingham hub, as projects of this scale are unlikely to occur with such frequency during CP5. Based on the 4.91% cost of capital (real, pre-tax), we estimated this would yield total facility charges income for Great Britain of £58m (2012-13 prices) in CP5.
- 18.57 We apply a real "vanilla" WACC to government sponsored projects and a pre-tax WACC to other projects. This is because our approach to the calculation of our corporation tax assumptions, in our calculation of Network Rail's revenue requirement, is to base them on forecast cash corporation tax payments in CP5 rather than a notional amount.
- 18.58 This means that the governments fund the corporation tax consequences of government sponsored projects over the long-term through the corporation tax assumptions in the revenue requirements. However, other sponsors of investment framework projects may not still be in place in the future to fund the cash corporation tax payments when they materialise, so for those projects, we assume a simple approach to corporation tax, by including an estimate of the corporation tax effect of the project in the pre-tax cost of capital.

### **Responses to our draft determination**

- 18.59 A number of train operators noted that a lower cost of capital is likely to mean that more schemes will go ahead, which will increase Network Rail's income.

### **Our comments on the responses to our draft determination**

- 18.60 We consider that our facility charge income assumption is conservative given that it is based on the number of schemes that were assumed would go ahead with an investment framework cost of capital of 6%. We have reduced the investment framework cost of capital to 4.93% for CP5, which should increase the number of schemes that go ahead.

### **Our determination**

- 18.61 As we have not seen any representations or further evidence to persuade us to change the approach set out in our draft determination, we consider that this remains appropriate for CP5. We have slightly amended our assessment of Network Rail's investment framework cost of capital from 4.91% to 4.93% for our final determination.

## Other non-charge income (HS1 and the TOC insurance recharge)

### Summary of our draft determination

- 18.62 Network Rail assumed in its SBP that net revenues from HS1 will fall from £10.4m to £6.5m in CP5. In our draft determination we considered that it was not appropriate to prejudge our 2014 periodic review of HS1. Therefore, our assumption in the draft determination was that the income Network Rail would receive from HS1 would be unchanged at £10.4m per annum.
- 18.63 Our draft determination of the insurance recharge to TOCs was the same as Network Rail's SBP (£3m per annum).

### Responses to the draft determination

- 18.64 Network Rail noted that some discussions on PR14 have already taken place and it thinks an assumption of £6.5m would therefore be a more appropriate assumption for its HS1 income.

### Our comments on the responses to our draft determination and our determination

- 18.65 We still consider that it is appropriate not to prejudge the PR14 determination of HS1. If there is a difference between the outcome of PR14 and our assumptions for Network Rail's income in PR13, the difference will be logged up to the opex memorandum account.
- 18.66 The TOC insurance recharge is cost reflective and we have assumed a higher level of efficiency in insurance costs than Network Rail. We have therefore reduced our assumptions for the insurance recharge from TOCs by £1.8m over CP5.

## Other non-regulated income

### Background

- 18.67 In our draft determination, Network Rail's non-regulated income was only included in Annex C. Network Rail noted that we had not included open access non-regulated income in our draft determination of OSTI and we have now included this income in the final determination.

### Our determination

- 18.68 Our assumption for Network Rail's managed stations QX income in CP5 of £212m for Great Britain is consistent with our estimate of managed stations expenditure and is similar to Network Rail's SBP estimate of managed stations QX income (£215m). Network Rail has provided us with an estimate of what its CP5 QX management fee proposal will be, which we have included in our managed station income forecasts, as we think it is a reasonable assumption for the purpose of our final determination.
- 18.69 We have assumed that franchised stations lease income (£223m for Great Britain) and depots lease income (£300m) in CP5 will be the same as Network Rail included

in its SBP submission, which is broadly the same as the income received from these two sources in the final year of CP4<sup>424</sup>. This is because the vast majority of this income is related to leases/contracts that are fixed and are uplifted by RPI each year. The only change we have made to Network Rail's SBP assumptions is where Network Rail has identified an error in the classification of its income between stations lease income and the station long term charge in relation to a particular station<sup>425</sup>.

18.70 We have not changed our assumptions in relation to Network Rail's open access charges in CP5 (£90m for Great Britain), as we consider that Network Rail's SBP assumption is reasonable.

## Our assessments

18.71 Our assessments of OSTI covered in this chapter for Great Britain, England & Wales, and Scotland in CP5 are summarised in Tables 18.5, 18.6 and 18.7.

**Table 18.5: Our assessment of other single till income (non-charge related income and non-regulated income) for Great Britain in CP5**

£m (2012-13 prices)	CP4			CP5			CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Property rental	292.0	272.1	290.1	311.0	331.8	359.6	1,293.0	1,564.6
Property sales		34.7	35.5	35.5	36.0	34.9		176.6
Adjustment for commercial opex	(31.7)	(29.4)	(30.1)	(30.7)	(31.3)	(31.9)	(180.2)	(153.3)
Crossrail finance charge	-	29.2	47.2	64.2	75.9	81.6	-	297.7
Welsh Valley Lines finance charge	-	0.5	1.3	3.0	6.9	11.1	-	22.8
Facility charges – station, depot and track	44.0	47.4	53.0	55.7	58.3	61.0	147.0	275.4
Other	13.0	13.6	13.5	13.3	13.2	13.1	78.0	66.7
<b>Total non-charge related income</b>	<b>317.3</b>	<b>368.1</b>	<b>410.5</b>	<b>452.0</b>	<b>490.8</b>	<b>529.4</b>	<b>1,337.8</b>	<b>2,250.5</b>

<sup>424</sup> Franchised stations lease income increases slightly throughout CP5 to reflect an arrangement in relation to building car parks at a particular station

<sup>425</sup> Network Rail has advised us that, for stations on the Isle of Wight, maintenance, repair and renewals expenditure is recovered through stations lease income rather than the station long term charge but this income was shown incorrectly in its SBP. We therefore made an adjustment of £0.3m to our determination of station lease income and franchised station long term charge income to correct this.

£m (2012-13 prices)	CP4			CP5			CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Managed stations qualifying expenditure	43.0	42.6	42.4	42.3	42.3	42.3	226.0	211.9
Franchised stations lease income	43.7	44.4	44.4	44.5	44.5	45.1	234.7	222.9
Open access fixed contractual contributions	17.9	17.9	17.9	17.9	17.9	17.9	116.9	89.5
Depots	59.6	59.9	59.9	59.9	59.9	59.9	317.6	299.5
<b>Total non-regulated income</b>	<b>164.2</b>	<b>164.8</b>	<b>164.6</b>	<b>164.6</b>	<b>164.6</b>	<b>165.2</b>	<b>895.2</b>	<b>823.8</b>

**Table 18.6: Our assessment of other single till income (non-charge related income and non-regulated income) for England & Wales in CP5**

£m (2012-13 prices)	CP4			CP5			CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Property rental	274.5	255.7	272.6	292.3	311.9	338.0	1,215.4	1,470.5
Property sales		32.6	33.4	33.4	33.8	32.8		166.0
Adjustment for commercial opex	(29.8)	(27.6)	(28.2)	(28.8)	(29.4)	(30.0)	(169.4)	(144.1)
Crossrail finance charge	-	29.2	47.2	64.2	75.9	81.6	-	297.7
Welsh Valley Lines finance charge	-	0.5	1.3	3.0	6.9	11.1	-	22.8
Facility charges – station, depot and track	43	46.5	51.9	54.4	57.0	59.5	145.0	269.3
Other	12.7	13.3	13.2	13.1	13.0	12.9	77.0	65.5
<b>Total non-charge related income</b>	<b>300.7</b>	<b>350.2</b>	<b>391.3</b>	<b>431.6</b>	<b>469.1</b>	<b>505.9</b>	<b>1,266.6</b>	<b>2,147.7</b>
Managed stations qualifying expenditure	38.6	38.3	38.0	38.0	38.0	37.9	204.6	190.2
Franchised stations lease income	41.6	42.3	42.3	42.4	42.4	43.0	223.6	212.4
Open access fixed contractual contributions	17.9	17.9	17.9	17.9	17.9	17.9	116.9	89.5

£m (2012-13 prices)	CP4			CP5			CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Depots	53.0	53.3	53.3	53.3	53.3	53.3	281.0	266.5
<b>Total non-regulated income</b>	<b>151.1</b>	<b>151.8</b>	<b>151.5</b>	<b>151.6</b>	<b>151.6</b>	<b>152.1</b>	<b>826.1</b>	<b>758.6</b>

**Table 18.7: Our assessment of other single till income (non-charge related income and non-regulated income) for Scotland in CP5**

£m (2012-13 prices)	CP4			CP5			CP4 Total	CP5 Total
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19		
Property rental	17.5	16.4	17.5	18.7	20.0	21.6	79.0	94.2
Property sales		2.1	2.1	2.1	2.2	2.1		10.6
Adjustment for commercial opex	(1.9)	(1.8)	(1.8)	(1.8)	(1.9)	(1.9)	(10.8)	(9.2)
Facility Charges – Station depot and Track	0.7	0.9	1.1	1.2	1.4	1.5	2.0	6.1
Other	0.3	0.3	0.3	0.3	0.3	0.3	1.0	1.5
<b>Total non-charge related income</b>	<b>16.6</b>	<b>17.9</b>	<b>19.2</b>	<b>20.5</b>	<b>22.0</b>	<b>23.6</b>	<b>71.2</b>	<b>103.2</b>
Managed stations qualifying expenditure	4.4	4.3	4.3	4.3	4.3	4.3	21.4	21.5
Franchised stations lease income	2.1	2.1	2.1	2.1	2.1	2.1	11.1	10.5
Depots	6.6	6.6	6.6	6.6	6.6	6.6	36.6	33.0
<b>Total non-regulated income</b>	<b>13.1</b>	<b>13.0</b>	<b>13.0</b>	<b>13.0</b>	<b>13.0</b>	<b>13.0</b>	<b>69.1</b>	<b>65.0</b>

Note: There is no Crossrail income, Welsh Valley Lines income or open access fixed contractual contributions in Scotland.

18.72 The differences in OSTI between Network Rail's SBP and our final determination are summarised in Table 18.8. These differences are explained in detail above and largely reflect our more optimistic view than Network Rail of the property income that it can achieve in CP5.

**Table 18.8: Difference in OSTI between Network Rail SBP and our final determination for Great Britain, England & Wales and Scotland**

£m (2012-13 prices)	Great Britain			England & Wales			Scotland		
	SBP	FD	FD - SBP	SBP	FD	FD - SBP	SBP	FD	FD - SBP
Property rental	1,477.1	1,564.6	87.5	1,388.2	1,470.5	82.3	88.9	94.2	5.3
Property sales	101.6	176.6	75.0	95.5	166.0	70.5	6.1	10.6	4.5
Adjustment for commercial opex	(153.3)	(153.3)	-	(144.1)	(144.1)	-	(9.2)	(9.2)	-
Crossrail finance charge	327.7	297.7	(30.0)	327.7	297.7	(30.0)	-	-	-
Welsh Valley Lines finance charge	27.8	22.8	(5.0)	27.8	22.8	(5.0)	-	-	-
Facility charges – station, depot and track	265.6	275.4	9.8	261.7	269.3	7.6	3.9	6.1	2.2
Other non-charge income	52.6	66.7	14.1	51.0	65.5	14.5	1.6	1.5	(0.1)
<b>Total non-charge income</b>	<b>2,099.1</b>	<b>2,250.5</b>	<b>151.4</b>	<b>2,007.8</b>	<b>2,147.7</b>	<b>139.9</b>	<b>91.3</b>	<b>103.2</b>	<b>11.9</b>
Managed stations qualifying expenditure	215.0	211.9	(3.1)	193.2	190.2	(3.0)	21.9	21.5	(0.4)
Franchised stations lease income	221.2	222.9	1.7	210.8	212.4	1.6	10.4	10.5	0.1
Open access fixed contractual contributions	89.3	89.5	0.2	89.3	89.5	0.2	0.0	0.0	-
Depots income	299.4	299.5	0.1	266.4	266.5	-	32.9	33.0	0.1
<b>Total non-regulated income</b>	<b>824.9</b>	<b>823.8</b>	<b>(1.1)</b>	<b>759.7</b>	<b>758.6</b>	<b>(1.1)</b>	<b>65.2</b>	<b>65.0</b>	<b>(0.2)</b>



18.73 The differences in OSTI between our draft and final determination are summarised in Table 18.9. These differences are explained in more detail in Annex C (summary of other single till income). The main differences are the inclusion of the fixed contractual contribution from open access operators of £90m, a reduction in income from low probability but high potential income projects of £92m and the removal of £23m of income from freight connection agreements as this is also included in other operating income.

**Table 18.9: Differences in OSTI between our draft and final determination for Great Britain, England & Wales and Scotland**

£m (2012-13 prices)	Great Britain			England & Wales			Scotland		
	DD	FD	FD - DD	DD	FD	FD - DD	DD	FD	FD - DD
Property rental	1,656.4	1,564.6	(91.8)	1,557.0	1,470.5	(86.5)	99.4	94.2	(5.2)
Property sales	176.6	176.6	-	166.0	166.0	-	10.6	10.6	-
Adjustment for commercial opex	(153.8)	(153.3)	0.5	(144.8)	(144.0)	0.8	(9.4)	(9.2)	0.2
Crossrail finance charge	298.1	297.7	(0.4)	298.1	297.7	(0.4)	-	-	-
Welsh Valley Lines finance charge	22.8	22.8	-	22.8	22.8	-	-	-	-
Facility charges – station, depot and track	274.4	275.4	1.0	268.3	269.3	1.0	6.1	6.1	-
Other non-charge income	68.5	66.7	(1.8)	67.0	65.5	(1.5)	1.5	1.5	-
<b>Total non-charge income</b>	<b>2,343.0</b>	<b>2,250.5</b>	<b>(92.5)</b>	<b>2,234.4</b>	<b>2,147.7</b>	<b>(86.7)</b>	<b>108.2</b>	<b>103.2</b>	<b>(5.0)</b>
Freight connection agreements and other non-regulated income	22.5	-	(22.5)	20.5	-	(20.5)	2.5	-	(2.5)
Managed stations qualifying expenditure	215.0	211.9	(3.1)	193.0	190.2	(2.8)	22.0	21.5	(0.5)
Franchised stations lease income	221.1	222.9	1.8	210.9	212.4	1.5	10.5	10.5	-
Open access fixed contractual contributions	-	89.5	89.5	-	89.5	89.5	-	-	-
Total depots income	299.0	299.5	0.5	266.5	266.5	-	33.0	33.0	-
<b>Total non-regulated income</b>	<b>757.6</b>	<b>823.8</b>	<b>66.2</b>	<b>690.9</b>	<b>758.6</b>	<b>67.7</b>	<b>68.0</b>	<b>65.0</b>	<b>(3.0)</b>

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# 19. Financial incentives

## Key messages in this chapter

- We are encouraging the industry to work together to improve productivity, reduce costs and to deliver better value for its customers. We are doing this by strengthening and developing incentives to better align the interests of Network Rail and its customers, the train operators, and to make Network Rail more commercially responsive to the needs of its customers.
- We are improving the existing efficiency benefit sharing mechanism by replacing it with a route level incentive mechanism. This route level incentive will encourage Network Rail and the operators to work together and allow both to share in efficiency gains or losses on an annual basis.
- To encourage franchised operators to take a more active interest in periodic reviews, we have asked franchising authorities to expose new franchises to changes that we make to the variable usage charge at future periodic reviews. We will also work with governments to explore how we can increase franchised train operators' exposure to the fixed charge and changes to it. These are decisions for the governments. DfT has said that it will consider exposure to changes in the variable usage charge for future franchises. However Transport Scotland has confirmed that it does not intend to expose the new Scottish franchises to changes in access charges.
- We are strengthening the incentives for the industry to work together to drive down the costs of enhancements. We want Network Rail and operators to enter into commercial agreements that will reward operators if real cost savings are achieved.
- We support research and development (R&D) and innovation as means of improving Network Rail's productivity and reducing its costs in the medium to long term. We are introducing a matched-funding financial incentive whereby we will make provision in the settlement for up to £50m of additional Network Rail expenditure on R&D or innovation to be matched.
- We are encouraging Network Rail to act more like a commercial organisation – which makes informed judgements about the amount of capacity to provide, at what cost and to whom. We are doing this by improving the existing volume incentive mechanism. Network Rail has confirmed its commitment to introducing a range of measures to strengthen the way in which it acts on the incentive in its decision making. The incentive will be disaggregated to a route level and we are introducing a downside and increasing incentive payment rates to increase its impact.

## Introduction

- 19.1 This chapter relates to financial incentives. As we described in the overall incentives chapter, if Network Rail's income is set at a level which is equal to its costs, since it does not face competition, it has limited incentive to improve its productivity and control its costs. Further, as Network Rail's variable charges do not cover all the costs of providing capacity, the company does not have an incentive to act commercially when making judgements about whether to accommodate unexpected additional demand for the use of its network.
- 19.2 A possible remedy is to design individual charges in a way that provides these incentives. As the current structure of charges does not do this, we are establishing a longer-term project to work with the industry to review the existing structure of charges and to consider how it might be improved, including how the incentive properties of the charges might be strengthened. But, at present, financial incentives are required to supplement the structure of charges and to provide these incentives. In PR13, we have reviewed the existing financial incentives framework and decided to modify this for CP5 to improve its incentive properties by:
- (a) developing the existing efficiency benefit sharing mechanism into a **route-level efficiency benefit sharing (REBS) mechanism**. This incentive is designed to strengthen the alignment of incentives between Network Rail and train operators – through the development of a default mechanism in CP5 for Network Rail to share efficiencies with train operators – in order to support greater co-operation to drive down industry costs. It works by allowing efficiency gains or losses to be shared between Network Rail and its customers (i.e. operators) on an annual basis;
  - (b) asking franchising authorities to provide new franchises with **exposure to technical or cost-reflective (as opposed to policy related) changes in the variable usage charge** at future periodic reviews. We will work also with governments to explore how we can increase franchised train operators' exposure to the fixed charge and to changes in it. The rationale is similar to that for REBS but the mechanism works by giving operators a greater interest in infrastructure costs at a periodic review;
  - (c) strengthening the incentives for the industry to work together to drive down the costs of enhancements and to align scope, specification and delivery of projects better with the needs of the operational railway and its customers. We want Network Rail and operators to enter into **commercial agreements** that will help Network Rail to achieve improvements and reward both parties if these are achieved;
  - (d) supporting investment in R&D and innovation by introducing a **matched-funding financial incentive**; and

- (e) developing the **existing volume incentive mechanism** in terms of both its design and payment rates in order to improve its effectiveness. The volume incentive is designed to encourage Network Rail to consider unexpected demand from its customers and in doing so to make trade-offs similar to those made by a company operating in a more commercial setting.

## Route-level efficiency benefit sharing

### Overview

19.3 In December 2012, we published our decisions on the route-level efficiency benefit sharing (REBS) mechanism<sup>426</sup>. This mechanism is intended to strengthen the incentive to reduce infrastructure costs. It works by increasing passenger and freight train operators' interest in these costs by exposing them to these costs in each year of the control period.

### Rationale

19.4 In a normal competitive market, when a company reduces its costs, its customers should benefit over time as a result of the lower prices or better service they receive. There are market incentives in place for firms to work together with their suppliers to help reduce their suppliers' costs and for suppliers to encourage them to do so. In the rail industry these normal market incentives are not present, primarily because franchise agreements provide franchisees with a high degree of insulation from the financial impact of changes to access charges, both upwards and downwards, at a periodic review.

19.5 Ultimately, we want to see the relationships between Network Rail and train operators put on to a more commercial footing, in which operators are exposed to changes in Network Rail's costs (through the charging framework) and so have an incentive to help the company to reduce them. There are already cases where train operators are fully exposed to costs, e.g. traction electricity costs and freight and open access operators' exposure to changes in variable charges.

19.6 This exposure has led those train operators to put considerable effort into investigating and challenging Network Rail's costs and efficiency in those areas. But only a small proportion of Network Rail's total cost base is affected. We are keen to see the level of engagement and challenge that these operators bring, and the extent to which Network Rail and operators work together to identify and achieve cost savings, extended.

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<sup>426</sup> *Aligning incentives: decisions on route-level efficiency benefit sharing (REBS) and train operator exposure to Network Rail's costs at a periodic review*, December 2012, available at <http://www.rail-reg.gov.uk/pr13/PDF/aligning-incentives-decisions-dec12.pdf>.

## Previous decisions

- 19.7 In our draft determination we explained that we had decided to replace the existing efficiency benefit sharing mechanism (EBSM) with a REBS mechanism. This mechanism will expose train operators to Network Rail's costs in each year of the control period and will:
- (a) **operate at a Network Rail operating route level:** EBSM operated at a national level but REBS will operate at a route level to strengthen the relationship between the effort of individual train operators to reduce Network Rail's costs and the payments they receive;
  - (b) **provide operators with upside (25% share) and downside (10% share) exposure to Network Rail's financial performance, which is capped at 10% of the REBS baseline:** caps limit the risk of gains and losses for operators and the upside/downside exposure incentivises operators to work with Network Rail regardless of whether it is underperforming or outperforming our determination assumptions;
  - (c) **have payments which take into account efficiencies achieved in alliances:** this will support industry cost reductions as it provides incentives on Network Rail, the alliance partner, and secondary operators to support route-level cost savings, both inside and outside of alliance arrangements; and
  - (d) **provide train operators with an opt-out from the mechanism (by route)<sup>427</sup>:** an opt-out provides train operators with the opportunity (but not the obligation) to enter into arrangements to share in Network Rail's performance. Network Rail will be required to make REBS available to all train operators. The opt-out<sup>428</sup> gives train operators the opportunity to evaluate the risks involved before deciding whether to participate in REBS during CP5.
- 19.8 REBS provides train operators with the opportunity to receive short-term financial benefits in return for helping Network Rail to deliver long-term industry cost reductions. We consider that the capped payments under REBS represent value for money, in terms of the wider efficiencies they will generate. For example, EBSM payments to train operators totalled £16.4m (2012-13 prices) for the first four years of CP4 but the outperformance achieved is likely to generate significantly higher

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<sup>427</sup> We understand that the governments will allow new franchised train operators to retain the rewards and costs of participating in REBS but it is unlikely that this will apply for existing franchised or negotiated direct awards with existing franchises. This decision does not affect the ability of open access operators (passenger and freight) to retain the rewards and costs from REBS as they are not covered by franchise agreements. We discuss this issue in more detail later in this chapter.

<sup>428</sup> In our draft determination we said that train operators would be able to opt-out of REBS at the start of CP5 but also in other circumstances, e.g. when they start a new franchise on that route. We discuss the opt-out in more detail later in this chapter.

long-term savings for passengers, freight customers and funders<sup>429</sup>. Furthermore, although the focus of REBS is on outperformance, train operators will also be at risk from underperformance. It is not simply a 'no-lose' situation for train operators.

- 19.9 We see REBS in CP5 as a default mechanism for those train operators that do not want to enter into direct commercial agreements with Network Rail, as well as a stepping stone to the development of more commercial relationships within the industry. As our preference is for more commercial arrangements, we would be content to see train operators opting out of REBS to pursue their own commercially negotiated risk and reward sharing agreements with Network Rail, provided such arrangements were transparent and non-discriminatory<sup>430</sup>. Indeed, we do not necessarily expect REBS to be a long-term regulatory mechanism, but see it as a stimulus to change the behaviour of Network Rail and the train operators that will become self-sustaining in the longer term.

### Issues raised in draft determination

- 19.10 We set out our decisions on REBS early in the periodic review process (in December 2012) to help the industry factor them into its plans and to provide the industry with greater certainty. But this meant that there were some aspects of the incentive mechanism that were still to be decided. In our draft determination we set out our proposals on the remaining outstanding issues:

- (a) approach to setting REBS baselines;
- (b) methodology for calculating and reporting REBS performance in CP5; and
- (c) elements of Network Rail's income and costs that will be included in REBS.

### Work completed since draft determination

- 19.11 Since we published the draft determination, we have continued to discuss our REBS proposals with the industry:

- (a) as part of our **consultation on PR13 implementation**, published in July 2013, we set out additional information on how we expected REBS to operate in CP5, e.g. the form of REBS payments and how the opt-out provision would work. As part of this consultation, we set out the amendments to track access contracts that would be required to implement REBS in CP5;
- (b) we held a **small workshop** on 24 July 2013 with representatives from train operators (passenger and freight), ATOC, governments, and Network Rail. The

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<sup>429</sup> This is because, whilst train operators benefit immediately from cost savings (via REBS), funders and passengers will benefit in the longer term, i.e. from CP6 onwards from Network Rail's lower cost base and hence lower funding requirement.

<sup>430</sup> Our statement on alliancing, published in March 2012 is available at: <http://www.rail-reg.gov.uk/server/show/ConWebDoc.10854>.

focus of the workshop was our approach to setting REBS baselines and measuring REBS performance; and

- (c) we have discussed our REBS proposals at **industry forums** such as Rail Delivery Group meetings.

## Overview of general consultation responses on REBS

### Summary of consultation responses

- 19.12 In the next section, we summarise consultation responses to the main issues on REBS that we raised in our draft determination and consultation on implementing PR13. However, a number of consultees made broader comments about our REBS proposals. We have summarised these general comments below.
- 19.13 The responses from the majority of train operators, including East Coast, Greater Anglia, Northern and Virgin, agreed with ATOC's response which stated that it was not supportive of full-cost risk-sharing between Network Rail and train operators through REBS. ATOC suggested that train operators did not have the necessary control of those risks and costs and hence were unlikely to enter into voluntary arrangements.
- 19.14 Although some train operators supported the principles of REBS, almost all train operators considered that alliancing arrangements would bring greater benefits than REBS in CP5. Freight operators reiterated the concerns that they have previously raised about the inclusion of downside risk in REBS. However, many responses welcomed our decision to allow train operators to opt-out of the mechanism.
- 19.15 Operators such as Arriva, DB Schenker and Freightliner did not think that there is sufficient information available to make an informed decision about entering into REBS. Similarly, PTEG was sceptical about the practicality and effectiveness of the proposed REBS, without greater transparency and disaggregation of infrastructure cost data.
- 19.16 TSSA opposed REBS because it did not consider it to be appropriate to allow additional taxpayer money to go to private companies, and it was concerned that REBS may introduce a profit motive into the day-to-day running of the rail infrastructure.

### Our response

- 19.17 We acknowledge the concerns of stakeholders in relation to our REBS proposals and agree that alliancing arrangements are more likely to deliver industry savings and better working relationships than a regulatory mechanism. We have said previously that we are content to see train operators opting out of REBS to pursue their own commercially negotiated risk and reward sharing agreements with Network Rail, provided such arrangements are transparent and non-discriminatory. However, we consider that REBS can act as a default mechanism.
- 19.18 We do not consider that REBS is a full-cost risk sharing mechanism. We have excluded elements of Network Rail's income and expenditure, where we consider that



train operators are not able to influence Network Rail, e.g. Network Rail's financing costs.

- 19.19 We and Network Rail publish a significant amount of information on Network Rail's income, expenditure and assets. For example, a substantial amount of route level financial information is already presented in Network Rail's regulatory financial statements. Given that train operators engage with Network Rail on a daily basis on operational and planning issues, we consider that train operators are well placed to develop improved ways of working to deliver efficiencies and provide additional challenge on its plans, e.g. to advise on the scope and timing of renewals projects.
- 19.20 We note concerns from some operators about downside risk exposure in REBS. Whilst the general purpose of REBS is to drive outperformance, and the expectation is generally of cost reduction, we consider that incentives are significantly strengthened if there is also some downside exposure.
- 19.21 We consider that the capped payments under REBS represent value for money, in terms of the wider efficiencies they will generate. Where Network Rail has not delivered its regulatory outputs, e.g. long-term sustainability of the network or PPM targets, we will consider adjusting REBS performance (impacting the value of any REBS payments). We think that this will limit the incentive on train operators to seek unsustainable infrastructure cost savings in exchange for payments via REBS.

## **Our decisions on outstanding issues**

- 19.22 In this section, we set out the background to each of the outstanding issues in relation to REBS, summarise consultees' responses, provide our responses to the issues raised by consultees, and then confirm our decisions.

### **Approach to setting REBS baselines**

#### **Background**

- 19.23 In December 2012, we wrote to Network Rail setting out our current thinking on setting REBS baselines<sup>431</sup>. We explained that our main aim was to be able to determine how Network Rail is performing in CP5 relative to our PR13 assumptions.
- 19.24 In its response to our letter<sup>432</sup>, Network Rail suggested that it should have flexibility to set route-level baselines (through the delivery plan); that REBS baselines should not be fixed for the entire control period; and that REBS should include Schedules 4 & 8 costs and variable usage charge income (to reflect changes in traffic volumes) but exclude property and other income sources.
- 19.25 Our draft determination confirmed that our PR13 final determination cost assumptions for England & Wales and for Scotland would act as REBS baselines in CP5. Network

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<sup>431</sup> This letter is available at <http://www.rail-reg.gov.uk/pr13/PDF/rebs-letter-171212.pdf>.

<sup>432</sup> Network Rail's response can be found via the following link:  
<http://www.networkrail.co.uk/WorkArea/DownloadAsset.aspx?id=30064784819>.

Rail would then be able to set REBS route baselines for the nine England & Wales operating routes, as long as they reconciled, in total, back to our national England & Wales determination assumptions. As we have a separate determination for Scotland, our CP5 REBS baseline assumptions will act as the final REBS route baseline for Scotland.

- 19.26 We also said that Network Rail would be required to agree REBS route baselines for CP5 by the start of the control period so that train operators had sufficient time to decide on whether to enter into REBS. We understand the rationale for allowing changes to REBS baselines to reflect factors such as the re-profiling of a major cost-saving (or income generating) scheme within the control period. However, we explained in our draft determination that we did not agree that Network Rail should be allowed to make annual adjustments to REBS route baselines.
- 19.27 Setting REBS route baselines at the start of CP5 provides certainty for train operators, whilst allowing Network Rail and train operators to propose and, after having consulted, refine the route-level income and expenditure assumptions prior to the start of the control period.

### ***Summary of consultation responses***

- 19.28 Only a small number of consultees commented on our approach to setting REBS route baselines.
- 19.29 Although Network Rail stated its preferred approach to setting REBS route baselines was for it to be able to make intra-control period adjustments, it accepted our alternative proposal to reflect any significant changes to income and expenditure in annual adjustments to REBS performance. Network Rail did, however, consider that our approach increased the complexity of reporting. Network Rail welcomed our proposal to allow it to finalise the nine England & Wales REBS route baselines.
- 19.30 ATOC considered that REBS route baselines needed to be transparent and that operators required assurance that there will be clear challenge and monitoring to identify genuine efficiencies and changes in scope of activities. A number of train operators agreed with ATOC's response, including East Coast and East Midlands Trains. Some train operators also thought that they would not have sufficient information to assess whether the REBS route baselines were appropriate.
- 19.31 Attendees at our 24 July 2013 workshop suggested that both the way in which REBS route baselines were determined and the availability of relevant information were crucial to train operators when deciding whether to opt-out of REBS.

### ***Our response***

- 19.32 We acknowledge that setting the correct REBS route baselines is crucial to the success of the mechanism. We also think that it is important that train operators (passenger and freight) have sufficient information about Network Rail's income, costs and asset information so that they can make informed decisions about whether to

participate in REBS. There is already a significant amount of publicly available information on Network Rail's income, costs and asset information, e.g. in Network Rail's regulatory accounts, our final determination and Network Rail's delivery plans. However, we expect Network Rail and train operators to work collaboratively in setting REBS baselines and for Network Rail to provide additional information to train operators, where reasonable and practical, to help inform their decisions on REBS participation.

19.33 REBS route baselines will be published as supporting information to Network Rail's delivery plan. As such train operators will have an opportunity to provide input into the development of REBS route baselines through the delivery plan consultation, due to be published in December 2013.

### ***Our determination***

19.34 Having considered consultees' responses, we have decided to retain the majority of our draft determination proposal for setting REBS route baselines. We consider that setting baselines at the start of the control period provides more certainty for train operators than allowing annual adjustments to baselines. We also think that fixed baselines provide transparency of any changes that Network Rail may make to its expenditure plans over CP5, as these would be clearly shown against the agreed REBS route baselines.

19.35 The only change from our draft determination proposal is that we will require Network Rail to reconcile its REBS route baselines for the nine routes in England & Wales back to our final determination for England & Wales, on a line-by-line basis<sup>433</sup>. We think that a line-by-line reconciliation will provide a more direct link back to our determination and better align the mechanism with the incentives Network Rail faces, i.e. it has different incentives for operating expenditure than capital expenditure.

19.36 Network Rail will use the delivery plan process<sup>434</sup> to consult on the REBS route baselines and should confirm them in time for the start of CP5.

## **Methodology for calculating and reporting REBS performance in CP5**

### ***Background***

19.37 In chapter 23 of our draft determination, we set out how we intended to measure and report on Network Rail's financial performance in CP5. The wider issue of financial monitoring in CP5 is closely linked to REBS because the decisions we make on

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<sup>433</sup> By 'line-by-line, we mean that the sum of each income and expenditure line in the agreed REBS baselines should equal the value of each line in our final determination assumptions for England & Wales. For example, the REBS baseline for operations costs in each England & Wales route can be different to our own route-level assumptions as long as the total operations cost assumption across those nine routes is equal to our determination assumptions for England & Wales.

<sup>434</sup> REBS baselines will be provided to us and published in a supporting document to Network Rail's 2014 delivery plan.

monitoring are likely to be a significant factor when train operators are considering whether to take part in REBS.

- 19.38 Chapter 23 confirms that our approach to measuring Network Rail's financial performance will focus on a comparison between Network Rail's actual income and expenditure and our PR13 determination income and expenditure assumptions. In our draft determination we said that we wanted REBS to be consistent with this wider approach so that our decisions on REBS payments are more transparent and so that they are consistent with our view on Network Rail's total financial performance. By consistency, we do not mean that REBS performance will be exactly the same as total financial performance. However, for the elements of income and expenditure that are included in REBS, our approach to measuring performance will be the same (e.g. we will use our RAB roll forward rules for calculating REBS performance on renewals expenditure)<sup>435</sup>.
- 19.39 Fixed baselines provide certainty for participants in REBS. However, this approach does present risks if Network Rail makes significant changes to spend profiles on certain routes within the control period. To address this issue we said that REBS route baselines will be fixed for the control period and that any significant changes to Network Rail's income and expenditure within the control period would be reflected in annual adjustments to REBS performance.
- 19.40 In our draft determination, we explained how the measure of total financial performance in CP5 would include adjustments to Network Rail's overspend or underspend against our determination assumptions to better reflect Network Rail's actual performance, e.g. adjusting for rescheduling of capital schemes. REBS performance will already reflect these changes, and so to maintain a stable mechanism, we expect to only approve additional adjustments to REBS performance in exceptional circumstances, i.e. we do not anticipate significant regular annual adjustments, over and above those reflected in the wider measure of Network Rail's total financial performance.
- 19.41 Our draft determination set out the additional adjustments that we will consider making to the measure of REBS performance:
- (a) if Network Rail makes a significant change to its spend profile in a particular route, e.g. Network Rail re-profiles the roll-out of its network operating strategy, where these changes could not have been reasonably known before the baselines were set; or
  - (b) if Network Rail makes material changes to the methodology for allocating costs between operating routes.

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<sup>435</sup> In the financial monitoring section of the monitoring, enforcement and reporting chapter (chapter 23), we provide a worked example of how the RAB roll forward policy will apply to REBS.

19.42 We consider that by allowing these adjustments, we will reduce the potential for windfall gains and losses for train operators.

### **Summary of consultation responses**

19.43 The issue of measuring REBS performance received a number of specific comments from consultees.

19.44 Network Rail agreed that there should be consistency between REBS and the wider financial framework. For example, it thought that REBS should use the same measure of renewals efficiency as is used in total financial performance. It agreed that there should be consistency with the RAB roll forward policy and that this should be extended to the calculation of REBS caps. Network Rail wanted further clarity on the treatment of accelerated / deferred renewals for REBS performance and asked that we agree a transparent and robust process for proposing adjustments to REBS performance. Network Rail also considered that REBS performance should include any output adjustments that we make to Network Rail's total financial performance. Additionally, it suggested that the annual assessment should be completed in a reasonable timeframe after it has published its regulatory financial statements, e.g. 90 days.

19.45 ATOC asked that we explain how we will manage the process of REBS benefit allocation in CP5, given the issues experienced in CP4. ATOC's response to this issue was supported by a number of train operators, including FirstGroup.

19.46 GB Railfreight asked that we provide further detail on criteria for making adjustments to REBS performance, e.g. what is the definition of a 'significant' change to Network Rail's spend profile. GB Railfreight also suggested that there should be a dispute and resolution process for resolving issues between Network Rail and train operators.

19.47 East Midlands Trains (EMT) thought that the calculation of financial performance could over complicate REBS and that our approach could be difficult for train operators to understand, and hence make it difficult to evaluate the likely benefits and risks involved in participating in REBS. EMT also asked us to consider how significant events, which could drive up Network Rail's costs, would be reflected in REBS.

19.48 DfT agreed with Network Rail that REBS performance should include adjustments that we make to Network Rail's financial performance where the company has missed its output targets.

19.49 At the 24 July 2013 workshop, attendees discussed these issues, with the majority agreeing that REBS should be consistent with the RAB roll forward approach to renewals expenditure. Attendees also considered that for REBS to be successful, train operators need to understand both how performance is measured and the reasons behind any differences between our assessment of financial performance and Network Rail's own assessment. Attendees were keen to see our criteria for making adjustments to Network Rail's own assessment of CP5 performance.

## ***Our response***

- 19.50 We agree that it is beneficial to have a consistent approach to measuring both Network Rail's total financial performance and REBS performance. This will help improve the alignment of incentives between train operators and Network Rail, i.e. the value of REBS payments will reflect the benefits/cost to Network Rail. We also note Network Rail's view that the RAB roll-forward policy for renewals expenditure should be reflected in how we calculate REBS caps.
- 19.51 We agree with Network Rail that it is important to finalise our annual efficiency and finance assessment of Network Rail in a timely manner. In CP5, we plan to issue our annual assessment in early autumn in each year. However, we want our assessment to be as robust as possible and the speed at which we can finalise our assessment will depend on the quality of information provided in Network Rail's regulatory financial statements.
- 19.52 In our PR13 implementation consultation, published in July 2013, we set out further details of how we will determine and allocate REBS payments to train operators.
- 19.53 We do not think it is appropriate to set out specific criteria for defining 'material' and 'significant' changes in relation to making adjustments to REBS performance. This is because it is difficult to capture, ex-ante, all the issues that may arise in CP5 where it may be appropriate to make adjustments.
- 19.54 We acknowledge that there is a balance between producing a measure of Network Rail's performance that reflects the precise level of efficiency it has achieved in each year of CP5 and a simple and straightforward measure that can easily be understood.
- 19.55 Significant events will be included / excluded from REBS performance, consistent with the CP5 risk and uncertainty framework, e.g. if Network Rail is at risk, then it will be included in REBS performance.

## ***Our determination***

- 19.56 Having considered consultees views on this issue and after further engagement with the industry, we intend to adopt the following approach to calculating REBS performance:
- (a) REBS performance will be consistent with any outputs adjustments we make to total financial performance. Although this may require annual adjustments to REBS performance, we think that this approach aligns incentives between Network Rail and train operators and reduces the incentive for participants to encourage cost savings that reduce Network Rail's ability to deliver against its regulatory outputs;
  - (b) REBS performance will be consistent with the RAB roll forward policy for renewals, i.e. in simple terms, only 25% of renewals outperformance or underperformance will be reflected in REBS payments. Again, this is consistent with the aim of REBS, i.e. to strengthen the alignment of incentives between



Network Rail and train operators. This also has the effect of reducing risk exposure to train operators as they will only be exposed to 25% of any underperformance on renewals expenditure;

- (c) caps on upside and downside exposure of 10% will be consistent with the RAB roll forward approach to renewals expenditure<sup>436</sup>. This maintains the consistency between the calculation of REBS payments and of the caps on financial exposure; and
- (d) when calculating REBS performance, we will only consider additional adjustments to Network Rail's total finance performance, where:
  - (i) Network Rail had made significant changes to its spend profile in a particular route, where these changes could not have been reasonably known before the baselines were set; or
  - (ii) Network Rail has made material changes to the methodology for allocating costs between operating routes.

This will help to provide transparency of changes to Network Rail's income and expenditure against the fixed baseline, whilst allowing adjustments to performance that do not reflect efficiency savings, e.g. the deferral of work to the next year.

19.57 We will also publish a short guide on how REBS will work in CP5 – this should help to explain a number of process-related issues that consultees raised on REBS.

## **Specific elements of Network Rail's income and costs that will be included in REBS**

### **Background**

19.58 In our draft determination, we set out the elements of Network Rail's income and expenditure that would be included in the scope of the REBS mechanism, reflecting those that we consider train operators are able to influence. These were:

- (a) support costs;
- (b) operations costs;
- (c) maintenance costs;
- (d) renewals costs<sup>437</sup>;
- (e) Network Rail's share of RSSB and BTP costs;

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<sup>436</sup> In calculating the 10% downside cap, we will reflect that train operators are exposed to 25% of any underperformance on renewals expenditure. For example, the part of the downside cap which relates to renewals will be calculated as: baseline renewals expenditure x 10% (downside cap) x 10% (share of underperformance) x 25% (share of renewals underperformance based on RAB roll forward). Please note that the cap on REBS payments applies at the total baseline level and not on a line-by-line basis for each element of income and expenditure.

<sup>437</sup> Due to the separate treatment of the renewal of civil structures in PR13 we will exclude the impact of volume changes of the renewal of civil structures in CP5 for financial performance purposes.



- (f) Schedule 4 & 8 costs;
- (g) property income<sup>438</sup>; and
- (h) variable usage charge income<sup>439</sup>.

### **Summary of consultation responses**

- 19.59 Few responses commented on the specific elements of Network Rail's income and expenditure included in our REBS proposal.
- 19.60 Network Rail welcomed the inclusion of Schedule 4 & 8 costs and variable usage charge income within REBS. However, it thought that there was a strong case for including additional elements of income that reflect traffic growth, e.g. capacity charge and electrification asset usage charge income. Network Rail also reiterated its view that property income should be excluded, suggesting that it is more suited to bespoke arrangements.
- 19.61 EMT agreed with Network Rail that we should include capacity charge income within REBS. Both EMT and Freightliner thought that Network Rail's central support costs should be excluded from REBS.
- 19.62 The majority of attendees at our 24 July 2013 workshop agreed that additional elements of Network Rail's income relating to network usage e.g. additional variable charges income, should be included within the scope of REBS, as this would partly offset any additional costs from higher network usage. The group also discussed the removal of renewals volume savings from the scope of REBS. The consensus was that removing volume savings would be likely to dis-incentivise train operators from supporting savings in these areas.

### **Our response**

- 19.63 We consider that there is merit to including additional elements of Network Rail's income that reflect changes in network usage. For example, if Network Rail's costs increased due to an increase in traffic, this would be offset by the increase in charging income. However, we still consider that train operators have some ability to influence Network Rail's property income and think it is appropriate to include this income in the REBS baselines.

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<sup>438</sup> In our draft determination, we excluded Network Rail's telecoms property income because we do not consider that train operators can sufficiently influence this income. We also excluded Network Rail's non-periodic review income because this category of income is included in the spend-to-save mechanism in CP5.

<sup>439</sup> We have excluded volume incentive income from the measure of REBS performance. The volume incentive is in place to incentivise Network Rail to improve its responsiveness to unexpected demand for network capacity. The benefits of accommodating this extra demand should flow to operators through increased revenue. Given our view that REBS should include costs and income that train operators are able to influence, and to avoid the possible double counting of the benefits of additional access to capacity, we think that it is appropriate to exclude volume incentive income from REBS.

19.64 Our view is that train operators are well placed to influence Network Rail's central support costs because train operators run their own corporate services and can support Network Rail in improving efficiencies in this area and can draw on their own experience.

### ***Our determination***

19.65 We have considered consultees' views on this issue and have reviewed the elements of Network Rail's income and expenditure that should be included within the scope of REBS.

19.66 We have decided to include, within REBS baselines, all of the elements of Network Rail's costs that we included in our draft determination proposal because we think that train operators can have sufficient influence over these costs. However, we have decided to exclude Network Rail's information management renewals expenditure from REBS baselines because this category of expenditure is included in the spend-to-save mechanism<sup>440</sup>.

19.67 We have reviewed the elements of Network Rail's income included within REBS. We agree with consultees that, in addition to Network Rail's property income and variable usage charge income, capacity charge and electrification asset usage charge income should also be included within REBS as these also reflect network usage.

19.68 We have set out the indicative REBS baselines for CP5 in Annex D. This shows the line-by-line assumptions we have made on Network Rail's route-level income and expenditure for each year of CP5.

## **Approach to determining REBS payments**

### ***Background***

19.69 Our July 2013 consultation on implementing PR13 set out the changes that we would need to make to track access contracts to implement REBS in CP5.

19.70 In both our draft determination and in the proposed amendments to contractual provisions we said that REBS payments would be determined in the same way as the current EBSM, i.e. the value of any REBS payments will be determined each year in our annual efficiency and finance assessment of Network Rail. We consider that for REBS to provide a real incentive to train operators, it is important that payments are made on an annual basis.

19.71 We also said that REBS performance will be consistent with our assessment of Network Rail's cumulative performance, compared to REBS route baselines, for the control period up to the point of each assessment. We expect that REBS payments

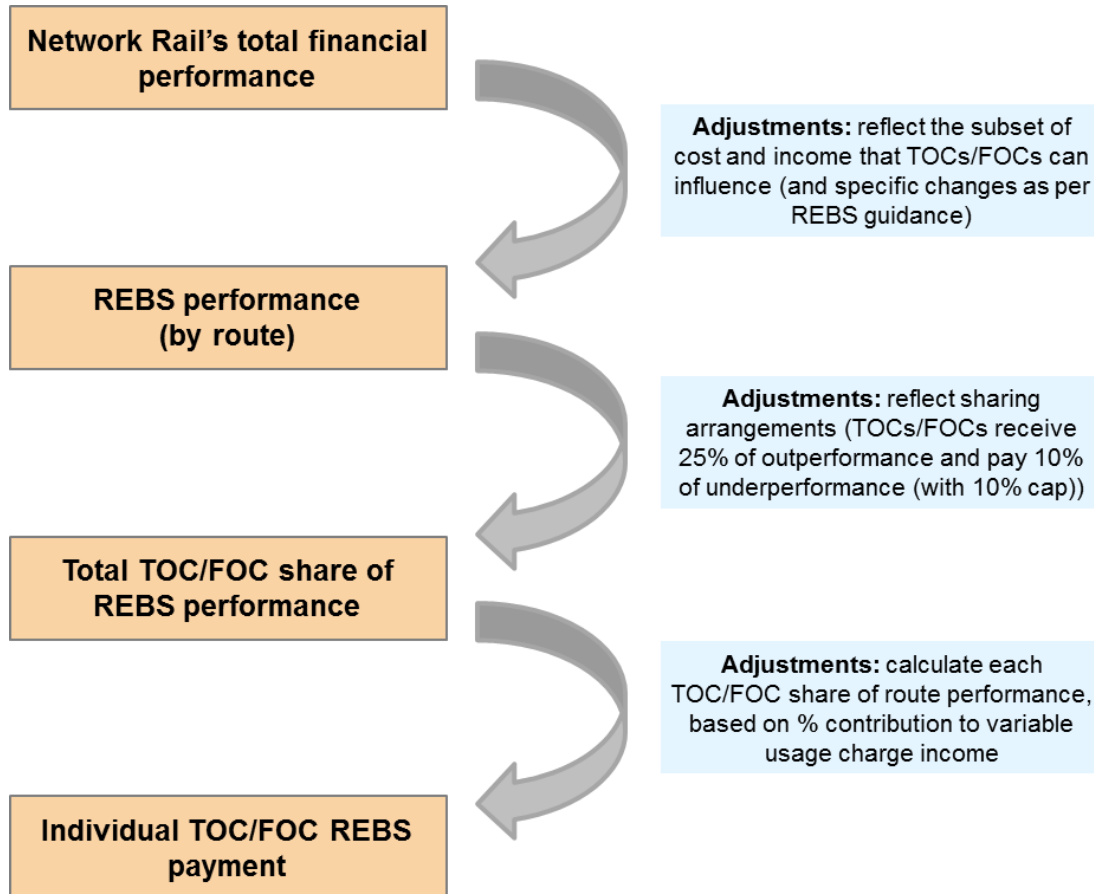
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<sup>440</sup> Through the spend-to-save mechanism, Network Rail faces different incentives on its expenditure on information management renewals because we do not think that an overspend in this area is necessarily inefficient. We further discuss the spend-to-save mechanism in the financial framework chapter (chapter 12).

relating to the prior year will be made soon after we have published our annual assessment (usually in the autumn).

19.72 Figure 19.1 shows the steps for calculating REBS payments between Network Rail and train operators.

**Figure 19.1: Steps to calculating REBS performance and payments**



19.73 In our consultation on implementing PR13, we said that, like EBSM, any REBS payments will be in cash as this will provide a strong incentive to operators and is administratively straightforward. Each train operator's REBS payments will be based on their share of variable usage charge income on each route. This approach has the benefit of capturing an element of the scale of an operator's services.

**Summary of our implementation consultation responses**

19.74 Only ATOC and Network Rail provided comments in this area of our REBS proposals.

19.75 ATOC asked us to clarify the different scenarios under which train operators can opt-out of REBS and how REBS payments would be apportioned where a new operator, mid-year, took on an existing track access agreement.

19.76 Most of Network Rail's comments related to the interaction of REBS with alliance arrangements. Network Rail considered that our current definition of an alliance agreement is too broad and that it should only apply where an alliance would be likely

to have a material direct financial impact on a REBS route baseline. It also asked us to clarify the information that we would require to assess whether a particular alliance was likely to have a material direct financial impact on a REBS route. Network Rail considered that we should widen the current opt-out provision to include the operator that enters into an alliance.

19.77 Network Rail also suggested that we should increase the period of time for which train operators and Network Rail have to make REBS payments following our decision. It suggested that this is increased from 28 days to two months.

### ***Our response***

19.78 We confirm the situations in which opt-outs are permitted below.

19.79 We have reviewed the notification we require from Network Rail when it enters into alliance arrangements. Given that Network Rail enters into a large number of very small alliance arrangements across the network, we think that it is appropriate for Network Rail to only notify us (and affected train operators) when it considers that a new alliance arrangement would be likely to have a material direct financial impact on a REBS route baseline. However, we will still have responsibility for deciding whether the alliance is likely to have a material direct financial impact on a REBS route baseline. We will address this issue in our final amendments to track access contract provisions.

19.80 We will work with Network Rail to determine the information that we will require to assess the financial impact on a REBS route baseline from a new alliance.

19.81 We consider that it is appropriate to allow two months for train operators and Network Rail to make REBS payments following our decision. More time may be required as payments will now be calculated for each operating route and because train operators may now also be required to make payments to Network Rail, given that REBS provides upside and downside exposure for train operators.

### ***Our determination***

19.82 Having regard to the issues raised in consultation responses, we have decided to maintain the general approach to determining REBS payments that we proposed in our consultation on implementing PR13. In each year of CP5, REBS payments will be determined as follows:

- (a) we will publish our assessment of REBS performance in our annual efficiency and finance assessment of Network Rail. This will be based on our assessment of Network Rail's cumulative performance, compared to REBS route baselines, for the control period up to the point of each assessment;
- (b) Network Rail and/or train operators will be required to make REBS payments within two months from the date that we publish our annual efficiency and finance assessment of Network Rail;

- (c) REBS payments will be in cash; and
- (d) each train operator's REBS payments will be based on their share of variable usage charge income on each route.

19.83 Train operators will be able to opt-out of REBS within three months of the start of CP5<sup>441</sup>. However, we also think that train operators should be able to opt-out from REBS on a particular route, where there is a material change in the risks faced by train operators from participating in the mechanism. Given this principle, we will also allow train operators to opt-out from REBS in the following circumstances:

- (a) within two months of entering into a new franchise on that route;
- (b) within two months of the start of operating train services on the route, where it has not previously done so<sup>442</sup>; and
- (c) within two months of the start of an alliance arrangement on that route, where we consider this alliance could have a material financial impact on REBS baselines for that route (including the franchisee that enters into the alliance).

19.84 For the avoidance of doubt, except where a train operator has notified us of its intention to opt-out from REBS in CP5, train operators will be 'opted-in' to REBS in CP5.

## Franchising considerations

19.85 In CP4, the majority of franchised train operators are not eligible to receive payments under EBSM because the governments did not waive the clause 18.1 / schedule 9 (no net loss, no net gain) provisions in existing franchise agreements. However, in CP4, DfT agreed to waive this provision for new franchises.

19.86 Throughout PR13, both governments have been supportive of REBS and we understand that they will both allow new franchises (let through open competition) to enter into REBS, i.e. to retain the potential benefits and costs from the mechanism. Prior to DfT issuing its revised rail franchise schedule<sup>443</sup>, published in March 2013, this would have resulted in a significant number of franchises being eligible for REBS from the start of CP5.

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<sup>441</sup> In our draft amendments to track access, published in July 2013, we said that train operators could opt-out of REBS within two months of the start of CP5. We now think it is appropriate to allow more time for train operators to consider their decision on REBS and so we have now increased this to three months.

<sup>442</sup> A new franchisee will not be bound by the decision of the previous franchise holders with respect to REBS. We also intend this to apply where an existing franchisee takes on the responsibility for delivering the services of another franchise, e.g. where two franchises merge into one.

<sup>443</sup> DfT's revised rail franchised schedule is available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/170565/rail-franchise-schedule.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/170565/rail-franchise-schedule.pdf).

- 19.87 However, the revised England & Wales rail franchise timetable includes a number of negotiated direct awards with existing franchisees and this has the effect of reducing the number of franchised operators eligible for REBS from the start of CP5<sup>444</sup>. This is because DfT has said that, for new competitively let franchises, it intends to allow train operators to join REBS but this is unlikely to apply to negotiated direct awards with existing franchisees. Transport Scotland also intends to allow its new franchises to join REBS<sup>445</sup>.
- 19.88 Although the latest franchise timetable may initially reduce the coverage of REBS (compared to our initial expectation), we think that it is still appropriate to implement REBS at the start of CP5 as this will allow open access operators (passenger and freight) to enter into REBS, as well as those new franchises that are due to start in the first year of CP5<sup>446</sup>. As franchises are re-let in CP5, the coverage of REBS should increase.

## Exposing franchised train operators to changes in Network Rail's costs at a periodic review

### Background

- 19.89 In most regulated industries, the customers of the regulated companies have an incentive to engage with a periodic review, challenging the regulated companies' costs (including scope of work and unit costs) to secure lower regulated prices. They do this because they benefit from these lower prices. In rail, franchised train operators currently do not have this incentive because they are held neutral (with some exceptions) through their franchise contracts to changes in Network Rail's access charges as a result of our periodic reviews.
- 19.90 To complement our decisions on REBS, in December 2012, we decided that rather than implementing a new regulatory mechanism to address this issue, we will instead ask franchise authorities to provide new franchises with exposure to cost-reflective changes in the variable usage charge<sup>447</sup>.
- 19.91 This approach has broadly the same objective as REBS (i.e. to strengthen incentive alignment). But instead of incentivising within control period efficiencies, it encourages

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<sup>444</sup> This issue does not affect open access operators (passenger and freight) as they do not have the same agreements with governments.

<sup>445</sup> However, Transport Scotland's consultation response highlighted that it welcomed the industry initiative to explore a "deeper alliance" as part of the ScotRail refranchising process to increase efficiency and reduce costs. As such, it is unlikely that the main Scottish franchise will participate in REBS in CP5.

<sup>446</sup> The DfT rail franchise schedule indicates that the following new franchises will start in the first year of CP5: Essex Thameside; Thameslink, Southern and Great Northern; and East Coast.

<sup>447</sup> This change would only impact new franchised train operators from CP6, i.e. as a result of changes that we may make to Network Rail's track access charges at our next periodic review.



train operators to engage with us and Network Rail during the periodic review process to drive down industry costs.

- 19.92 However, given the proportion of Network Rail's costs that are recovered through the fixed charge, we also explained in December 2012 that we thought that exposing franchisees to changes in the fixed charge would generate further efficiency savings by increasing train operators' interest in Network Rail's costs at a periodic review.
- 19.93 The decision on whether to increase franchised train operator exposure to changes in Network Rail's charges is ultimately for the governments to make. DfT has said that it will consider this for future franchises. It is interested in greater alignment between train operators and Network Rail, and thinks that this would be a good way to achieve that end since it would incentivise train operators to reduce infrastructure costs in the longer term. However, DfT is still considering how it can be implemented – and suggests that the proposal is considered further as part of the forthcoming structure of charges review which will form a key part of our forthcoming PR18 development programme. However, Transport Scotland has confirmed that it does not intend to expose the new Scottish franchises to changes in access charges.
- 19.94 We recognise that providing exposure to changes in Network Rail's fixed costs is a significant departure from existing industry arrangements and we would expect that any further exposure to Network Rail's costs, i.e. exposure over and above changes in the variable usage charge, would be phased in over more than one control period (i.e. from CP6 onwards).

### **Summary of consultation responses**

- 19.95 Few responses specifically commented on our proposals in this area.
- 19.96 Network Rail's response agreed that this issue was a matter for governments and noted both DfT and Transport Scotland's views.
- 19.97 Rail Freight Group noted our discussions over exposing franchised operators to changes in access charges and questioned the benefit in seeking to introduce more complex regimes if franchises remain insulated from any changes.

### **Our response**

- 19.98 This is not a change that can be implemented in the short term as it is likely to require significant changes to the existing approach to risk in franchise agreements and to our charging framework (e.g. being clearer about the costs that are recovered through the fixed charge and network grant). As part of our wider review of the charging structure, we will work with governments to explore the options for increasing franchised train operators' exposure to the changes we make to charges at future periodic reviews.

## **Enhancements efficiency benefit sharing**

- 19.99 We want to strengthen the incentives for the industry to work together to drive down the costs of enhancements. In chapter 9, we describe how we expect Network Rail



and operators to enter into commercial agreements that will reward operators if real cost savings are achieved as a result of their involvement. We consider this is a powerful tool to enable Network Rail to outperform the PR13 settlement.

- 19.100 Network Rail can already enter into arrangements with train operators who want to fund additional enhancements or share the gains or savings from such investment. There are also examples where Network Rail pays for train operator input during project design and delivery. However, this arrangement does not provide any commercial incentive for the operator to drive down costs, with the risk that any new enhanced infrastructure is viewed as 'free goods'. A commercial arrangement would align incentives to reduce project costs while still achieving the outputs.
- 19.101 The commercial agreements would be for Network Rail and operators to agree on a case by case basis. The agreements could be at an individual project level, a route-based level, or a portfolio level. Network Rail would set a baseline enhancement project cost and would need to define a corresponding output consistent with the HLOS. We are not mandating this approach, and it is for Network Rail to decide which projects and the specific terms of any commercial agreement, but we consider it a means to reduce costs further than current industry engagement allows. This incentive is described in more detail in chapter 9.

## Research & development and innovation

- 19.102 We support R&D and innovation. Increased emphasis on R&D and innovation is likely to improve Network Rail's productivity in the long-run. Low levels of R&D and innovation have been identified by several studies as a reason for poor productivity in the rail industry. The RVfM study identified the potential for significant annual savings from 'safety, standards and innovation' by the final year of CP5. Investment can be risky but returns on investment can be high.
- 19.103 The Secretary of State's HLOS included a ring-fenced fund of £140m (2011-12 prices) over CP5 to support R&D and innovation, the development of potential enhancement schemes in CP6 and Network Rail's work to develop the link between HS2 and the existing network; £50m (2011-12 prices) of this is assumed to fund R&D (including innovation) expenditure, which Network Rail will be able to access. Subsequently, and completely separately from the HLOS fund, as part of its SBP, Network Rail requested an additional £300m for the funding of R&D and innovation expenditure in CP5. This section concentrates on this SBP request.
- 19.104 We acknowledge that there are reasons why Network Rail's incentive and ability to invest in R&D and innovation may not be as strong as it could be. For example:
- (a) Network Rail argues that the gains from innovation are accrued over the long-term while the costs are short-term. The resetting of the price control only allows it to retain the benefits of innovation over a five year period – over which time it may not be compensated fully for the risk of the investment;

- (b) our other incentives may not entirely address the problems that could arise due to Network Rail's monopoly status which might mean that the company lacks enough competitive tension that incentivises it to reduce costs, including through the adoption of innovative practices; and
- (c) in general, the level of innovation may be too low where the benefit that the innovating firm expects to receive is not as high as the wider benefits that could flow from it.

## **Our draft determination**

- 19.105 In our draft determination, we did not include any of the £300m requested by Network Rail in its SBP, within our baseline renewals or enhancement expenditure. We did, however, propose that subject to a well justified proposal from the company, we would introduce a matched-funding financial incentive whereby we would make provision in the settlement for each additional pound which Network Rail spends on R&D or innovation to be matched (up to £50m), and consider wider changes to the regulatory framework.
- 19.106 To minimise the cost of any further governance and provide read-across, in our draft determination, we proposed to subject the matched funding to similar governance arrangements as the HLOS funds. As with all funds, details of the governance process will be set out in Network Rail's draft delivery plan in December 2013. Unlike other funds however, the HLOS innovation fund will be considered as a portfolio of projects rather than on a project by project basis. Assessing individual projects would work against the provision of certainty for customers and funders, especially given the risky nature of innovation. Furthermore, this innovation funding will qualify for addition to the RAB if the RAB addition conditions are satisfied and an assessment by those deciding on awards, based on clear, good quality evidence shows that the portfolio will add value to Network Rail's network. Ex-post evaluation, although important for future decision making, will play no part in deciding how much of this HLOS innovation funding should be added to the RAB as to do so would undermine the certainty we wish to provide to the fund.
- 19.107 We invited Network Rail to set out its proposals on matched funding ahead of the final determination and to provide its view on how we might best develop the regulatory framework to encourage R&D and innovation.

## **Summary of consultation responses**

- 19.108 In its response to our draft determination, DfT said that it supports the proposed increase in funding for innovation but would welcome some more clarity on how this will work in practice and the governance process required. It also requested more clarity on how this can best support innovation across the entire rail system.
- 19.109 The key points raised by Network Rail in its response to our draft determination were:

- (a) Network Rail does not want the matched funding for innovation to be limited to £50m if a strong business case is established. It believes its strong governance proposal and proposed greater reporting provide suitable controls on the level of funding<sup>448</sup>;
- (b) Network Rail proposed that our assessment of whether spend could be added to the RAB should be done at a portfolio level rather than project by project;
- (c) Network Rail requested that all funding for R&D and innovation (not just the matched part) should be provided via the RAB additions policy since it would be unlikely to be able to commit funding via outperformance until at least half way through the control period; and
- (d) Network Rail proposed leveraging co-funding from third parties but requested that this should be considered an outcome and not a precursor for accessing R&D funds as this could stifle worthwhile opportunities.

19.110 RIA also commented that if innovation is sufficiently worthwhile to attract third-party funding then it should be encouraged and not restricted as this is in the long term interest of the railway.

## Our determination

19.111 After careful consideration of the issues raised in response to the consultation we intend to continue with the matched-funding financial incentive which we proposed in our draft determination. We have made provision for up to £50m to Network Rail of matched-funding for R&D and innovation. For the avoidance of doubt, this is £50m separately and in addition to the £50m provided via the HLOS innovation fund.

19.112 We do not agree that the fund should be left open-ended. This £50m of funding is intended to incentivise and help kick-start higher levels of innovation. It is not designed to provide all innovation funding required in the industry or to place a limit on the opportunities for funding. There is no limit to the amount that Network Rail can spend on R&D, where it has secured these funds from elsewhere. Our matched funding source is only one avenue available to Network Rail to fund R&D and innovation. Other sources of funding do already exist (£50m HLOS fund, RSSB funding, Transport Catapult Fund) and Network Rail has not provided us with any evidence that these other sources are likely to be exhausted. We consider that our fund achieves a balance with the funding which funders want to make available and the risk that a too large fund could simply crowd out sources of private investment which could otherwise have been identified and exploited.

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<sup>448</sup> Network Rail proposed a 'stepping up of funding with maturing capability' approach which is described in its main response and in further detail in a supporting document. Network Rail stated that this approach would enable an appropriate level of investment throughout the control period. This proposed approach involves reporting and evaluating arrangements at the end of each stage.

- 19.113 Furthermore, this approach is designed to provide some control around the fund – if left open-ended it could encourage the fund being used for activities that Network Rail is already funded for rather than for genuinely ‘innovative’ ideas.
- 19.114 The ORR matched part of the fund will be financed by the RAB using a consistent approach to the HLOS innovation fund. The RAB additions will be determined by Network Rail’s governance process which will be agreed by us and set out in its December 2013 draft delivery plan. However, we expect that it will take a similar form to the governance process which we agreed with Network Rail in February 2013 in respect of the HLOS fund as described above.
- 19.115 Network Rail will need to identify its side of the funding – whether sourced through outperformance or third party funding. This part of the funding will not be funded through a RAB addition. We consider that this is important since it should encourage Network Rail to consider carefully the risks and rewards since the approach involves it committing its own money or convincing other third parties to do so, thus introducing an implicit form of governance.
- 19.116 We will ensure there is transparency around the use of the funding – for example, the retrospective publication of details of how the fund has been used. This will further improve the incentives for the proper use of the funding.

## Volume incentive

### Overview

- 19.117 In December 2012, we published our PR13 consultation on the volume incentive<sup>449</sup>. This incentive is intended to encourage Network Rail to be more responsive to unexpected demand for network capacity over and above an agreed growth baseline level. Forecast volume incentive payments of £68m for CP4 have been credited to Network Rail’s opex memorandum account and will be paid over CP5.

### Rationale

- 19.118 One of Network Rail’s functions is the efficient management of existing network capacity. It is important that the company is incentivised to make network capacity available in response to unexpected demand. In a more commercial setting, Network Rail would face such an incentive as a result of having a more commercial set of relationships with its customers – relationships in which the company profited by selling more of what its customers wanted such as the use of network capacity.
- 19.119 The volume incentive should encourage Network Rail to think about the provision of network capacity to its customers in a more commercial way. This involves making trade-offs when deciding whether to meet unexpected demand.

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<sup>449</sup> *Volume incentive consultation*, December 2012, available at <http://www.rail-reg.gov.uk/pr13/consultations/volume-incentive.php>.

## December 2012 consultation

- 19.120 Responses to our consultation earlier in PR13 confirmed our view that the volume incentive is not fully effective currently in performing its intended role. Many respondents believed that the volume incentive has not been effective principally because it is neither visible to nor well understood by decision makers within Network Rail. So, in our December 2012 consultation document, we put forward a range of measures to improve its effectiveness.
- 19.121 We asked Network Rail to put forward proposals on how it will improve understanding of, and engagement with, the volume incentive at a route level where decisions on capacity are taken, for example by attributing incentive payments to its individual operating routes and so linking it to the decision makers.
- 19.122 We consulted on a range of changes to the design of the incentive including disaggregating the incentive to an operating route level, the possible introduction of a downside to make the incentive operational in a greater range of circumstances, and whether we should continue with the existing payment mechanism which defers payment to the next control period.
- 19.123 Finally, we asked whether we should continue to use the existing approach to calculating the incentive rates – and what other approaches might exist. And we recalculated the incentive payment rates using broadly the existing approach, but with new evidence<sup>450</sup>, and arrived at passenger and freight rates which were significantly higher than those used in the current control period.
- 19.124 We received 15 responses to our December 2012 consultation<sup>451</sup>. At the end of January 2013 we held a small stakeholder workshop to discuss the consultation and to understand better the wider views of the industry on the effectiveness of the incentive. We have considered this stakeholder feedback and carried out quantitative analysis to assemble an evidence base to inform and support our approach. We have also drawn on discussions at meetings with Network Rail, DfT and Transport Scotland.

## Responses to our draft determination

- 19.125 In our draft determination we invited views on our detailed approach to the volume incentive in CP5 which we set out in that document. We particularly invited views on our proposal to set a national ceiling and floor on payments under the volume incentive of +/- £300m over the whole of CP5.

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<sup>450</sup> See *Volume incentive consultation*, December 2012, for details of new evidence.

<sup>451</sup> Consultation responses are published on our website at <http://www.rail-reg.gov.uk/pr13/consultations/volume-incentive.php>.

- 19.126 In its response to our draft determination, Network Rail was supportive of many elements of our proposals, including those to improve the transmission mechanism, introduce a downside, and maintain national incentive rates. While Network Rail was content to see a downside introduced, it stressed the importance of setting the baselines at the expected growth level and expressed concern about the level of the floor on payments, suggesting a floor of -£100m would be more manageable for its business. Network Rail also expressed a strong view that, as with ESI coal, biomass should be excluded from the volume incentive.
- 19.127 We received a small number of additional comments on the volume incentive in other responses to the draft determination. There were no material issues raised on the key elements of our proposal. Several train operators highlighted the importance of considering the volume incentive together with Schedules 4 and 8 and the capacity charge, as suggested by RDG. A small number of respondents expressed concerns about how well the volume incentive is understood by decision makers in Network Rail. A freight operator expressed support for the inclusion of biomass in the volume incentive.
- 19.128 We have considered the responses to the draft determination carefully and how these might affect the detailed proposals set out in our draft determination. Since most of the comments received were in support of, or consistent with, our proposal as set out in the draft determination, the section which follows relates our final determination to both the responses received to the December 2012 consultation and, by exception, to the responses received to our draft determination.

## Our final determination

- 19.129 Our approach is summarised below, then described in more detail:
- (a) **overall effectiveness:** Network Rail has committed to a range of measures to strengthen the transmission mechanism in CP5;
  - (b) **disaggregation:** the incentive will be calculated relative to disaggregated route-level growth baselines while maintaining national incentive rates;
  - (c) **downside:** we are introducing a downside with symmetric payment rates around expected growth baselines. We are introducing a national ceiling and floor on total payments over the control period;
  - (d) **payment mechanism:** we are continuing to allow accrual of payment for release over the next control period, but amounts will be calculated and credited to the routes on an annual basis;
  - (e) **other design issues:** we are continuing to allow for all growth, to apply the incentive to all routes and to exclude commodities that are subject to mark-ups such as the freight specific charge and the freight only line charge;
  - (f) **baselines:** we are setting a total national growth baseline for each of the metrics. We will agree the principles for disaggregation with Network Rail in



advance of its draft delivery plan consultation and review the proposed annual, route-level baselines before these are put in place for the beginning of CP5.

- (g) **metrics:** we are continuing with all four existing metrics of farebox and passenger train miles for passenger volumes and freight train miles and freight gross tonne miles for freight volumes; and
- (h) **incentive rates:** we are adopting the updated version of the rates in line with the approach set out in our December 2012 consultation, with minor changes reflecting updated information.

## Overall effectiveness

19.130 Almost all respondents to the December consultation were supportive of the need for a volume incentive, at least in the short term. But there was a clear message that the incentive has not been properly effective to date and that it needs to be improved going forward. While respondents were broadly supportive that we are considering the 'right' design areas to improve its effectiveness, particularly disaggregation, there was the sense that something else is needed to improve the transmission mechanism and the way in which Network Rail thinks about, and acts on, the volume incentive internally. Some responses to the draft determination reiterated the need for the incentive to be well understood and effective.

19.131 Getting the transmission mechanism right is a matter for Network Rail. In April 2013, we wrote to Network Rail asking it to identify and commit to changes by building on the ideas in its response to the December 2012 consultation<sup>452</sup>. Network Rail responded to us in April 2013 suggesting a combination of approaches outlined below<sup>453</sup>. It proposed that:

- (a) volume incentive payments will be included in the Financial Value Added (FVA) measure, a measure of Network Rail's outperformance. Under the current staff incentive arrangements, this will have an impact on the level of payments to senior Network Rail staff;
- (b) the payments to senior route-based staff will also be affected through inclusion of the routes' performance against traffic targets in routes' FVA. Senior staff working centrally would be affected by the sum of the routes' performance against the national volume incentive baselines;
- (c) baseline and outturn traffic figures will be published at a route level in Network Rail's annual regulatory accounts; and

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<sup>452</sup> For the letter which we wrote to Network Rail in April 2013 asking it to identify and commit to changes to the transmission mechanism by building on the ideas in its response to the December 2012 consultation see <http://www.rail-reg.gov.uk/pr13/PDF/vi-transmission-mechanism-2013-04-04.pdf>.

<sup>453</sup> For Network Rail's response to our April 2013 letter see <http://www.rail-reg.gov.uk/pr13/PDF/vi-transmission-mechanism-2013-04-19.pdf>.



- (d) where there is overall outperformance against the volume incentive baseline, Network Rail will make decisions centrally about how to use any gains but routes would make proposals about ways of spending outperformance, which would be judged against 'payback' criteria. Network Rail will also work with passenger and freight operators through existing processes and report on how it spends any outperformance in its regulatory accounts. It plans to issue an industry consultation on the governance arrangements for determining any spend of outperformance.

## Disaggregation

- 19.132 Most respondents to the December 2012 consultation supported disaggregating the incentive as this could potentially increase visibility and effectiveness. Among passenger operators and their representatives (including ATOC), there was broad support for disaggregating the growth baselines to a route level with a national incentive rate. A few respondents felt that the disaggregation should be at a more granular level, or include disaggregation of the incentive rates, to better account for the variation in the social value of rail by region. Freight operators (and freight customer representatives) expressed concerns about disaggregation. Respondents felt it would add unnecessary complexity as most freight flows do not map neatly onto Network Rail's operating routes. DfT and Network Rail were broadly supportive of disaggregation, with Transport Scotland also favouring disaggregation below the route level. A majority of respondents did not support an alternative form of disaggregation e.g. by TOC. There were no material comments in relation to this issue in the responses to the draft determination.
- 19.133 Growth baselines will be disaggregated but we will maintain national incentive rates. Disaggregated route level data on passenger train miles, freight train miles and freight gross tonne miles exists already. Disaggregated route level farebox data does not exist but we will work with Network Rail to translate the national baseline into route-level baselines ahead of the start of CP5. We consider that this approach is consistent with the majority of stakeholder feedback and could increase effectiveness of the incentive by improving visibility and targeting route based decision makers. The approach could also allow us to gain valuable knowledge/ data to inform future work on the charging framework. Going further and disaggregating incentive rates is unlikely to result in more appropriate incentive rates being applied to particular volume increases, as we would expect rates to vary more within routes than between them.

## Downside

- 19.134 Most respondents to the December 2012 consultation were in favour of a downside to the volume incentive and many made statements supporting our principles for having a downside (e.g. keeping the incentive effective at all times, mitigating incentives to reduce volume). Some respondents who were less supportive of the volume incentive as a whole also expressed doubts about a downside. The Rail Freight Group suggested that the downside will be difficult to implement and may be perverse or

counterintuitive. Network Rail “recognise ORR’s arguments in considering introducing a downside” but proposed that in order to manage risk, a downside should be capped at the national level. Several respondents expressed concerns around Network Rail being exposed to risks outside its control, especially for freight volumes, and there was support for a floor on payments. In its response to the draft determination, Network Rail supported the downside but expressed concerns about the size of the proposed floor on payments.

- 19.135 We will introduce a downside for CP5, with symmetric incentive rates so that the same rates apply to both the upside and the downside. We consider that, on balance, a downside will improve the effectiveness of the incentive by removing the uncertainty over whether the volume incentive will apply to a specific increase in volume, since currently it works only if volumes are above the baseline. Symmetric rates eliminate any uncertainty over which rates might apply to a given increase in volume. The downside should mitigate Network Rail’s incentive to reduce volume under pressure from the performance regime, keep the incentive working when volumes fall below the baseline (e.g. in recessions) and strengthen the incentive for Network Rail to proactively expand capacity<sup>454</sup>. A downside will interact with disaggregation by allowing netting off of payments from routes that are below the baseline from those that are above the baseline.<sup>455</sup>
- 19.136 We will introduce both a ceiling and a floor on payments under the volume incentive. The floor will cap downside payments from Network Rail. The ceiling will cap upside payments from governments. While we did not consult explicitly on a floor and ceiling in our December document, a floor was supported by several consultation responses, mainly to mitigate risk to Network Rail, particularly amid concerns that the downside exposes Network Rail to risks beyond its control. And we consider the ceiling to be an important feature of the incentive since we propose to introduce higher incentive rates but our statutory duties require us to take into consideration government finances and affordability.
- 19.137 The levels of the floor and ceiling are based on analysis of possible payment scenarios under different assumptions on background growth in passenger and freight demand and the timing of the delivery of major capacity based enhancements. The floor and ceiling are intended to balance the risk of the incentive becoming inactive (achieved by setting the levels of the floor and ceiling so that they are relatively

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<sup>454</sup> Payments are not cost based and so any downside payments are not intended to reflect any decrease in cost associated with reduced volumes.

<sup>455</sup> Under the CP4 incentive design, the volume incentive payment is calculated at the national level and so volumes below the baseline level on one route could be offset by those above the baseline on another route. If in CP5 disaggregation was introduced without a downside, for many patterns of volume increases the payment would be higher than in CP4, because volumes below the baseline for some routes would not be offset by volumes above the baseline for other routes.

unlikely to become binding), against affordability concerns for both governments and Network Rail. We have illustrated this in the final section of this chapter.

- 19.138 We have considered Network Rail's concern about the level of a floor on payments as expressed in its response to the draft determination. However, we will introduce a floor of -£300m and a ceiling of +£300m for CP5 as set out in the draft determination. Setting a lower floor of -£100m, as suggested by Network Rail, would make it more likely that the incentive would become inactive in CP5, reducing its effectiveness.
- 19.139 The baseline will reflect expected growth, and will be based on Network Rail's traffic model and DfT farebox projections with appropriate adjustments to reflect asymmetric risk to these projections. Setting the baseline at expected growth, with symmetric incentive rates, gives the incentive an expected value of zero. A baseline set below expected growth might require a corresponding adjustment to fixed charges for a positive expected value of the volume incentive. This adjustment would avoid Network Rail receiving a volume incentive payment for volumes that it was expected to deliver and for which it had been paid already. An expected growth baseline means that positive and negative volume incentive payments are easily interpreted, which might contribute towards improving the transmission mechanism.

### **Payment mechanism**

- 19.140 At present, the volume incentive is calculated annually, but paid over the subsequent control period through the opex memorandum account, with regard to affordability. Most respondents to our December consultation, including Network Rail, supported the continuation of payments through the opex memorandum account. They did not think that the deferral of payment affects incentives or if it does, that this is a secondary issue, and that it is the transmission mechanism which is the most important driver of effectiveness. And both Transport Scotland and DfT stated clearly that the timing of payment to Network Rail will affect affordability for funders. But nearly all respondents supported the annual calculation and crediting of incentive payment amounts to the individual routes. There were no further comments on this element of our proposal in the draft determination responses.
- 19.141 We will continue with the existing payment mechanism, with volume incentive amounts accrued in the opex memorandum account and paid over the subsequent control period, profiled according to affordability.

### **Other design issues**

- 19.142 Most respondents to the December 2012 consultation opposed crediting the volume incentive only in congested areas of the network, mainly because of difficulties with the definition and measurement of congestion. The majority of respondents said that Network Rail should be credited for all volume growth, some because of the need to incentivise Network Rail to accommodate all volume, whatever its cause, and some because of the practical problems in distinguishing what Network Rail had caused.

We did not receive any further comments on this issue in response to the draft determination.

- 19.143 In December 2012, we consulted on excluding ESI coal and spent nuclear fuel. When coal was excluded in PR08 it was argued that coal was 'captive' to rail and did not need an incentive for that reason. Network Rail supported that as did Freightliner (with some concerns about Scottish coal) and RFG (who wanted to ensure biomass attracted the volume incentive). Arriva supported it but not if there were data problems at the route level. DB Schenker, Transport Scotland, Centro and PTEG did not support the exclusion or did not see the point of it.
- 19.144 In its response to our draft determination, Network Rail strongly disagreed with our proposal to include biomass in the volume incentive, which it considered should be treated consistently with ESI coal, given that biomass is a close substitute for ESI coal. A freight operator supported the inclusion of biomass in the volume incentive.

## Our decision

- 19.145 We will continue to apply the incentive to all routes since congestion may not necessarily be correlated with high value volume and we expect that it will be difficult to measure. We propose to continue to include all growth regardless of who has driven that growth. Our rationale is that all volume is valuable and separating Network Rail-caused volume is both difficult and could set the wrong target.
- 19.146 We will continue to exclude commodities that are subject to mark-ups such as the freight specific charge and the freight only line charge (data allowing)<sup>456</sup>. Our rationale is that these mark-ups provide an incentive for volume that does not need duplicating.
- 19.147 We have taken into account comments on the inclusion of biomass in the volume incentive. Future growth in biomass is uncertain, but we consider that it is important that Network Rail is incentivised to accommodate any such growth. For this reason, biomass will be included in the volume incentive but we have accepted an adjustment to the baseline, proposed by Network Rail, to reflect the greater degree of uncertainty associated with this commodity and asymmetric risk to the biomass forecast.

## Metrics

- 19.148 In their responses to the December 2012 consultation, Network Rail and some freight operators commented that for freight, more weight should be put on the gross tonne miles measure, in order to incentivise more efficient traffic growth. At our January 2013 workshop, RFOA said that all the measures should in fact relate to better use of available capacity rather than encouraging more capacity. Centro argued that a metric which focuses on train miles is likely to incentivise long-distance services

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<sup>456</sup> We expect data to be available to exclude ESI coal and iron ore. We recognise that it is difficult to exclude spent nuclear fuel from the volume incentive baselines and outturn data, as this is not recorded separately in Network Rail's billing system. We consider that as this traffic is relatively small, its inclusion will not materially affect the financial impact of the volume incentive.

(passenger or freight) rather than short-distance passenger commuter services. We did not receive any material comments on this issue in response to the draft determination.

19.149 We propose to continue with all four existing metrics. We have considered the consultation responses and discussed the availability and potential vulnerabilities of the existing metrics with Network Rail and DfT (which holds farebox data). Train miles metrics are not entirely satisfactory because they could encourage empty trains and longer distance volumes, and growth in farebox could reflect developments outside Network Rail's control such as changes to wider government policy. However, loss of either the train miles or farebox metrics without a satisfactory substitution could reduce the effectiveness of the incentive since the broad scope represents a range of different values. In recognition of these concerns we will allow for the re-opening of the farebox baseline in CP5 if it is clear that it will be affected by a change in fares policy, and we are confident that we can isolate that effect<sup>457</sup>.

## Baselines

19.150 In the workshop and in its response to the December 2012 consultation, Network Rail suggested that ORR should set a national growth baseline, and then it, in consultation with operators, would set route level growth baselines. In its consultation response, Network Rail also argued that by continuing to apportion growth over a control period equally between the five years, the baseline is likely to be unachievable in the early years of CP5. This is because growth is not forecast to be uniform over CP5, but concentrated in the final years of the control period when a number of capacity driving enhancements e.g. Thameslink, Crossrail are due to be completed. In its response to the draft determination, Network Rail reiterated its intention to work with ORR to finalise national baselines and to consult on route level baselines.

19.151 In our draft determination, we set out our intention to set expected growth baselines. We also recognised that the delivery of a number of capacity enhancing projects in CP5, which are due to complete towards the end of the control period, means that the passenger train miles growth forecasts included in Network Rail's traffic forecasting model are unlikely to be an accurate representation of expected growth. Since our draft determination we have worked closely with Network Rail to ensure that the baselines are as accurate as possible. To inform the setting of expected growth baselines, Network Rail had prepared probability analysis of its forecasts that reflect uncertainties around the timing of capacity-enhancing projects. We have carefully reviewed this analysis and underlying assumptions, and used this to inform our setting of national growth baselines.

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<sup>457</sup> In line with our approach to setting the farebox baseline, we would expect to draw on data from alternative runs of DfT's Network Modelling Framework to estimate the effect of a change in fares policy. To adjust the farebox baseline we would need to consider the timing of any change in fares policy, and assess the practicality of translating changes in the national baseline to the route level.

19.152 National growth baselines for passenger train miles, passenger farebox, freight train miles and freight tonne miles are shown in Table 19.1 below. Compared with our draft determination, these baselines are based on more up-to-date forecasts, in most cases drawing on forecasts prepared for Network Rail's draft delivery plan. In our draft determination, we used SBP traffic forecasts for passenger train miles, freight train miles, and freight gross tonne miles. In response to our draft determination, a freight operator expressed concerns about the use of the SBP traffic forecasts as a baseline for the volume incentive, partly because these forecasts assume unconstrained network capacity. We are now setting the freight baselines using forecasts prepared for Network Rail's delivery plan, which reflect constraints on the development of new intermodal terminals.

19.153 Our approach can be summarised as follows:

- (a) the passenger train miles baseline is based on probability analysis of Network Rail's traffic forecasts prepared for its delivery plan and expressed as total growth over CP5. We have adjusted the forecasts to account for asymmetric risk around the timing of the delivery of enhancements, for example risks of delay associated with rolling stock procurement, agreements between TOCs and funders, and external delivery of enhancements (such as Crossrail);<sup>458</sup>
- (b) the baseline for farebox is based on the DfT Network Modelling Framework<sup>459</sup>. We have adjusted the forecast to ensure it captures revenue growth that would occur within CP5, and to adjust for asymmetric risk (consistent with our approach to the passenger train miles baseline) to ensure that the baseline reflects expected growth;
- (c) the freight baselines are for chargeable traffic (excluding ESI coal and iron ore), and are based on Network Rail's traffic forecasts prepared for its delivery plan. These forecasts reflect freight volume growth forecasts included in the draft Freight Market Study<sup>460</sup>, with adjustments to reflect short-term economic growth forecasts and constraints on the development of new intermodal terminals. We have made a further adjustment to the delivery plan forecasts to reflect downside risks to biomass traffic by delaying forecast growth in biomass flows by two years (with the exception of specific known flows to Drax).

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<sup>458</sup> Note that the delivery plan passenger train miles forecast is slightly higher than the SBP forecast. This means that the baseline has increased slightly since our draft determination, despite some downward adjustment for asymmetric risk.

<sup>459</sup> The DfT Network Modelling Framework is a strategic modelling tool which can provide, among other things, high level demand and revenue forecasts.

<sup>460</sup> *Long Term Planning Process: Freight Market Study - draft for consultation*, Network Rail, April 2013, available at <http://www.networkrail.co.uk/improvements/planning-policies-and-plans/long-term-planning-process/market-studies/freight/>. This is part of the rail industry's Long Term Planning Process and sets out how freight demand is expected to change over the next 30 years.



**Table 19.1: CP5 final national baseline growth rates**

Total growth over CP5 <sup>461</sup>	Final CP5 baseline	Draft determination CP5 projection	CP4 baseline
Passenger train miles	6.6%	6.4%	4.1%
Farebox	17.7% (real)	19.6% (real)	25.8% (real)
Freight train miles	15.7%	30.4%	12.0%
Freight 1,000 gross tonne miles	21.5%	33.5%	8.3%

19.154 We will work with Network Rail to translate national growth forecasts into annual route-level baselines ahead of the start of CP5. Network Rail will consult on route level baselines when it publishes its draft delivery plan in December 2013. Baselines must be set before the beginning of CP5 and adjustments to route-level baselines must be neutral in aggregate relative to the national growth baselines specified above. We will agree the principles for disaggregation with Network Rail in advance of its delivery plan consultation, and review the proposed route-level baselines before these are put in place for the beginning of CP5.

### Incentive rates

19.155 A majority of respondents to our December 2012 consultation supported the retention of the current value-based approach to calculating the incentive rates. A description of our approach to calculating the volume incentive payment rates is provided in our December 2012 consultation document. In summary, the incentive rates are intended to reflect a share of the value of increases in volume (rather than, for example, being based on the cost associated with accommodating that additional volume). For passenger traffic, this means that incentives rates are based on an estimate of the additional social and private (i.e. farebox) value of increased passenger volumes. For freight traffic, the incentive rates are intended to reflect the social value (for example reduced congestion, accidents, pollution etc.) of increased freight traffic as a result of the shift from road to rail. The small differences between the CP5 draft determination rates and the final determination rates are due to small adjustments, for example to reflect the availability of updated underlying assumptions relative to those which we used when we originally calculated the rates in December 2012.

19.156 A majority of respondents commented that regardless of the size of the payment, the transmission mechanism is the key factor in ensuring that the incentive is effective. Some respondents suggested that there would be merit in moving to a cost based approach for the volume incentive, but recognised that it seems unlikely that this could be implemented in a robust way at this time. Network Rail expressed support for

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<sup>461</sup> Note that this table expresses the baselines as total growth over CP5, rather than the annual average specified in the draft determination. We have re-expressed the draft determination and CP4 projections in this format. These numbers may not reconcile due to rounding.



strengthening the incentive by increasing the incentive rates. Freightliner commented that in the case of freight, in addition to the size of the incentive rates, setting a realistic baseline is also a key factor in ensuring the incentive is effective. We did not receive any further material comments on this issue in response to the draft determination.

19.157 We will continue with the existing method of calculating incentive rates and adopt the updated version of those rates included in our December 2012 consultation and shown in Table 19.2<sup>462</sup>. Most respondents are supportive of this approach and there appears to be little interest in the 'higher rate alternative' which we also consulted on in December 2012, at least until there is full confidence in the effectiveness of the transmission mechanism. The higher rate alternative would also be of concern to funders since it could raise affordability issues.

**Table 19.2: Incentive rates**

	Final CP5 value (2012-13 prices) <sup>463</sup>	Refreshed CP5 value as per the draft determination (2012-13 prices)	CP4 value (2006-07 prices)	CP4 value (2012-13 prices)
Per additional train mile	139p	141p	69p	84p
% of additional farebox revenue	2.5%	2.5%	1.5%	1.5%
Per additional freight train mile	281p	284p	111p	136p
Per additional freight 1,000 gross tonne mile	239p	242p	100p	122p

### Payment scenarios, caps and payment rates

19.158 Figure 19.2 below shows how a ceiling and floor set at +/- £300m will mitigate the risk around the magnitude of payments should traffic growth be significantly above or below the growth baselines set out above. The scenarios reflect different assumptions on passenger and freight demand and on the timing of the delivery of major capacity improving enhancements. We have not associated specific probabilities with these illustrative scenarios, although we consider the more extreme scenarios to be relatively unlikely to occur.

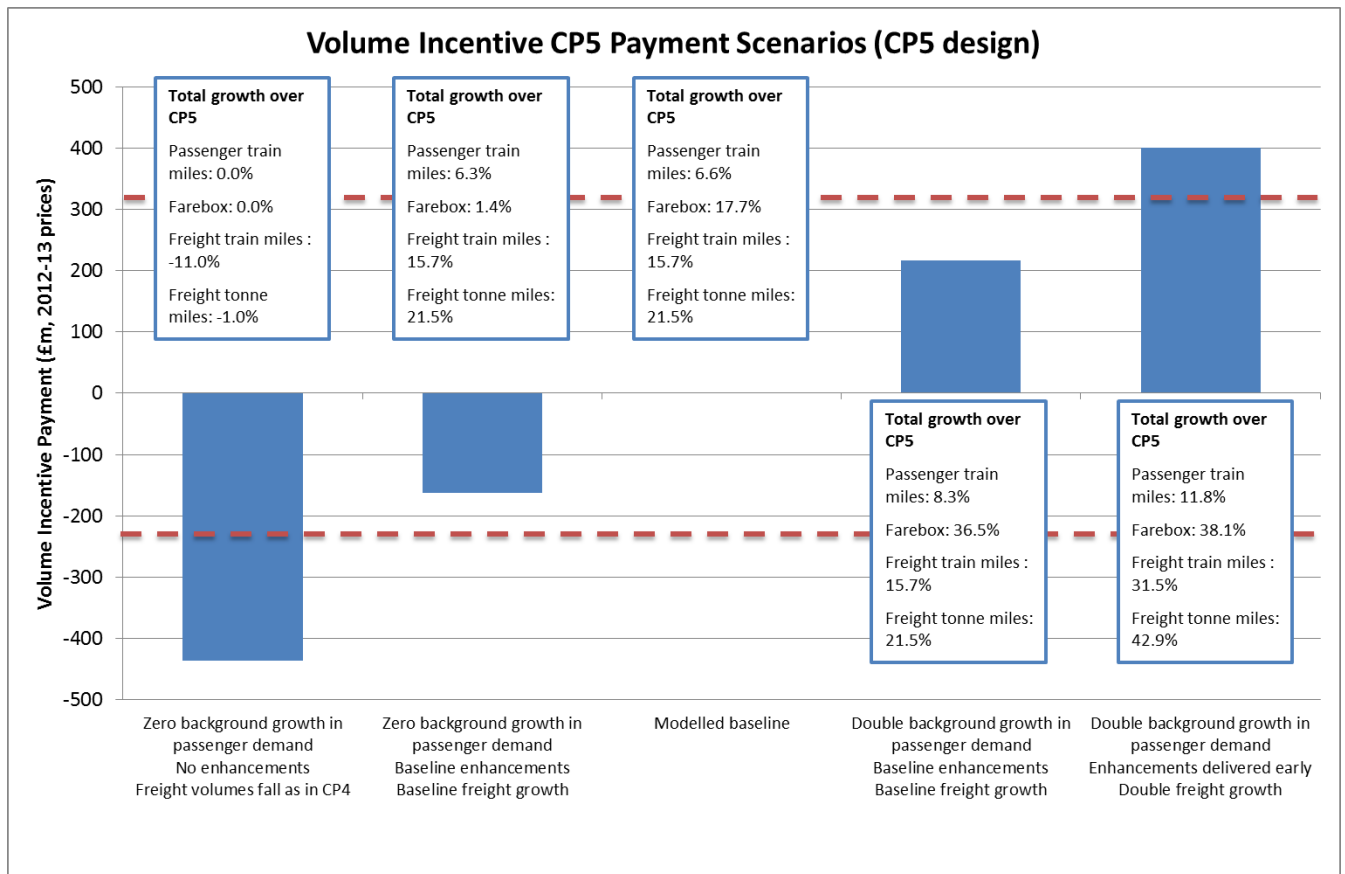
19.159 The level of the floor and ceiling is intended to balance the risk of the incentive becoming inactive (achieved by setting the levels of the floor and ceilings so that they

<sup>462</sup> These rates have been updated for RPI inflation compared with those published in our December 2012 consultation.

<sup>463</sup> Please note that differences between the CP5 draft determination rates and the final determination rates are due to small adjustments to reflect, for example, some of the underlying assumptions in WebTAG, used to calculate the rates, having been updated since we originally calculated the rates in December 2012.

are relatively unlikely to becoming binding), with affordability concerns for both governments and Network Rail. While the modelled scenarios have informed our setting of a ceiling and floor of +/- £300m, the ceiling and floor put in place must also be considered in light of other aspects of the PR13 settlement. For example, our decision on the cap on the level of the variable usage charge means that if Network Rail was to deliver volumes below the baseline, since the variable usage charge is to be set below the level of cost directly incurred, it would effectively over-recover, offsetting some of the potential downside experienced through the volume incentive.

**Figure 19.2: Volume incentive CP5 Payment Scenarios**



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## 20. Possessions and performance

### Key messages in this chapter

- The Schedule 4 ('possessions') regime compensates train operators for the financial impact of planned possessions – where operators cannot access the network because Network Rail is carrying out engineering work. The Schedule 8 ('performance') regime compensates train operators for unplanned service disruption caused by Network Rail and other train operators.
- **Schedules 4 and 8 protect train operators from risk that they cannot control.** In the case of franchised passenger train operators, this helps reduce the risk premiums factored into franchise bids, **which ultimately feeds through to taxpayers through lower franchise costs.**
- **We are retaining Schedules 4 and 8 so they mainly operate as 'liquidated sums' regimes,** where compensation (and bonus) payments are largely determined by formula, set in advance. This reduces transaction costs in the industry, because the alternative would be to negotiate the financial impact of each incident after the event.
- **We have updated Schedule 4 and 8 payment rates so they reflect the best available evidence** on the impact of possessions and poor performance on revenue and costs. Passenger Schedule 8 payment rates will increase by an average of 68%. Schedule 4 revenue loss compensation payment rates will also increase but to a lesser extent. The increases are due to large increases in passenger numbers, above inflation increases in fares on some services and updated evidence showing that passenger demand responds more to service disruption than previously thought. The scale of the increase in large part reflects the fact that the Network Rail payment rates have not been updated (other than for inflation) since 2005. The increase in Schedule 4 payment rates will result in an increase in Network Rail's funding requirement, most of which will be reflected in an increase in the Schedule 4 access charge supplement paid by train operators. The increase in Schedule 8 payment rates will not result in an increase in Network Rail's funding requirement, since Schedule 8 is financially neutral when Network Rail and train operators perform in line with our expectations.
- **The increase in Schedule 4 and 8 payment rates will increase the financial incentive on Network Rail to minimise planned and unplanned service disruption to passengers** and also ensure train operators are adequately compensated. This is because Network Rail will have to pay a higher amount of compensation for each minute of lateness it causes.

## Key messages in this chapter (continued)

- **We have updated performance benchmarks in Schedule 8**, including ensuring Network Rail's performance benchmarks reflect the output targets we set for CP5.
- We have improved other aspects of Schedules 4 and 8 to make sure they function effectively, do not result in perverse incentives, and work overall in the best interests of passengers, freight customers and taxpayers. This includes **incentivising Network Rail to reduce instances of it booking unnecessary possessions early and then cancelling them at short notice**; and reducing compensation rates to train operators to cover replacement bus costs so it is in line with actual bus costs.
- Schedule 8 is not designed to compensate passengers for poor performance. Instead this type of compensation is available to passengers through passenger compensation schemes. We have been exploring passenger awareness of current refund rights and compensation arrangements, and the extent to which passengers exercise their rights, and any barriers to them doing so. We will publish a report of our findings and recommendations in November 2013.
- Information on net Schedule 4 and 8 payments between Network Rail and train operators by route is contained in Network Rail's published regulatory financial statements. In order to make this information more accessible, we will be putting it onto our data portal in November 2013.
- Also, to enable passengers to get a better understanding of disruption due to engineering possessions, including detailed information on the extent of use of buses instead of trains during engineering works, Network Rail will be publishing its four-weekly Possession Indicator Reports.

## Introduction

- 20.1 Passenger train operators are concerned about the performance of their services because of the adverse impact on their customers of poor reliability, which over time leads to lower passenger numbers and revenues. Freight operators are concerned about the performance of their services because of the costs incurred, e.g. additional crewing costs, and because of the impact on revenue through the loss of customers.
- 20.2 The possessions and performance regimes (Schedules 4 and 8) in track access contracts perform the following functions:
- (a) compensate train operators for the financial impact of planned and unplanned service disruption attributable to Network Rail and other train operators;
  - (b) help align incentives between Network Rail and train operators, so the impact of service disruption on revenue and/ or costs is incurred by the organisation who cause the disruption, rather than the train operator that faces the disruption; and

- (c) provide appropriate signals so as to drive the decision-making in relation to performance and possession management, for example, in relation to where to make investments, or to give an indication to Network Rail on whether it is better to have a short possession but with higher engineering costs or take a longer possession.

- 20.3 In their role as compensation mechanisms, Schedules 4 and 8 ensure that train operators are less exposed to risk that they cannot control than they would otherwise be. In the case of franchised passenger train operators, this helps reduce the risk premiums factored into franchise bids. This ultimately feeds through to taxpayers through lower franchise costs.
- 20.4 This has been demonstrated by research we commissioned from Steer Davies Gleave (SDG), which estimated that setting Schedule 4 and 8 rates at 25% below full compensation would significantly increase the risk premium factored into franchise bids. SDG estimated that this could result in a £30m loss in franchise value over a control period (based on central estimates subject to a high degree of uncertainty)<sup>464</sup>. If Schedules 4 and 8 did not exist at all, the adverse impact on the risk premium would be even more considerable.
- 20.5 Exposing Network Rail to the impact of its possessions management and performance on long term fare revenue means it is more likely to be incentivised to act in the interests of passengers, for example, by investing in improving the performance of services that more passengers use.
- 20.6 Schedules 4 and 8 are liquidated sums regimes, which means that compensation payment rates are determined in advance using a set formula, rather than negotiated individually once an event has occurred. This is a common feature of contracts and is a way of minimising legal and administrative costs.
- 20.7 Schedules 4 and 8 are designed to be financially neutral if possession activity and the performance of Network Rail and train operators are at expected levels during CP5.
- 20.8 As with any formulaic compensation regime, it is not possible to ensure the amount paid under Schedules 4 and 8 in every single instance precisely compensates for the impact of service disruption. However, it is important that on average it does and that there are no systematic biases, for example, always over-compensating a particular train operator for delays to peak services.
- 20.9 Information on net Schedule 4 and 8 payments between Network Rail and train operators by route is contained in Network Rail's published regulatory financial

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<sup>464</sup> It should be noted that this analysis was based in CP4 payment rates, and the impact would be higher if based on CP5 payment rates.

statements<sup>465</sup>. In order to make this information more accessible, we will be putting it onto our data portal on 28 November 2013<sup>466</sup>.

## Current compensation arrangements

### Schedule 8

- 20.10 Schedule 8 provides train operators with compensation for unplanned service disruption caused by Network Rail and other train operators. Schedule 8 is one of a range of factors that encourage Network Rail and train operators to continuously improve performance.
- 20.11 Track access contracts for franchised passenger, open access passenger, freight and charter operators all contain a Schedule 8.
- 20.12 Our view is that, overall, Schedule 8 works well. For CP5 we will therefore not be making any major alterations to the structure of the regime, but we will be making changes to some of the metrics to ensure they remain appropriate and that Schedule 8 continues to work effectively in CP5.

### Schedule 8 for franchised and open access passenger operators

- 20.13 The regimes for franchised and open access passenger operators are very similar. They are both benchmarked regimes, where payments are made when Network Rail's or a train operator's performance diverges from a benchmark<sup>467</sup> number of minutes of lateness.
- 20.14 There are separate benchmarks and payment rates for Network Rail and train operators. These are unique to each train operator's service groups (collections of train services).
- 20.15 The Network Rail payment rate sets the basis for compensation payments from Network Rail to train operators when Network Rail's performance is worse than benchmark, and bonus payments to Network Rail from train operators when Network Rail's performance is better than benchmark. Network Rail payment rates are set at a level to reflect the impact over time of performance on fare revenue. Schedule 8 is not designed to compensate passengers for poor performance. Instead this type of compensation is available to passengers through passenger compensation schemes such as delay repay<sup>468</sup>, which are required under franchise agreements. More information on this is contained in the text box below.

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<sup>465</sup> <http://www.networkrail.co.uk/browsedirectory.aspx?dir=%5Cregulatory%20documents%5Cregulatory%20compliance%20and%20reporting%5Cregulatory%20accounts&root>

<sup>466</sup> <http://dataportal.orr.gov.uk/>

<sup>467</sup> Benchmarks are known as 'performance points' in track access contracts.

<sup>468</sup> Under the Delay Repay scheme, all passengers including season ticket holders are entitled to claim compensation for each delay of more than 30 minutes which they experience, whatever the cause.

## Difference between Schedule 8 payments & passenger compensation

Schedule 8 compensation and passenger compensation serve the different purposes:

- Schedule 8 compensation is an intra-industry arrangement designed to compensate train operators for the impact of poor performance on their long term revenue. This is an important protection to operators and it also helps reduce the risk premium factored into franchise bids, and as a result reduces the cost of franchising to the taxpayer; and
- passenger compensation arrangements are designed to provide redress for passengers when they are delayed. Franchise agreements require franchised train operators to compensate passengers for delays to their journeys. As in other sectors, consumers of rail passenger services also enjoy rights under general contract law on the sale of goods and services.

While they both reflect performance on the network, Schedule 8 and passenger compensation arrangements therefore perform very different roles. There is no direct linkage between the two, with Schedule 8 relating to the compensation and incentive arrangements between train companies and Network Rail, and the passenger facing arrangements being a means of compensating passengers for delays to their journeys.

Schedule 8 payments are based on the extent average minutes of lateness deviates from a pre-determined benchmark, and can involve bonuses or compensation, depending on how well Network Rail and train operators perform. Payments are determined by formula, based on the average number of minutes trains are late, whereas passenger compensation is paid if the train travelled on is subject to a significant delay and a claim is made.

In recent years Schedule 8 compensation has been typically higher than passenger compensation. This reflects the fact that Network Rail has not been meeting its performance targets. If, during CP5:

- Network Rail and train operators perform in line with our expectations, net Schedule 8 payments will be zero, whereas it is likely there will still be passenger compensation;
- Network Rail's performance exceeds expectations, train operators will have to pay bonuses to Network Rail but also pay passenger compensation as a result of significant delays caused by Network Rail, albeit a lower amount than if Network Rail's performance was below expectations.

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Passengers are entitled to claim compensation of 50% of the single fare for delays of 30 to 59 minutes, 100% of the single fare for delays of more than 60 minutes and for delays of more than 2 hours 100% of the return fare. The entitlement for season ticket holders is calculated using the proportional daily cost of the season ticket.



## Difference between Schedule 8 payments & passenger compensation

Track access contracts do not and cannot govern what passengers receive for poor performance. It is the role of franchising authorities to ensure that franchises are regulated in such a way that franchised train operators act in the interests of their passengers. This includes considering as part of the franchising process, the level and type of compensation passengers receive for delays to their journeys.

However, we are also concerned that passenger inconvenience is recognised and compensated for. Train operators have an obligation to comply with consumer law and we have a role in enforcing it. In this context, we have been exploring passenger awareness of current refund rights and compensation arrangements, and the extent to which passengers exercise their rights, and any barriers to them doing so. We will publish a report of our findings and recommendations in November 2013.

- 20.16 The train operator payment rate represents the level of compensation a train operator is liable to pay to Network Rail in relation to disruption caused to third party train operators as a result of the train operator's performance being worse than the train operator benchmark. Under what is commonly referred to as the 'star model', all liabilities between operators flow through Network Rail. Network Rail pays a bonus to a train operator (payable at the same rate as compensation) if the train operator's performance is better than benchmark. Train operator payment rates are based on an estimate of the extent to which the performance of a train operator impacts on the services of other train operators, along with the impact of performance on revenue over time for those services disrupted.
- 20.17 Poor performance is measured in terms of lateness experienced by passengers. Specifically it is measured as the average minutes of lateness (AML) per day between the timetabled time at particular stations, known as monitoring points, and the actual time a train arrives at those particular points. Lateness recorded at monitoring points within a service group is weighted to reflect how many passengers are travelling to the monitoring points<sup>469</sup>.
- 20.18 The share of responsibility for lateness is attributed between Network Rail and train operators using the TRUST delay attribution system. This identifies the causes of delays to services, i.e. the time lost between points where delay is reported<sup>470</sup>.
- 20.19 For the purposes of Schedule 8, cancellations are treated as a specific number of minutes of 'deemed' lateness. This varies between service groups and reflects the

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<sup>469</sup> And stations preceding them that are not monitoring points.

<sup>470</sup> The primary purpose of the TRUST system is to help ensure the industry is able to fix the underlying problems that cause delays so performance can improve over time. Rather than collect separate data for Schedule 8 to attribute lateness, Schedule 8 relies on data already collected for the TRUST system.

frequency of services, i.e. how long passengers will have to wait for the next train, and the fact that subsequent trains become more crowded and less pleasant to travel on when cancellations occur.

- 20.20 Benchmarks and train operator payment rates were last updated (other than for inflation) as part of PR08. Network Rail payment rates were last updated in our 2005 review of Schedule 8<sup>471</sup>.
- 20.21 Network Rail has made net Schedule 8 payments to train operators during CP4. This is largely due to Network Rail performing below expectations (the net payment is also affected to a lesser extent by train operator performance). In 2011-12, Network Rail made a net Schedule 8 payment of £80m (2011-12 prices).
- 20.22 Currently train operators may claim additional compensation from Network Rail for Sustained Poor Performance (SPP), if performance is worse than a defined threshold over time, provided they can demonstrate the liquidated sums element of Schedule 8 is not providing adequate compensation.

### **Schedule 8 for freight operators**

- 20.23 The freight Schedule 8 performance regime was comprehensively reviewed and updated in PR08, with the creation of a standardised regime across all freight operators so as to remove any competitive advantage to particular operators, for example through having a different payment rate to other operators running a similar service. The regime was also simplified considerably.
- 20.24 The nature of the standardised freight Schedule 8 is that benchmarks and payment rates are common across all freight operators. We are of the view the standardised regime works well and this view is shared by the majority of stakeholders.
- 20.25 Freight Schedule 8 benchmarks are based on minutes of delay per 100 miles, rather than average minutes of lateness, used in Schedule 8 for passenger operators. Because they are normalised for distance operated, the freight Schedule 8 benchmarks are suitable for all sizes of operator.
- 20.26 Most of the freight Schedule 8 is designed to be financially neutral at benchmark performance. However, there is no benchmark for cancellations. Instead freight operators receive compensation for all cancellations caused by Network Rail or other train operators. Network Rail receives funding to cover the expected number of cancellations for the control period.
- 20.27 Certain elements of the freight Schedule 8 are designed to reduce the exposure of freight operators to financial risk. These are:

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<sup>471</sup> <http://www.rail-reg.gov.uk/server/show/nav.177>

- (a) an option available to each freight operator to pay an access charge supplement (ACS) for a cap on the amount it is required to pay in relation to a single incident; and
- (b) reciprocal caps on the maximum annual Schedule 8 liability freight operators and Network Rail can face in relation to a particular track access contract. These are usually agreed by Network Rail and freight operators, and approved by us.

### **Schedule 8 for charter operators**

- 20.28 In CP4, there is a different Schedule 8 arrangement for charter operators to reflect the fact that charter services (generally trains used for leisure purposes) do not carry passengers at ordinary fares and the revenue implications of disruption are complex.
- 20.29 Like freight, the Schedule 8 regime for charter operators is also a standardised regime. Payment rates are common across all charter operators, and the Network Rail payment rate is the same as the Network Rail payment rate for freight operators.
- 20.30 There are currently no Schedule 8 benchmarks within the charter operator regime. Charter operators make compensation payments in respect of all delays they cause to other operators of three or more minutes; Network Rail compensates charter operators for all delays of three or more minutes caused by Network Rail or other operators.
- 20.31 In CP4, incident caps limit the amount of compensation per incident paid by charter operators to Network Rail under the Schedule 8 regime to £5,524 (2012-13 prices). The same incident cap applies to compensation paid by Network Rail to charter operators, although this has rarely been employed in practice. Charter operators do not currently pay an ACS in exchange for the benefit of incident caps.
- 20.32 For CP5, we will be making changes to the Schedule 8 for charter operators to bring it in line with the freight Schedule 8. More detail is contained in paragraphs 20.250 to 20.273 below.

### **Schedule 4 possessions regime**

- 20.33 The Schedule 4 possessions regime is designed to compensate train operators for the financial impact of planned possessions where operators are given restricted access to the network, principally as a result of Network Rail undertaking engineering work.
- 20.34 The possession regimes for passenger and freight operators are different. Both regimes were significantly overhauled as part of PR08. The key features of each are explained below. There is no Schedule 4 regime for charter operators. This is because engineering possession plans are typically agreed before the majority of charter services are planned.

## **Schedule 4 for franchised passenger operators**

- 20.35 This compensates franchised passenger operators for service disruption due to planned possessions. In return for this compensation passenger operators pay a pre-determined ACS to cover the estimated efficient cost to Network Rail of the Schedule 4 regime. This reflects the fact that Network Rail is expected to require a certain number of possessions and can be seen as analogous to the performance benchmark in Schedule 8.
- 20.36 Compensation payments are paid by Network Rail to franchised passenger operators on a formulaic basis. Schedule 4 payments are to compensate for a combination of the following:
- (a) the effect of possessions on fare revenue;
  - (b) additional costs incurred when running replacement buses; and
  - (c) costs or cost savings from a change in train mileage.
- 20.37 We are not making major changes to the regime as part of this periodic review, but there are a number of aspects we have reviewed in order to improve the incentives for Network Rail to plan possessions effectively and efficiently and to reduce the impact of possession disruption on passengers. The main areas where we are making changes are in relation to replacement bus cost compensation and the level of compensation payable to operators where Network Rail makes late cancellations of or amendments to Type 1 possessions<sup>472</sup>.

### ***The effect of possessions on fare revenue***

- 20.38 Network Rail compensates franchised passenger operators for revenue losses as a result of passengers being deterred from travelling due to possessions disruption. Compensation is based on Schedule 8 payment rates. Network Rail is entitled to a reduction in the amount of compensation it pays, depending on how early it notifies passenger operators about possessions. The discount reflects the reduced impact on passenger operators' revenues where passengers receive early notice of service disruption<sup>473</sup>. The amount of discount is determined by notification discount factors which vary according to the amount of notification given to passenger operators, and the type of service that is being disrupted.

### ***Additional costs incurred when running replacement buses***

- 20.39 Franchised passenger operators can claim compensation for the costs of running replacement bus services when train services are cancelled due to disruption caused

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<sup>472</sup> Type 1 possessions are possessions generally less than 60 hours in duration and which attract formulaic Schedule 4 revenue loss and costs compensation. The majority of possessions are of this type.

<sup>473</sup> While with earlier notice of possessions passengers may be more likely to make alternative travel arrangements, they are less likely to be put off from travelling by train in the future if amended timetables do not take them by surprise.

by possessions. Compensation is determined by formula; the amount of compensation received is the product of estimated bus miles (EBMs), which is the distance in miles between transfer points (i.e. between stations), and the EBM payment rate which is paid in £ per EBM operated. EBM rates are paid at two rates, one for London & South East services and one for services operating in the rest of the country.

20.40 To enable passengers to get a better understanding of the service they are getting, including detailed information on the extent of use of buses instead of trains during engineering works, Network Rail will publish its four-weekly Possession Indicator Reports. This is also discussed in chapter 3.

### **Costs or cost savings resulting from a change in train mileage**

20.41 Franchised passenger operators may make cost savings or incur additional costs as a result of changes in train mileage operated due to possessions, depending on the actual pattern of cancellations or diversions. The costs or savings are determined by a payment rate per train mile, as set out in track access contracts.

### **Schedule 4 for open access passenger operators**

20.42 Open access passenger operators only receive full formulaic Schedule 4 compensation, consistent with that available to franchised passenger operators, if they opt to pay an ACS. Currently no open access passenger operators do this, and therefore they only receive compensation for very long-lasting possessions<sup>474</sup> or Sustained Planned Disruption (SPD).

### **Schedule 4 for freight operators**

20.43 The Schedule 4 freight regime is structured so that there are three levels of compensation depending on the degree of disruption (with the possibility of compensation for actual losses for severe disruption) and higher payments made for late notice possessions. Freight operators do not pay an ACS to cover the expected costs of Schedule 4 compensation, and as a result only receive compensation for significant planned disruption notified before T-12<sup>475</sup>.

## **Our draft determination**

20.44 The main changes to Schedules 4 and 8 that we set out in our draft determination are summarised below.

20.45 In reaching these proposed decisions we:

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<sup>474</sup> These possessions are classified as Type 2 and Type 3 possessions, defined as: type 2 possessions: single possession greater than 60 hours, but equal to or less than 120 hours, (excluding public holidays) type 3 possessions: single possession greater than 120 hours (including public holidays).

<sup>475</sup> T-12 refers to twelve weeks before a new timetable comes into operation.

- (a) consulted on Schedules 4 and 8 at a high level in our May 2011 consultation document and our December 2011 consultation on incentives;
- (b) consulted specifically on Schedules 4 and 8 in our November 2012 consultation on the possession and performance regimes;
- (c) set up industry groups in relation to the passenger and freight Schedules 4 and 8, which have provided technical advice and helped inform policy decisions; and
- (d) commissioned external work to help inform our decisions and determine payment rates and benchmarks.

20.46 Where work was incomplete at the time of our draft determination, we outlined the progress we had made so far and the remaining work left to be completed.

### **Schedule 8 for franchised and open access passenger operators**

20.47 The main changes announced in our draft determination in relation to Schedule 8 for franchised and open access passenger operators were as follows:

20.48 We said we would update Schedule 8 payment rates so they reflect the best available evidence of the impact of poor performance on long term revenue. At the time of publication:

- (a) our consultants Halcrow had calculated a draft set of Schedule 8 Network Rail payment rates based on evidence in a draft of the update to the Passenger Demand Forecasting Handbook (PDFH 5.1), which was subsequently published in July 2013; and
- (b) on 15 May 2013 Network Rail had issued a consultation letter outlining concerns it had regarding the established methodology for converting the evidence in the PDFH into Schedule 8 payment rates for commuter journeys between London and the South East, and proposed an alternative solution<sup>476</sup>. At the same time we invited train operators and Network Rail to agree alternative Network Rail payment rates in instances where they did not think the ones calculated using the standard approach were a realistic reflection of the impact of performance on fare revenue.

We set out a high level timetable of the process for finalising Schedule 8 payment rate calculations.

20.49 We said we would update benchmarks in the Schedule 8 regime, including ensuring Network Rail's benchmarks reflect the output targets we set for CP5. At the time of publication, our contractors Halcrow had shared train operator benchmarks and base Network Rail benchmarks with Network Rail and train operators. We set out a

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<sup>476</sup> Network Rail's consultation, responses and its conclusion are published at <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/pr13-closed-consultations/>.



timetable of the process for Network Rail to calculate a final set of Network Rail benchmarks and consult on them, and said we would finalise Schedule 8 benchmarks as part of our final determination.

20.50 We also said that we would do the following:

- (a) keep the threshold for train operators to be eligible to claim additional Schedule 8 compensation for sustained poor performance at 10% worse than benchmark performance over 12 months; and
- (b) remove the passenger charter element of Schedule 8.

### **Schedule 8 for freight operators**

20.51 We said we would update:

- (a) payment rates so they reflect the best available evidence. This included an increase in the freight operator payment rate to reflect the fact that the passenger Schedule 8 Network Rail payment rates had increased. We did not propose a change in the Network Rail payment rate due to there being no clear evidence to suggest an alternative payment rate;
- (b) benchmarks to reflect our expectation of performance during CP5. This included setting the freight operator benchmark to reflect performance by freight operators during CP4, and setting the Network Rail benchmark to reflect our end of CP4 delay minute target. We also said we would adjust the benchmark to address an inconsistency between the Network Rail benchmark and our delay minute targets in CP4; and
- (c) the ACSs required for incident caps to reflect the change in payment rates.

20.52 We said we would set the bonus payment rate at 100% of the compensation payment rate, as opposed to 50%.

### **Schedule 8 for charter operators**

20.53 In our draft determination we set out that we would introduce benchmarks into the Schedule 8 for charter operators to ensure financial neutrality of the Schedule 8 regime, and bring it in line with other types of operator. We stated that the introduction of benchmarks sits alongside our decision to introduce the capacity charge for charter operators.

20.54 We also set out that we would increase the charter operator payment rate to reflect the increase in Network Rail payment rates under the Schedule 8 for passenger operators. We also said that we would not remove the £5,524 cap on the amount of Schedule 8 payment, or require either party to pay an ACS to receive this cap.

### **Schedule 4 for franchised and open access passenger operators**

20.55 In our draft determination we said we would adjust rail replacement bus costs compensation rates to ensure that over CP5 the amount of compensation paid better



reflects the costs faced by train operating companies. We said we would reduce compensation rates by 7.9% for London & South East services and 8.9% for services operating in the rest of the country.

- 20.56 We also set out a revised range of notification discount factors reflecting changes in late time multipliers for each service group, compared with CP4.
- 20.57 We introduced additional protection for train operating companies for costs incurred where type 1 possessions are cancelled at late notice and train services fully re-instated. Previously companies could not claim any compensation under these circumstances; the new arrangements will allow them to claim where the costs incurred are £5,000 or more.
- 20.58 We made minor changes to the contractual provisions in respect of sustained planned disruption to ensure that they are consistent with the purpose of the SPD mechanism and that the provisions are clear to all parties.
- 20.59 For our draft determination Network Rail supplied us with its ACS estimate for CP5, of which we undertook detailed scrutiny. Our engineers assessed Network Rail's volume forecasts and pre-efficient expenditure to ensure that these reflected the levels of planned maintenance and renewals in Network Rail's SBP submission. We found these to be broadly consistent with Network Rail's SBP submission but we made minor adjustments to reflect some inconsistencies. We also appointed our Reporters to carry out a detail audit of Network Rail's ACS calculation.
- 20.60 Network Rail's ACS estimate reflected draft changes in Schedule 8 payment rates, changes to the level of notification discount factors due to revised late time multipliers and the reduction in bus cost compensation rates. Based on these, our draft determination said Network Rail would need funding of £1.05bn over CP5 to fund Schedule 4 costs relating to maintenance and renewals.

### **Schedule 4 for freight operators**

- 20.61 We increased the level of funding for the freight Schedule 4 regime from £8.2m per annum to an average of £12.3m per annum. This was to reflect a forecast increase in the level of disruption faced by freight operators. Without this increase freight Schedule 4 compensation for CP5, rates would have reduced by approximately 30%.

### **Work since our draft determination**

- 20.62 There are several elements of Schedules 4 and 8 for which there has been further work done since we published our draft determination. This includes the following:

## Schedule 8 for passenger operators

- 20.63 On 16 July 2013 we wrote a letter to stakeholders setting out our technical decision on our standard approach for calculating Schedule 8 Network Rail payment rates<sup>477</sup>. This was in response to Network Rail's May 2013 consultation letter on Schedule 8 Network Rail payment rates in respect of London and South East commuter journeys. We said that we would make our final decision on the Network Rail payment rates together with our final decision on the capacity charge and volume incentive.
- 20.64 We also received two proposals for alternative Network Rail payment rates, one from Network Rail and First Capital Connect and the other from Network Rail and Chiltern. We accepted both proposals.
- 20.65 On 16 August 2013, we e-mailed stakeholders outlining the principles Network Rail should follow when calculating its proposed set of Network Rail benchmarks for CP5. On 23 August 2013, Network Rail consulted with train operators individually on the Schedule 8 Network Rail benchmarks for each year of CP5, which it had calculated according to these principles.
- 20.66 In order to calculate these benchmarks, Network Rail produced a set of performance trajectories for each train operator, and a model to convert PPM and CaSL into average minutes of lateness. Network Rail commissioned Steer Davies Gleave (SDG) to review its model for converting PPM and CaSL into AML<sup>478</sup>.

## Schedule 8 for freight operators

- 20.67 We have done further work to update:
- (a) the Network Rail benchmark so it uses data from 2010-11 and 2011-12 and more accurate data supplied by Network Rail on delays to freight operators from third parties;
  - (b) the freight operator payment rate to reflect our final set of Schedule 8 Network Rail payment rates for passenger operators; and
  - (c) the list of incident caps and associated access charge supplements to reflect the update to the freight operator payment rate.

## Schedule 8 for charter operators

- 20.68 As a follow-up to discussions at two stakeholder meetings on Schedule 8 and charges, on 23 August 2013 we published our draft conclusions on the structure of charges and Schedule 8 performance regime for charter operators. The main changes to Schedule 8 in this letter compared to our draft determination were that:

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<sup>477</sup> <http://www.rail-reg.gov.uk/pr13/PDF/london-commuter-flows-decision-2013-07-16.pdf>

<sup>478</sup> <http://www.networkrail.co.uk/PR13-closed-consultations/SDG-final-report-review-of-income-and-schedule-8-benchmark-models.pdf>

- (a) charter operators and Network Rail will be given reciprocal annual caps on Schedule 8 payments; and
- (b) charter operators will be required to pay an ACS to receive incident caps, with charter operators being able to choose from a menu of incident caps and associated ACSs.

20.69 These two changes bring the Schedule 8 for charter operators further in line with the freight Schedule 8, and mean that charter operators are not subsidised through Schedule 8 and will be protected against the maximum Schedule 8 liability they can be exposed to each year.

20.70 We have also updated the charter operator payment rate to reflect our final set of Schedule 8 Network Rail payment rates for passenger operators.

20.71 On the basis of CP4 delays and CP5 payment rates, we estimate that the combined impact of the changes we are making to Schedule 8 and charges for charter operators will result in charter operators being financially better off than under the current arrangements.

#### **Schedule 4 for passenger operators**

20.72 Since our draft determination we have updated our ACS calculation to take account of changes to a number of inputs into the calculation. These include an adjustment to reflect our conclusion on Schedule 8 Network Rail payment rates and changes to late time multiplier values, which reflect the value passengers place on scheduled versus unscheduled delays to journey time.

20.73 Network Rail improved the accuracy of the way in which it had apportioned the ACS between train operators, by using three years data. We have reviewed the updated calculation and have used it to split our determined ACS between train operators.

#### **Schedule 4 for freight operators**

20.74 We have not done any further work on this since the draft determination, other than to incorporate funding to cover the cost of payments in CP5 in respect of service variations<sup>479</sup>. Network Rail had not provided us with this information early enough to incorporate into our draft determination calculations.

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<sup>479</sup> A service variation is when a service is re-scheduled at very short notice at the request of Network Rail.

## Key issues raised in consultation responses

### Schedule 8 for franchised and open access passenger operators

#### Network Rail payment rates

20.75 Network Rail has raised several concerns regarding the scale of the increase in the Schedule 8 Network Rail payment rate, and specifically to the use of the evidence in PDFH 5.1 on how passenger demand responds to poor performance. It said that:

- (a) it considers the proposed Schedule 8 Network Rail payment rates in respect of London and South East commuter journeys to be contrary to the empirical evidence;
- (b) for other journeys, it does not consider the empirical evidence is sufficiently conclusive to form the basis for such large financial flows;
- (c) a key test for increasing rates should be that Schedule 8 should not lead to 'catastrophic' situations in CP5, whereby train operators are unable to support payments to Network Rail for delivering outperformance and are therefore exposed to financial difficulties;
- (d) there is a reputational risk to the industry if the Schedule 8 payment rates are found to be wrong;
- (e) if Network Rail payment rates are too high, train operators would be financially better off from worse than benchmark performance by Network Rail, which could result in highly distortive behaviours, and that this is an asymmetric risk in the sense that this sort of distortion would only arise if payment rates are too high; and
- (f) the structure of the track access agreement is such that there are fewer risks to the industry and the credibility of the regulatory regime if rates are set 'too low' rather than 'too high'. In particular if the rates are set too low, train operators can claim additional compensation under the sustained poor performance (SPP) provisions, whereas if payment rates are set too high, no such contractual safety valve exists.

20.76 Network Rail also said that it believes Schedule 8 payment rates should reflect the full effect of performance on revenue, and that it is important that rates should be recalibrated at each control period to make sure they keep pace with changes in fares, demand changes and other behavioural impacts on passengers' tolerance to journey delays.

20.77 Network Rail said that if industry parties believe that the higher Schedule 8 payment rates are the appropriate way forward for CP5, information about Schedule 8 should be made significantly more transparent than is current the case.

- 20.78 DfT and Transport Scotland expressed concern about whether the Schedule 8 payment rates will be set at the right level and stressed the importance of setting them accurately.
- 20.79 The majority of train operators supported the use of the evidence in PDFH 5.1 in the setting of Schedule 8 payment rates.
- 20.80 RDG wrote to us on 28 August 2013<sup>480</sup> in the context of its work considering the interaction between the capacity charge and Schedule 8. In its letter, it set out some common principles on Schedule 8. We think it is very significant and useful to have a common industry understanding articulated in these terms. The overarching principles were:
- (a) the Schedule 8 rates should be recalibrated such that they reflect, as accurately as possible, the revenue impacts of disruption for train operators;
  - (b) for passenger operators the Schedule 4 payment rates should continue to be set on a consistent basis with the Schedule 8 rates; and
  - (c) Schedule 8 benchmarks should be recalibrated so that they reflect determined levels of performance in CP5.
- 20.81 We agree with the principles that RDG set out in its letter, including the principle also stated by Network Rail in its consultation response, that Schedule 8 payment rates should reflect the full effect of performance on revenue, and have calculated them so they are based on the best evidence available. We do not agree with Network Rail that the Schedule 8 payment rates we have set for CP5 are too high:
- (a) as outlined in our July 2013 letter, we have made a 10% downward adjustment to Network Rail payment rates in respect of London and South East commuter journeys to reflect some of the issues Network Rail raised in relation to crowding dampening the impact of performance on demand and the longer time period between poor performance occurring and it having its full effect on revenue. This adjustment also reflects the fact that in some instances passengers may switch between different services run by the same operator. Our judgement is that use of the evidence in the recently updated PDFH 5.1, combined with this adjustment provides the best estimate of the impact of performance on long term revenue for London and South East commuter journeys that could be calculated within the time available. It will be worth investigating whether for CP6 a more detailed approach should be taken to determine the size of the adjustment for these factors;
  - (b) we do not agree with Network Rail that the empirical evidence in PDFH 5.1 is insufficiently conclusive for us to use, since it is based on a much more

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<sup>480</sup> See <http://www.raildeliverygroup.com/assets/files/2013/09/LtrtoCRoss280813.pdf>.

comprehensive and thorough review of evidence than in previous editions of the PDFH, which Schedule 8 payment rates have been based on;

- (c) Network Rail has helpfully provided us with estimates of the impact of the net Schedule 8 payments that would be made if Network Rail missed or exceeded its PPM targets. This includes a comparison of the impact if the Network Rail payment rates are based on our technical decision in our July 2013 letter, with the impact if the Network Rail payment rates are based on the evidence from previous editions of PDFH. We compared these estimates with total train operator revenue and do not consider that the increase in payment rates results in train operators facing undue cash-flow risk. This is reflected by the fact that most consultation responses from train operators supported us basing the payment rates on the evidence from PDFH 5.1 and that there were only two joint proposals from Network Rail and train operators for alternative payment rates;
- (d) we agree that there is a reputational risk to the industry if the Schedule 8 payment rates are incorrect, and are of the view that this highlights the importance of factoring in the most recent review of the evidence on how passenger demand responds to performance;
- (e) we agree that if Schedule 8 payment rates were set too high, it could encourage conflict. But deliberately setting payment rates too low would result in Schedule 8 not being as effective as a compensation mechanism and not providing Network Rail with a strong enough financial incentive to perform well. Also, Schedule 8 payments only cover the impact of performance on revenue; they do not cover the impact on costs, such as staff overtime, additional fuel costs or passenger compensation. Schedule 8 payment rates are also based on revenue in 2011-12, which for many service groups will have increased by the beginning of CP5 and will continue to increase throughout CP5. These factors which are not taken into account in Schedule 8 payment rates reduce the risk of there being any instances where payment rates are set at a level that the train operator is better off financially if Network Rail performs poorly; and
- (f) we do not agree that there are no contractual 'safety valves' if Network Rail payment rates are set too high. Paragraph 17 of Schedule 8 enables Network Rail or a train operator to propose a change in Schedule 8 payment rates mid control-period, including where new evidence becomes available. It is also the case that additional compensation is available for sustained poor performance (SPP) only in the event performance falls below the SPP threshold.

20.82 We have decided to set Network Rail payment rates on the basis of our technical decision outlined in our July 2013 letter. The reasons this decision are discussed in more detail in paragraphs 20.142 to 20.163.

20.83 We agree with Network Rail that information about Schedule 8 should be more transparent than is currently the case. Information on net Schedule 4 and 8 payments



between Network Rail and train operators by route is contained in Network Rail's published regulatory financial statements. In order to make this information more accessible, we will be putting it onto our data portal on 28 November 2013.

### **Treatment of cancellations under Schedule 8 and weighting given to lateness at different stations within service groups**

- 20.84 One train operator suggested that Schedule 8 should be updated to better reflect the importance of not cancelling long distance services, and another said we should have systematically updated monitoring points, monitoring point weightings (MPWs) and cancellation minutes as part of PR13.
- 20.85 In December 2012, we gave train operators and Network Rail the opportunity to jointly propose alternative monitoring points, monitoring point weightings and cancellation minutes. We received proposals in respect of the service groups of a few train operators, which we accepted. We did not systematically review these elements of Schedule 8 as we were not of the view this would have justified the costs of doing so.
- 20.86 An increase in the cancellation minutes would mean a cancellation is given a greater weighting under Schedule 8, and would therefore address the concern raised by a long distance operator regarding this. If a train operator and Network Rail wish to jointly propose a change to the cancellation weighting during CP5 (most likely with a corresponding adjustment to the benchmarks), for example, in order to place a greater financial incentive on Network Rail to avoid cancellations relative to lateness, we would welcome such a proposal.

### **Network Rail benchmarks**

- 20.87 A few responses, including Network Rail's response, stressed the importance of the Network Rail benchmarks reflecting the output targets we set in our final determination.
- 20.88 In October 2013, Network Rail provided us with a proposed set of final determination-consistent CP5 Network Rail benchmarks, along with the PPM and CaSL trajectories that sit behind them. We are reviewing these to make sure they are consistent with our performance targets and will be circulating the final set of benchmarks we have determined for CP5 by 8 November 2013.

### **Sustained poor performance (SPP) threshold**

- 20.89 Network Rail said it does not agree with our decision to keep the SPP threshold at 10% worse than benchmark performance over 12 months.
- 20.90 Given Network Rail has continued to underperform against its performance targets, we do not consider it would be appropriate to make any changes to the SPP threshold that could weaken Network Rail's incentives to avoid poor performance over a sustained period of time. Also, given the relatively low number of claims during CP4 despite Network Rail not meeting its performance targets, we do not anticipate that



setting the threshold at 10% will result in a large number of claims if in CP5 Network Rail performs at benchmark in aggregate.

20.91 We therefore will be setting the SPP threshold at 10%, as stated in our draft determination.

## Schedule 8 for freight operators

20.92 Network Rail was content with the decision in our draft determination regarding Schedule 8 for freight operators. Freight companies have expressed some concern regarding the updated benchmarks and payment rates outlined in our draft determination, and have said the following:

- (a) *Freight operator benchmark.* Updating this to reflect performance during CP4 will penalise parties that have improved performance, reducing the long term investment incentives. Further improvement in performance comes at an increasing investment cost and any changes should be phased in. One freight operator explained that its CP5 fleet age profile means it will be challenging to perform at the same level during CP5;
- (b) *Network Rail benchmark.* One freight operator said it is not convinced by the adjustment to the Network Rail benchmark and would like to see the data behind these adjustments. Another said that we are increasing the Network Rail benchmark as a result of poor performance during CP4;
- (c) *Network Rail payment rate.* RFOA provided us with evidence, which it argued justifies an increase in the Network Rail payment rate.

20.93 Some responses from freight operators highlighted that they would receive £10.3m less each year in Schedule 8 payments than they would without the changes to benchmarks in our draft determination.

20.94 We will not be making any changes to the approach we proposed in our draft determination for calculating the freight operator and Network Rail benchmarks as a result of these responses.

20.95 Since we are basing the Network Rail benchmark on the end-of-CP4 delay minute target we set in PR08, this does not in any way reflect Network Rail's worse than benchmark performance during CP4. Our calculation of the CP5 Network Rail benchmark includes adjustments to reflect the fact that the way delay is attributed between Network Rail and freight operators differs in Schedule 8 to the way it is attributed in respect of our end-of-CP4 delay minute target. It is therefore entirely appropriate that we make these adjustments. Network Rail supplied us with the underlying data to make the adjustments and the reporters have reviewed this data to ensure its accuracy.

20.96 We continue to be of the view that the freight operator benchmark should be based on freight operator performance during the recalibration period of CP4. This is consistent with our approach to setting benchmarks for freight operators in PR08 and for other

types of train operator in PR13, and we regard it as a reasonable expectation of freight operator performance during CP5.

- 20.97 A key principle of Schedule 8 is that it should be financially neutral on expectation. If we set Schedule 8 benchmarks so they result in an expected income stream to freight operators, then Network Rail would require funding for this. We do not agree that this would be appropriate.
- 20.98 We have carefully considered the evidence RFOA provided to us in relation to the Network Rail payment rate. On the basis of this evidence we do not regard there is sufficient evidence to change the CP4 Network Rail payment rate, other than uplift for inflation. The evidence provides us with further comfort that the Network Rail payment rate we have set for CP5 provides an appropriate level of compensation.
- 20.99 Nevertheless we welcome the fact that RFOA has provided us with this evidence and see there being potential to work with RFOA and freight operators to build on this evidence when determining the Network Rail payment rate for CP6.

### **Schedule 8 for charter operators**

- 20.100 We received two responses to our August 2013 draft conclusions letter to charter operators, from DB Schenker and from Network Rail.
- 20.101 Network Rail commented on our draft decision for there to be a menu of incident caps and associated ACSs. It said it thought that it would be appropriate for the minimum incident cap to be set at the same level in terms of minutes as the CP4 incident cap. It also suggested that it would be appropriate for us to include a larger number of options in the menu of incident caps than those we set out in our August 2013 draft conclusions letter, in order to ensure that the differing needs of operators would be catered for.
- 20.102 Network Rail also said it thought it appropriate to include a major line side fire that took place on the East Coast Main Line within the calculation of the benchmarks.
- 20.103 DB Schenker supported our draft proposals on Schedule 8, noting that further work would be needed to finalise the benchmarks, payment rates and calculate the menu of incident cap access charge supplement rates.
- 20.104 In CP5 we will require Network Rail to offer an incident cap in minutes equivalent to the current £5,524 cap, in return for an access charge supplement (ACS) and also offer a menu of caps and associated ACSs.
- 20.105 We have included delay minutes due to the line side fire in our calculation of benchmarks.

### **Schedule 4 for franchised and open access passenger operators**

#### **Bus cost compensation formula**

- 20.106 Since publishing our draft determination decision to reduce rail replacement bus cost compensation rates, the DfT has confirmed its decision to remove eligibility for Bus

Service Operators Grant (BSOG) payments for rail replacement services from 1 October 2013. BSOG is a subsidy paid to bus operators for services that meet the BSOG eligibility criteria. The Welsh Government removed BSOG eligibility for rail replacement services in Wales from 1 April 2013. Transport Scotland has retained BSOG payments for services in Scotland, but given the eligibility criteria very few services are likely to attract BSOG payments.

- 20.107 In response to this, a number of train operators said that we should amend the amount by which we proposed to reduce bus cost compensation rates because the loss of BSOG by bus operators will lead to increased rail replacement bus hire costs.
- 20.108 We agree that it is right to take account of the impact of the changes to BSOG eligibility when setting bus compensation rates and we explain how we have done so at paragraphs 20.282 to 20.284.
- 20.109 As part of our implementation process we made a minor change to the bus costs compensation formula within the franchised passenger track access contract. This introduced a 'no bus replacement' category to the formula to allow for circumstances where no replacement service is required for possessions where a viable alternatives exists such as London Underground or a tram service.

#### **Additional protection for late changes to possession plans**

- 20.110 Passenger train operators welcomed our draft determination decision to extend Schedule 4 protection to include costs incurred where Network Rail cancels Type 1 possessions at late notice and subsequently reinstates a full timetable. Respondents considered this an important additional incentive on Network Rail to improve its possession planning and reduce the amount of late cancellations.
- 20.111 First Capital Connect (FCC) said it was important that Network Rail is incentivised to ensure that any changes to possessions are implemented in time for train operators to inform passengers by the 'informed traveller' timetable (T-12)<sup>481</sup>. It argued this could be achieved more generally by the inclusion of additional notification discounts between T-22<sup>482</sup> and T-12, with higher amounts of compensation becoming payable the closer to T-12 any changes to possessions are made.
- 20.112 In response to the last point raised by FCC, whilst we are keen to increase the incentive power of Schedule 4 to encourage Network Rail to plan possessions efficiently, we are concerned about adding complexity to the current system from increased notification discount thresholds. We discussed options for making changes to the notification discount system with train operators as part of PR13 but there was no consensus amongst operators on whether to introduce more thresholds or make

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<sup>481</sup> The 'informed traveller' timetable is the earliest timetable by which advanced tickets become available for sale, at 12 weeks before day of departure.

<sup>482</sup> T-22 means 22 weeks before day of departure.

significant changes to the notification discount system. We do not intend to make any further changes to the notification discount system as part of this periodic review.

- 20.113 Network Rail agreed with our view that timescales for completing the Engineering Access Statement are the primary driver of some possessions being booked very far in advance (and subsequently cancelled) rather than the notification discount system. To address this Network Rail is developing a joint approach to this issue working with industry partners as part of the Rail Delivery Group's Asset, Programme and Supply Chain Management work-stream.
- 20.114 A number of operators said the increased protection should include revenue loss compensation. We do not agree with this and discuss our reasons for this at paragraphs 20.324 to 20.325.
- 20.115 Network Rail requested an increase in the ACS of approximately £1m per annum to fund the new scheme based on its estimate of how much compensation it would pay out under the extended protection for late cancellations. Network Rail based its estimate on rail replacement bus costs faced by operators using the Schedule 4 bus costs compensation formula and its own estimate of the likely number of possessions cancelled at late notice and where train services are fully reinstated. Network Rail recognised it should not be compensated where possessions are cancelled as a result of inefficient planning but argued it should be for cancellations out of its control. Network Rail assumed 50% of late cancellations were within its control and therefore it should receive half the estimated annual cost compensation through the ACS. We do not intend to provide this additional funding and we explain our reasons for this in paragraphs 20.322 to 20.323.

### **ACS Calculation**

- 20.116 East Coast expressed concern about the way in which the ACS is calculated and apportioned between train operators. Of particular concern to East Coast was that over CP4 it had paid out significantly more in ACS than it received in Schedule 4 payments, largely because Network Rail had carried out less renewals work than forecast. East Coast said that it believes a 'wash-up' mechanism should be introduced whereby train operating companies can claim back ACS payments for planned work not carried out.
- 20.117 We are not convinced of the benefit of a wash-up mechanism, we discuss this in more detail at paragraphs 20.290 to 20.294.

### **Schedule 4 for freight operators**

- 20.118 Freight operators repeated their concern that Schedule 4 payment rates were too low to compensate for disruption to freight services or properly incentivise Network Rail to minimise possessions disruption to freight.
- 20.119 We have increased the level of funding for the freight Schedule 4 to reflect real-terms increases in Network Rail's expected Schedule 4 payments due to a forecast increase

in maintenance and renewal activity. This has enabled us to keep the Schedule 4 payment rates the same in real terms as in CP4. We welcome any proposals from freight operators who wish to pay an access charge supplement in order to receive higher levels of compensation.

## **Our final determination**

20.120 We set out below the changes we are making to Schedules 4 and 8. Some of these changes are updates to the metrics of the regimes, such as payment rates and benchmarks, as a result of new evidence. Others are policy changes, such as the introduction of compensation to passenger train operators for late notice cancellations of possessions.

20.121 In particular we have improved the compensation and incentive properties of Schedules 4 and 8 to improve outcomes for passengers, end-users and taxpayers. We have done this by:

- (a) updating Schedule 4 and 8 payment rates so they reflect the best available evidence of the impact of possessions and poor performance on long term revenue and costs;
- (b) updating performance benchmarks in the Schedule 8 regime, including ensuring Network Rail's performance benchmarks reflect the output targets we set for CP5; and
- (c) improving other aspects of Schedules 4 and 8 to make sure they function effectively, do not result in perverse incentives, and work overall in the best interests of passengers, freight customers and taxpayers.

### **Schedule 4 and 8 compensation in relation to full impact of disruption**

20.122 As part of PR13, we considered whether train operators should continue to be fully compensated for the impact of service disruption on their revenue and costs, as they are currently.

20.123 The intention of setting payment rates at a level that would not fully compensate train operators for planned and unplanned service disruption would be to help encourage train operators to work with Network Rail to improve performance and minimise the number and impact of possessions. Potential ways train operators could work more closely with Network Rail to minimise service disruption include greater effort from train operators in delay recovery from Network Rail incidents, and better possession planning with greater train operator involvement in ensuring disruption to passengers is minimised.

20.124 However, we were mindful that a disadvantage of capping Network Rail payment rates below 100% is that such an approach would weaken the financial incentive for Network Rail to reduce disruption to services by reducing the amount that the company would pay to train operators for poor performance or disruption. We

commissioned Steer Davies Gleave (SDG) to carry out research to establish whether it is appropriate to set payment rates to below 100% of the financial impact of disruption, including whether the economic benefits of doing so would outweigh the costs.

20.125 We have decided to set Schedule 4 and 8 payment rates so that they continue to compensate train operators for the full financial impact of service disruption due to Network Rail and other operators, where this is currently the case<sup>483</sup>. This is for the following reasons:

- (a) SDG reported that interviews with, and quantitative analysis it carried out using evidence from, train operators suggested that setting Schedule 4 and/or Schedule 8 rates to 25% below full compensation would be unlikely to change behaviour. While behaviour may change to a greater extent if we were to set payment rates more than 25% below full compensation, we are concerned that this would materially reduce the financial incentives on Network Rail to minimise disruption;
- (b) setting Schedule 4 and 8 rates at 25% below full compensation was estimated by SDG to significantly increase the risk premium factor in franchise bids and result in additional costs for freight operators from being exposed to risks from Network Rail's performance that the operators are unable to control;
- (c) Schedule 4 and 8 payments incorporated within the REBS mechanism, as will be the case in CP5 (see chapter 19), are more likely to result in constructive engagement between Network Rail and train operators in the interests of passengers and taxpayers; and
- (d) rates that compensate train operators for the full financial impact of service disruption were supported by all parties who responded to our consultation (including Network Rail, passenger and freight operators).

20.126 We also considered the effectiveness of Schedules 4 and 8 during extreme disruption, such as severe weather, including a proposal from Network Rail to introduce a 'Joint Restrictions of Use' concept into Schedule 4, where under particular 'trigger' scenarios Network Rail and train operators could agree a joint Restriction of Use. In these scenarios Network Rail would pay a lower amount of compensation and would not pay compensation in relation to estimated bus mileage where the use of buses is also not possible, due to the same adverse weather conditions. The aim of this would be to prevent situations where neither party is able to run a full timetable, but neither party wishes to be the first to declare this, in order to avoid incurring Schedule 4 costs, or avoiding Schedule 4 compensation payments.

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<sup>483</sup> Elements of Schedules 4 and 8 that require funding, such as the freight Schedule 4 and payments for Network Rail cancellations under the freight Schedule 8, do not necessarily provide full compensation.



20.127 We will not be incorporating Network Rail's proposed joint Restrictions of Use concept into Schedule 4 of our model track access contracts. Our view is that in most parts of the network the current wording of Schedules 4 and 8 is not preventing Network Rail and train operators from working together in the interests of passengers during extreme disruption, and that in any localised circumstances where the current contractual wording is not felt to work well, it would be more effective for Network Rail and train operators to propose bespoke arrangements to us.

20.128 The other changes we have made relate specifically to Schedule 4 or 8. We set these out below.

## Schedule 8 performance regime

### Passenger performance regime

20.129 The Schedule 8 performance regime for passenger operators was last updated as part of PR08, but there are elements, such as Schedule 8 Network Rail payment rates, that were last reviewed in our 2005 performance review.

20.130 As part of PR13, ORR and Network Rail commissioned Halcrow to update Schedule 8 payment rates and benchmarks so they reflect the most up to date evidence. An element of this work included Halcrow engaging with train operators and Network Rail to validate its calculations.

20.131 In October 2013, we published a report from Halcrow outlining its methodology for the update of Schedule 8 payment rates and benchmarks<sup>484</sup>. Halcrow has also provided Network Rail (where not confidential) and ORR with the supporting data and models to aid with future operator specific recalibrations, for example, in the event of a major timetable change.

20.132 We set out below the changes we have determined in relation to the Schedule 8 passenger performance regime.

### Network Rail benchmark

20.133 Since Schedule 8 is intended to be financially neutral in aggregate, benchmarks should therefore be set at a level that is challenging but realistically achievable, and consistent with the performance levels Network Rail is funded to achieve.

20.134 We have updated the Network Rail benchmarks to take account of:

- (a) actual performance between the beginning of April 2010 and the end of March 2012 (the recalibration period);
- (b) changes in performance required by Network Rail and train operators in order to get from the levels of performance during the above period to the performance levels in our performance targets for the first year of CP5 (PPM and CaSL); and

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<sup>484</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.



- (c) performance trajectories within CP5. These are to ensure the CP5 benchmarks reflect a level of performance which Network Rail can deliver in respect of each train operator, while at the same meeting the performance targets we have set at an aggregate level.

20.135 The recalibration period was chosen on the basis of the following:

- (a) it is desirable to use the most recent data as possible as this better reflects the current network characteristics and service patterns;
- (b) it is desirable to use time periods that relate to Network Rail's financial years so improvement trajectories can be applied to Network Rail's benchmarks in a way that is simple and transparent;
- (c) year-on-year fluctuations in performance due to external factors such as those related to the weather can have a significant impact on benchmarks. A two year period helps minimise the impact of these fluctuations while still ensuring the data is relatively recent; and
- (d) due to the high volume of data required for the update of benchmarks, it would be costly to use data from a longer time period than necessary.

20.136 During 2013, Halcrow calculated a set of Network Rail benchmarks based on performance during the two year recalibration period, and engaged with Network Rail and train operators, before producing a set of base Network Rail benchmarks for each service group.

20.137 On 1 May 2013, Network Rail consulted on the principles it would apply when calculating Schedule 8 Network Rail benchmarks for each year of CP5<sup>485</sup>. It then provided us with a proposal that reflected the consultation responses.

20.138 On 14 August 2013, we advised stakeholders by e-mail that Network Rail should follow the principles below when calculating Schedule 8 Network Rail benchmarks for each year of CP5:

- (a) For each year of CP5, Schedule 8 Network Rail benchmarks should be consistent with achieving the annual performance targets specified in our final determination, such as PPM and CaSL;
- (b) subject to (a), CP5 Schedule 8 Network Rail benchmarks should reflect industry's view on expected CP5 performance by train operator, and therefore be consistent with whole CP5 performance (PPM and CaSL) trajectories at train operator level, which should be developed by Network Rail working with train operators;

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<sup>485</sup> <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/pr13-closed-consultations/>.

- (c) Schedule 8 Network Rail benchmarks should be set on the basis of the most recent data and relationships, available at the time of calculation, between Schedule 8 average minutes lateness (AML) and the performance targets specified in our final determination;
- (d) Re-benchmarking exercises should take place during CP5 in instances where there are material changes to timetables, for example as a result of refranchising. These new benchmarks will be active from the date of the material change to the timetable or the proposal for a change in the benchmark, whichever occurs later; and
- (e) if 'change control' is used in CP5 to adjust the performance output targets, appropriate adjustments should also be applied to Schedule 8 Network Rail benchmarks. The new benchmarks will be active from the date following the adjustment to the performance output targets.

20.139 On 23 August 2013, Network Rail wrote to each train operator to consult on two sets of service group specific benchmarks<sup>486</sup>. The first was based on our draft determination CP5 performance trajectories and the second on performance trajectories proposed by each of Network Rail's routes after discussion with train operators.

20.140 On 9 October 2013, we informed Network Rail and train operators of the PPM and CaSL targets we would be publishing in our final determination. Network Rail has since provided us with a proposed set of final determination-consistent CP5 Network Rail benchmarks, along with the PPM and CaSL trajectories that sit behind them.

20.141 We are reviewing these to make sure they follow the principles we set out on 14 August 2013, and will be circulating the final set of benchmarks we are determining for CP5 to Network Rail and train operators by 8 November 2013.

### **Network Rail payment rate**

20.142 As discussed above, the Network Rail payment rate is designed to reflect the impact of performance on a train operator's long term revenue. It is composed of the estimated average marginal revenue effect (MRE) per passenger journey within a service group multiplied by the number of passenger journeys per day in that service group. The MRE represents the impact of a minute's lateness on fare revenue over time.

20.143 The MRE calculation is based on the following:

- (a) estimating the amount of revenue at stake in each service group, using ticket sales data from LENNON<sup>487</sup> and other data sources such as those relating to

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<sup>486</sup> <http://www.networkrail.co.uk/schedule-8-benchmarks-consultation-letter.pdf>.

<sup>487</sup> LENNON is the rail industry's central ticketing system, operated by ATOC. It includes information on national rail tickets purchased in Great Britain.

multi-modal ticketing systems, during a one year period running from April 2011 to the end of March 2012<sup>488</sup>; and

- (b) combining this with the best available estimates from the Passenger Demand Forecasting Handbook (PDFH) on:
  - (i) how passenger demand responds to percentage changes in journey time (GJT<sup>489</sup> elasticities); and
  - (ii) how much passengers value lateness compared to scheduled journey time (late time multiplier).

20.144 The PDFH is the recognised industry guidance on forecasting the impact of various factors on the demand for passenger services. It has recently been updated. The bulk of this work was commissioned by the Passenger Demand Forecasting Council, with ORR and Network Rail making a contribution towards the update of late time multipliers. The work was overseen by the Passenger Demand Forecasting Executive steering group, members of which include train operators, Network Rail, ATOC, DfT, TfL, PTEG and ORR. DfT has not yet taken a view on the new PDFH guidance and will be conducting a thorough review of the updated evidence in the PDFH to help it decide whether to include it in its transport appraisal guidance (WebTAG). Since this review has not yet been completed, it has not been factored into our final determination.

20.145 Our opinion is that the evidence within PDFH 5.1 is the most up-to-date and robust available and should be used in the calculation of Network Rail payment rates.

20.146 However, Network Rail raised concerns regarding the established methodology used to convert revenue, GJT elasticities and late time multipliers into Schedule 8 payment rates for London & South East commuter services. It argued that the established approach results in Network Rail payment rates that are much higher than the actual impact of performance on revenue and suggests this could be due in part to:

- (a) capacity constraints, such as crowding suppressing demand growth, even on well-performing services; and
- (b) the amount of time it takes for changes in punctuality to result in changes in demand for this type of service.

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<sup>488</sup> Unlike the recalibration period for benchmarks, this is a one year period. This is because, while revenue is influenced by performance, it tends not to fluctuate as much because the impact is not immediate. Also, given the impact of performance on revenue is not immediate, performance in 2011-12 is likely to have been influenced by both of the years used for the recalibration of benchmarks. We therefore did not consider it cost effective to use revenue data from a two year period for the update of payment rates.

<sup>489</sup> Generalised journey time.

- 20.147 As a result, on 15 May 2013, Network Rail consulted on an alternative proposal to use the same GJT elasticities and late time multipliers in relation to commuter flows to and from London that were used in our 2005 update of Network Rail payment rates<sup>490</sup>.
- 20.148 At the same time Network Rail sent this letter, we invited Network Rail and train operators to jointly propose alternative Schedule 8 payment rates for our approval in any local circumstances where both Network Rail and a train operator are of the view that an alternative Network Rail payment rate would better reflect the impact of performance on revenue over time, for a particular service group. We received two such proposals and in both instances we approved them.
- 20.149 On 16 July 2013, in response to Network Rail's consultation letter we wrote to stakeholders to announce our technical decision in relation to the methodology for setting Network Rail payment rates<sup>491</sup>. We said that this decision was based on our consideration of Schedule 8 in isolation and that we would make our final decision at the same time we make our decision on the capacity charge and volume incentive. Our final decision is to use the set of GJT elasticities and late time multipliers outlined in our July 2013 letter.
- 20.150 Except where we have accepted alternative proposals, we have applied GJT elasticities and late time multipliers from PDFH 5.1 for all service groups, but adjusted the PDFH 5.1 GJT elasticities for commuter journeys to and from London downwards by 10%. Our decision was made on the basis that:
- (a) there are greater time lags in respect of commuter journeys before the effect of performance on revenue is fully felt;
  - (b) peak services in London and South East are typically more crowded than elsewhere; and
  - (c) for commuting flows to and from London, there is likely to be a greater degree of substitution between services (rather than transport modes) as a result of performance. In some instances this substitution will be between services groups run by the same train operator
- 20.151 As a result of concerns expressed by some stakeholders regarding the use of PDFH 5.1 for the GJT elasticities and late time multipliers for any of the payment rates, we provided further justification in our July 2013 letter for using PDFH 5.1 as opposed to continuing to use the GJT elasticities and late time multipliers used in our 2005 update of Network Rail payment rates. Our reasons for using the GJT elasticities and late time multipliers in PDFH 5.1 are as follows:

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<sup>490</sup> Network Rail's consultation, responses and conclusion are published at <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/pr13-closed-consultations/>.

<sup>491</sup> <http://www.rail-reg.gov.uk/pr13/PDF/london-commuter-flows-decision-2013-07-16.pdf>.

- (a) they are based on the most recent and comprehensive review of the evidence available. In earlier versions of the PDFH, the GJT elasticities were based on fewer and less up to date studies and the late time multipliers were mainly based on a single study;
- (b) the GJT elasticities in PDFH 5.1 are clear on what time period they relate to. This was not clear in earlier versions of the PDFH;
- (c) a recent Institute for Transport Studies and Mott MacDonald study<sup>492</sup> found that the GJT elasticities from PDFH 5.0 frequently understated demand effects; and
- (d) the late time multipliers have been adjusted downwards to make them consistent (when combined with the GJT elasticities) with the results of an analysis of evidence that observes the direct impact of performance on demand. This reduces the risk that they are over-stated.

20.152 More detail on our decision, including our reasons for using the evidence from PDFH 5.1, rather than earlier editions of the PDFH, is included within our decision letter.

20.153 In general, Schedule 8 payment rates have increased considerably, due to:

- (a) increases in passenger numbers, meaning there is more fare revenue at stake;
- (b) updates to the PDFH evidence on how passenger demand responds to increases in journey time; and
- (c) above inflation increases in fares on some services.

20.154 Table 20.1 shows the factors that have caused the CP5 Network Rail payment rates to increase relative to CP4, and their relative contributions. The main driver of the increase is the 40% increase in fare revenue since payment rates were last reviewed in 2005. The use of the updated evidence from PDFH 5.1, contributes towards a further 25% increase, which is offset by a 4% decrease due to our 10% downward adjustment in respect of London and South East commuter journeys, and alternative payment rates where Network Rail and train operators have had them approved. These two factors combined result in a 20% increase in Schedule 8 payment rates, above the 40% increase due to the increase in fare revenue.

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<sup>492</sup> Institute of Transport Studies and Mott MacDonald (2012), 'The impact of large changes in Generalised Journey Time on rail passenger demand', prepared for Passenger Demand Forecasting Council.

**Table 20.1: Factors that have caused the CP5 passenger Schedule 8 Network Rail payment rates to increase relative to CP4**

Factor	% impact on payment rates
Increase in fare revenue	40% increase
Use of updated evidence from PDFH 5.1	25% increase
10% downward adjustment in respect of London and South East commuter journeys, and alternative payment rates where Network Rail and train operators have had them approved	4% decrease
<b>Total increase</b>	<b>68% increase</b>

Note:

1. The percentage contributions and total percentage increase are calculated by looking at the increase in Schedule 8 payment if Network Rail's average minute lateness is one minute different to benchmark for each service group (i.e. weighted by the size of payment rate for each service group)
2. The percentage contributions of individual factors do not add up to the total increase because applying several percentage changes has a multiplicative effect.

20.155 In its response to our draft determination, Network Rail reiterated its concern about Network Rail payment rates in respect of London and South East commuter services and also expressed concerns about the scale of the increase in the Network Rail payment rates more generally. This is explained in more detail in paragraphs 20.75 to 20.83 above.

20.156 One particular concern expressed by Network Rail was that if we were to use the evidence from PDFH 5.1, the increase in Network Rail payment rates could result in cash-flow problems for train operators if Network Rail outperforms its benchmarks.

20.157 Network Rail has provided us with estimates of the size of the Schedule 8 payments for different deviations of PPM from target, based on the model it created to estimate the relationship between PPM and AML for its benchmark calculations. It also shared this analysis with train operators who requested it.

20.158 We have compared the Schedule 8 bonus payment that would be made by each train operator to Network Rail if PPM were one percentage point above target for a whole year due to Network Rail performing well<sup>493</sup>, with the total annual revenue of each train operator. The total increase in Schedule 8 bonus payment as a result of using the PDFH 5.1 evidence (combined with adjustments described above), rather existing GJT elasticities and late time multipliers, would represent approximately 0.2% of total train operator revenue. In no instance would the payment be more than 0.5% of train operator revenue.

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<sup>493</sup> The analysis assumes that train operators perform at benchmark.

- 20.159 Since bonus payments made to Network Rail would reflect future revenue gains, this would also only represent a short-term cash-flow issue if revenue does not respond until after the bonus payment is made.
- 20.160 In light of this analysis and the fact that only two train operators have requested payment rates that are lower than those calculated using the above methodology, we do not think there is strong evidence that the use of the evidence from PDFH 5.1 will result in train operators being subject to undue financial risk. We also do not think any of the arguments in Network Rail's consultation response would provide us with a sufficient justification to deviate from the methodology for calculating the Network Rail payment rates that we set out in our July 2013 letter.
- 20.161 Overall, the increase in the Network Rail payment rates will help strengthen the incentives on Network Rail to improve its performance, since Network Rail will face a higher financial penalty if it performs poorly and will make higher financial gains if it performs well. Setting the Network Rail payment rates so they are based on the most up to date evidence will also help it prioritise its investments where there is the most passenger revenue at stake.
- 20.162 Crucially, setting the Network Rail payment rates at the right level will also have the benefit of ensuring train operators receive appropriate compensation for disruption to their services caused by Network Rail and third parties. This will reduce the risk train operators are exposed to that they cannot control, which will help reduce the risk premiums factored into future franchise bids.
- 20.163 Our final set of Network Rail payment rates are lower than the ones we produced for our draft determination. This is due to the final set of Network Rail payment rates:
- (a) being based on the final set of GJT elasticities and late time multipliers for use in PDFH 5.1 (the draft Network Rail payment rates were based on drafts of these values);
  - (b) reflecting our decision on 16 July to adjust payment rates relating to London and South East commuter flows downwards by 10%; and
  - (c) reflecting proposals from train operators and Network Rail for alternative Network Rail payment rates.

### **Train operator benchmark**

- 20.164 Train operator benchmarks should also be set at a challenging but realistically achievable level. For CP5, we have updated train operator benchmarks to reflect actual performance between the beginning of April 2010 and the end of March 2012, as part of the Schedule 8 recalibration work we and Network Rail have commissioned from Halcrow.



20.165 The performance of franchised train operators is regulated by the franchising authorities<sup>494</sup>. We are of the view that train operators already face significant financial incentives to perform well through franchise agreements and exposure to fare revenue. We will not be setting performance trajectories for train operators in Schedule 8 as we are not of the view this would materially enhance the incentives which the train operators already face, i.e. train operator benchmarks will be set on the basis of performance during the two year recalibration period.

### **Train operator payment rate**

20.166 Although the train operator payment rate reflects the impact of the performance of a train operator on other train operators, payments between train operators are channelled through Network Rail in order to reduce the overall number of transactions.

20.167 The work we and Network Rail commissioned from Halcrow to update train operator payment rates reflects the following:

- (a) the updated Network Rail payment rates, as these reflect the best available evidence of the impact of performance on long term revenue; and
- (b) the latest pattern of impacts of each train operator's performance on other train operators (where much more detailed data is now available than in PR08).

20.168 In our November 2012 consultation we consulted on a number of policy issues, relating to Schedule 8. Our decisions in relation to these issues are set out below.

### **Additional compensation for sustained poor performance**

20.169 Under Schedule 8, additional compensation may be claimed when Network Rail's performance in relation to a specific train operator's services is worse than the Sustained Poor Performance (SPP) threshold, providing the train operator can show that it has not been adequately compensated through the liquidated sums element of Schedule 8. Our intention is that the SPP threshold should enable additional compensation to be claimed for sustained poor performance where compensation under the standard Schedule 8 arrangements is likely to be materially less than what is needed to reflect the actual impact of poor performance on the train operator.

20.170 The SPP threshold was established in our 2005 passenger performance regime review. Table 20.2 shows what levels the SPP threshold has been set at since it was introduced:

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<sup>494</sup> DfT and Transport Scotland. Similarly, Merseytravel and TfL regulate the performance of those train operators with whom they have a concession agreement (which is similar to a franchise agreement).

**Table 20.2: Passenger Schedule 8 SPP thresholds in previous years**

Year	SPP threshold
2006-07	25% worse than benchmark performance over at least 12 months
2007-08	22.5% worse than benchmark performance over at least 12 months
2008-09	20% worse than benchmark performance over at least 12 months
2009-14	10% worse than benchmark performance over at least 12 months

20.171 In our November 2012 consultation we stated that we consider train operators should be protected from the financial impacts of sustained poor performance by Network Rail; and that we are also of the view that a key strength of Schedule 8 is its liquidated sums nature, which is simpler and less costly to administer than a bespoke claims process. We proposed that we should increase the SPP threshold, and asked for suggestions from consultees on the level at which we should set it.

20.172 We received a mixed response from stakeholders. Network Rail was in favour of increasing the SPP threshold, and commissioned some research from Steer Davies Gleave (SDG), which it submitted as part of its consultation response, which recommended it should be set at 30%. ATOC and several train operators argued that the 10% threshold remains appropriate.

20.173 We have decided to continue to set the SPP threshold at 10% of the Schedule 8 benchmark for CP5, on the basis that increasing it could weaken Network Rail's incentive to avoid poor performance and the small number of claims made in CP4 does not indicate that in practice an SPP threshold of 10% is undermining the liquidated sums nature of Schedule 8<sup>495</sup>. Given the legal and administrative costs to a train operator of making a claim, we anticipate that SPP claims are in general only made when losses incurred are materially greater than the formulaic Schedule 8 compensation received.

20.174 The analysis presented by SDG suggests that even if Network Rail were performing at its benchmarks on average during 2011-12, an estimated 47% to 68% of train operators would be eligible to claim additional compensation for SPP<sup>496</sup>. With the SPP threshold set at 30% which the SDG analysis recommends, an estimated 5% of train operators would be eligible to claim additional compensation for SPP. This analysis

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<sup>495</sup> There have been two claims since the draft determination was published, but overall the number of claims still remains low, given the extent that Network Rail has been missing its performance targets over a sustained period of time.

<sup>496</sup> These two estimates are based on analysis that assumes that (i) performance in 2011-12 was better by fixed percentage across service groups or (ii) the SPP threshold is set at an average performance over the previous two years, respectively. The former assumes variability of performance between train operators remains the same. The latter assumes fluctuations of Network Rail's performance over time in relation to specific train operators remain the same.

assumes continuation of the current variability In Network Rail's performance, either across train operators, or in relation to a specific train operator over time.

- 20.175 At face value the evidence presented by SDG suggests that the 10% threshold might be too low. However, given Network Rail has continued to underperform against its performance targets, we do not consider it would be appropriate to make any changes to the SPP threshold that could weaken Network Rail's incentives to avoid poor performance over a sustained period of time.
- 20.176 Given the relatively low number of claims during CP4 despite Network Rail not meeting its performance targets, and the fact the CP5 Schedule 8 payment rates will be based on the best available up to date evidence on the impact of performance on revenue, we do not anticipate that setting the threshold at 10% will result in a large number of claims if Network Rail performs at benchmark in aggregate. But at the same time, maintaining the 10% threshold will ensure the option remains available to train operators to claim additional compensation in the event relevant losses are not adequately compensated for by the liquidated sums element of Schedule 8.

### **Compensation for Passenger Charter payments**

- 20.177 Currently a small number of train operators opt to pay an ACS in order to receive compensation to cover season ticket discounts to passengers in accordance with Passenger Charter regimes within their franchise agreements. Net payments within the Passenger Charter element of Schedule 8 are now very small and for the first three years of CP4, Network Rail has received significantly more in ACS for Passenger Charter compensation than it has paid out under Schedule 8.
- 20.178 This element of Schedule 8 is not operating as it originally intended, nor is it cost effective to update the payment rates relating to make it function more effectively. We therefore will remove this element of Schedule 8.
- 20.179 Despite the imbalance in payments it is possible that some of the train operators that opt into the Passenger Charter element of Schedule 8 view it as catastrophe insurance to protect them if there are significant declines in Network Rail's performance. Passenger operators are free to agree bespoke arrangements with Network Rail as part of their track access contracts, subject to approval by us, or seek insurance from the private market.

### **European Train Control System re-opener**

- 20.180 In our July 2013 implementation consultation we proposed a re-opener in the Schedule 8 provisions, relating to the introduction of the European Train Control System (ETCS). This is because ETCS will be implemented on some parts of the network before the end of CP5. We designed the re-opener to be as flexible as possible since further work is needed to determine exactly how the introduction of ETCS should be reflected in the metrics of Schedule 8.

- 20.181 We received responses from ATOC and Greater Anglia expressing concern that the proposed provisions in the passenger Schedule 8 seemed too broad. Concern was expressed that they give no indication of the nature of the changes that might trigger them, or the principles which might be applied when considering proposed amendments in relation to ETCS, and it was suggested that the changes to Schedule 8 should be addressed through the ERTMS Part G process.
- 20.182 Since ETCS is at an early stage of development, we have deliberately produced a re-opener that is flexible as it is not yet clear in exactly what circumstances it will need to be used. We are not convinced the ERTMS Part G process would necessarily be a suitable substitute for updating the performance regime itself. We therefore, as a default, will include the provisions outlined in our implementation consultation in Schedule 8 of track access contracts for CP5.
- 20.183 As stated in our implementation consultation, we expect the process for deciding when and how Schedule 8 should be amended, to reflect the introduction of ETCS, to be led by the industry. We understand that discussions are on-going regarding the transitional mechanisms that will take place while ETCS is being introduced, and expect in due course to work with the industry to develop a set of principles for us to follow when considering changes to Schedule 8 as a result of the introduction of ETCS.

### Other issues

- 20.184 There are some other issues we consulted on in November 2012 in relation to which we will not be making changes. These are as follows:
- (a) **whether to introduce a time delay on Schedule 8 payments.** Ideally Schedule 8 payments should reflect the impact of performance on train operators' revenues over the long term. However, Schedule 8 payments are made within 35 days of the preceding four-week period. After reviewing the evidence we are not of the view the benefits of introducing a time delay on Schedule 8 payments are material enough to justify the additional complexity and administrative burden it would result in. This view is reflected in the responses we received from stakeholders;
  - (b) **whether paragraph 17 of Schedule 8 should be amended to reduce the number of circumstances in which train operators may request changes in payment rates.** Paragraph 17 of Schedule 8 allows Network Rail or train operators to propose changes to metrics in Appendix 1 of Schedule 8, such as payment rates and benchmarks, mid-control period. Network Rail has proposed that the use of paragraph 17 of Schedule 8 to change Network Rail payment rates should be restricted to situations where there are major timetable changes. We will not be introducing this restriction. Our view is that there could be legitimate reasons for Network Rail or train operators to propose changes to

Appendix 1 mid-control period, other than a timetable change, including those that are not foreseeable during PR13; and

- (c) **treatment of cancellations by train operators to their own trains.** Currently the way in which the definitions and formulae in Schedule 8 work means that when a train operator cancels one of its own trains, it has an impact on its Schedule 8 payments even when it does not cause delay to the services of other train operators. We consulted on whether it would be worth changing this element of Schedule 8, when weighed against the costs of doing so. Responses from stakeholders suggest it is a small issue that is not having any particular impact on behaviour and that a change is unlikely to justify its cost. We therefore will not be introducing a change for CP5. However, we recommend that at the next substantive update of Network Rail's PEARS system, which translates delay attribution data into Schedule 8 payments, Network Rail considers the merits of including within PEARS the capability of allowing a change to be made to the treatment of cancellations by train operators to their own trains.

20.185 There are also a few minor drafting improvements that have been identified by stakeholders. We have included these in the revised drafting of the template track access contracts, on which we consulted on 12 July 2013.

## Freight performance regime

### Network Rail benchmark

20.186 As with the passenger Schedule 8, we have set the Network Rail benchmark at a level that is challenging but realistically achievable and consistent with the performance levels for which Network Rail is funded.

20.187 During CP4 both the regulated target for Network Rail freight performance and the benchmark in the freight performance regime were based on delay minutes per distance operated. Hence they were very closely correlated. In our November 2012 consultation we said we would set the benchmark to reflect the performance targets we set for Network Rail in CP5. Since producing that document, we have decided that the Network Rail performance target in relation to freight services will be expressed in terms of the new Freight Delivery Metric (FDM) which measures the percentage of freight trains arriving at their destination within 15 minutes of scheduled time. It only covers delay or cancellation caused by Network Rail. Further detail on the FDM is contained in chapter 3.

20.188 We do not consider that it would be robust to determine the Network Rail benchmark on the basis of this target, given it is based on an entirely new metric and differs slightly in purpose from the previous delay minute target. It conflates cancellations with delay, whereas cancellations are treated separately in the freight Schedule 8. Overall we expect Network Rail to perform throughout CP5 at a level equal to the delay minute target of 2.94 delay minutes per 100 train km we set for the final year of

CP4. This matches the internal route level delay minute target Network Rail referred to in its SBP.

20.189 Network Rail has argued that the methodology that we applied to produce the CP4 Network Rail benchmark for the new standardised regime did not take into account the fact that the delay minute target set for CP4 was based on delays caused by Network Rail captured in TRUST, and that this does not correspond exactly to the way Network Rail delay is defined when calculating Schedule 8 payments. Network Rail has proposed an adjustment to reflect this.

20.190 In order to ensure the Network Rail benchmark is consistent with the target for the final year of CP4 of 2.94 delay minutes per 100 train km, we have factored the following into our calculation of the draft Network Rail benchmark:

- (a) delay caused by other train operators, which is classified as Network Rail delay under Schedule 8 (this was also factored into the Network Rail benchmark calculation for CP4);
- (b) delay agreed to be caused by Network Rail as part of the Post Day 8 resolution process<sup>497</sup>, but which is still shown as freight operator-caused in TRUST due to it not being agreed until after the TRUST data is finalised (as per Network Rail's proposal);
- (c) delay agreed to be Network Rail-caused due to commercial agreements, for example in relation to delay attribution when there is leaf fall, but recorded as freight operator-caused in TRUST (as per Network Rail's proposal); and
- (d) delay agreed as service variation minutes<sup>498</sup> under the Management of Freight Services During Disruption (MFSD) process<sup>499</sup>. During CP4 an increasing proportion of delays to freight services have been classified as service variation minutes and therefore not captured in TRUST, when they previously would have been. The adjustment we apply to the CP5 benchmark should reflect the categories of delay captured by TRUST during the period on which our PR08 calculation of the end of CP4 delay minute target was based. Our adjustment therefore reflects service variation minutes in 2006-07 as a proportion of Network Rail caused delay in 2006-07, as this falls within the time period that the CP4

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<sup>497</sup> It is only possible to make detailed changes to individual records within the TRUST system up to 8 days after an incident. However there will be some incidents, such as where detailed investigation is needed into its cause, e.g. an electrification dewirement, where the final responsibility is not established until after this point. In addition there may be a negotiated agreement to split delay minutes in a particular way on days when there has been severe disruption due to seasonal factors.

<sup>498</sup> A service variation is when a service is re-scheduled at very short notice at the request of Network Rail.

<sup>499</sup> When an incident is in progress and likely to continue, freight trains that have timetable slots through the area may be given new schedules that reflect diversion or being held back in the interests of avoiding wider disruption, for example, if there are limited opportunities to regulate trains into loops along the way.



delay minute target was based on<sup>500</sup>. This differs from Network Rail's proposed adjustment which was for the adjustment to be based on service variation minutes during 2011-12. Our view is that Network Rail's proposal would result in a benchmark that is inconsistent with the delay minute target for the final year of CP4.

20.191 On the basis of information provided by Network Rail, we have calculated the CP5 Schedule 8 Network Rail benchmark to be 7.20 minutes<sup>501</sup> of delay per 100 freight operator miles<sup>502</sup>. The reporters, Arup, have audited the data Network Rail provided to us for use in this calculation to ensure its accuracy.

20.192 Without taking into account this difference in definition of Network Rail caused delay in TRUST and freight Schedule 8 in our setting of the Network Rail benchmark, Network Rail would be expected to make a net payment to freight operators each year. Based on draft delivery plan traffic forecasts, we estimate that Network Rail would have required an average of £3.8m per year funding to cover the cost of this.

### **Network Rail payment rate**

20.193 The Network Rail payment rate is the basis for compensation paid to freight operators or bonuses paid to Network Rail, when it performs worse than or better than benchmark respectively. The payment rate should reflect the average financial impact to a freight operator of each minute of delay to a freight train attributable to Network Rail, and is the same for all freight operators.

20.194 Initial analysis that we carried out based on previous ORR research on rail freight users' value of time<sup>503</sup> (consulted on as part of the 2010 review of access policy) suggested that the Network Rail payment rate may currently incorrectly compensate freight operators for delays to their services. However, in our draft determination, we highlighted that there is uncertainty over the robustness of some of the evidence in the analysis, and consequently our resulting estimates for the payment rate cover a wide range of £3.00 to £25.70 (2012-13 prices). Our research estimated that costs to freight operators as a result of one minute of delay make up £3.00 to £4.40 of the total range, with the remainder due to revenue effects. Given this range the new evidence

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<sup>500</sup> Known at the time as 'hidden delay.

<sup>501</sup> This is higher than our draft determination Network Rail benchmark of 6.91 minutes of delay per 100 freight operator miles. This is due primarily to Network Rail providing us with more accurate data on delay minutes caused by third parties, but also due to the draft determination benchmark being based only on 2011-12. Network Rail has since provided us with 2010-11 data, which we have incorporated into our calculation. The revised data Network Rail has supplied with has been audited by the reporters.

<sup>502</sup> Freight Schedule 8 benchmarks are in miles, whereas our delay minute targets were in km.

<sup>503</sup> *Rail Freight User Values of Time & Reliability: Final Report*, AECOM and University of Leeds Institute for Transport Studies, available from <http://webarchive.nationalarchives.gov.uk/20111108204718/http://www.rail-reg.gov.uk/server/show/nav.2254>.



did not help us reach a specific payment rate and was not judged significantly stronger than evidence provided previously by freight operators as the basis for the current rate.

20.195 If it were assumed that the full impact of delays on operator and user costs is borne by freight operators, the range is £21.20 to £25.70 per delay minute. At the time of our draft determination, we did not have any evidence on the proportion of the costs of delay that are incurred by freight operators (as compared to being retained by freight users), so there was no reason to assume it would be the full impact. Therefore we decided to keep the CP4 Network Rail payment rate at £19.13 per minute (2012-13 prices), but uplift it for inflation.

20.196 In response to our draft determination, RFOA commissioned two pieces of analysis<sup>504</sup>:

- (a) one from L.E.K. which provided some evidence on the extent train loads have increased over the last few years and estimated that 80% of operator costs and 100% of user costs of delay increase proportionally with train load; and
- (b) the other from Professor Myatt of London Business School, which estimated the proportion of the freight operator and user costs of delay that are ultimately borne by freight operators.

20.197 RFOA and freight operators suggested that the evidence from these two studies should be applied to the analysis we conducted using the ORR research on freight users' value of time. We assessed the evidence from the L.E.K. and Myatt studies and concluded that they do not suggest that the draft determination Network Rail payment rate of £19.13 per minute is too low. We have therefore decided to determine this payment rate for CP5.

20.198 The L.E.K. study contained:

- (a) an estimated breakdown of freight operator costs of delay, along with assumptions for each cost on whether the cost changes proportionally with train load. The analysis estimated that wagon lease and maintenance, fuel, handling and repositioning costs all increase proportionally with train load, and as a result 80% of overall freight operator costs of delay increase proportionally with train load;
- (b) a list of freight user costs of delay, along with an estimate that 100% of these costs increase proportionally with train load; and
- (c) a calculation showing that there was a 3.4% per annum increase in load<sup>505</sup> carried per train between 2009-10 and 2011-12. L.E.K. suggested that the trend

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<sup>504</sup> These studies are included within RFOA's response on our PR13 draft determination consultation page <http://www.rail-reg.gov.uk/pr13/consultations/draft-determination.php>

<sup>505</sup> Measured as tonnes of cargo

of increasing tonnes per train is forecast by Network Rail to continue throughout CP5.

- 20.199 The RFOA letter argued that this uplift should be applied to the Network Rail payment rate calculation to cover expected growth in load per train between 2012-13 and 2014-15, and then an annual adjustment should be applied in each year of CP5 to reflect further growth in load per train.
- 20.200 Passenger Schedule 8 Network Rail payment rates are based on revenue data from 2011-12. The only uplift that is applied is for inflation. It would therefore be inconsistent for us to apply an uplift to cover expected growth in load per train, other than to cover the period between 2009-10, when the ORR freight user value of time study was conducted, and 2011-12.
- 20.201 No evidence was provided in the L.E.K. analysis as to why any particular category of operator or user cost would increase proportionally with train load. This was highlighted by Network Rail in an e-mail it sent on 1 October 2013 to ORR and freight operators.
- 20.202 In particular it is not clear why fuel and repositioning costs resulting from a delay would increase proportionally with train load. When a train is delayed, a large part of the time will be spent idling, the costs of which should not change with heavier train loads. Together, fuel and repositioning costs, according to the L.E.K. analysis, make up an additional 61% of operator costs<sup>506</sup> suggesting that the proportion of operator costs that increase proportionally with load could be as low as 20%.
- 20.203 It seems reasonable that a large proportion of user costs would increase proportionally with train load, but it is not convincing that management time would increase proportionally with train load given that some trains are for a single customer. It is possible that stock outs<sup>507</sup> would decrease rather than increase with train load, if fewer deliveries are made with longer trains.
- 20.204 If we assume that freight operator costs increase at 20% of the rate average train load increases and freight user costs increase at 100%<sup>508</sup> of the rate average train load increases, we estimate that with load per train increasing at 3.4% each year, costs associated with delay minutes per train would increase by 2.9% to 3.0% each year.
- 20.205 If we apply this to take into account of the growth in load per train between 2009-10 and 2011-12, this gives a range for the Network Rail payment rate of £22.50 to £27.20 per delay minute<sup>509</sup>, if the full operator and user costs of delay were incurred by the

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<sup>506</sup> L.E.K. already acknowledged that 19% of freight operator costs do not increase with train load

<sup>507</sup> A stock out is where a freight user runs out of stock of something, for example, an input needed in a manufacturing process.

<sup>508</sup> This assumption is probably too high given the above

<sup>509</sup> This is an average of what the cost of a delay minute would be with 1 or 2 years of growth in volume per train since 2010-11 and 2011-12 span across two years.

freight operator. The CP4 Network Rail payment rate of £19.13 is 70% to 85% of this. By continuing with the CP4 Network Rail payment rate, we are therefore implicitly assuming that 70% to 85% (mid-point 78%) of the operator and user costs of delays are ultimately borne by freight operators.

20.206 These steps are summarised in Table 20.3.

**Table 20.3: Applying the L.E.K. analysis to the ORR analysis using the freight user value of time study**

	Amount
CP4 Network Rail payment rate (A)	£19.13
Estimated financial impact to freight operator of delay minute, based on ORR research using freight user value of time research (B)	£3.00 to £25.70
Estimated financial impact to freight operator of delay minute, based on ORR research using freight user value of time research, <u>assuming the full impact</u> of delays of delays on operator and user costs is borne by freight operators (D)	£21.20 to £25.70
As above, but with an uplift of 2.9% to 3.0% per annum applied to reflect growth in load per train between 2009-10 and 2011-12 (D)	£22.50 to £27.20
Implicit assumption of percentage of operator and user costs of delays that are borne by freight operators if continue with CP4 Network Rail payment rate (E = A/D)	70% to 85% (mid-point 78%)

20.207 The Myatt analysis provided an estimate of the proportion of freight operator and freight user costs of delay that are ultimately incurred by freight operators, in each of three scenarios.

- (a) a market where all of a commodity is transported by four competing rail operators and the delay induced costs impact on a single operator;
- (b) a market where a commodity is transported by road and four competing rail operators, and the delay induced costs impact on a single operator; and
- (c) a market where a commodity is transported by road and four competing rail operators, and the delay induced cost affects all operators.

20.208 We do not consider the first two scenarios to be realistic. All rail freight operators use Network Rail's infrastructure and it is in general likely to be the same infrastructure when transporting commodities between two particular locations. This means delays and expectations of future delays, which affect pricing and output decisions, are likely to have a similar effect on all operators running services between the two locations.

- 20.209 The third scenario assumes there are four operators and overall rail makes up 10% of the freight market across all transport modes. While this is a fair representation of the overall freight market, the shares for individual commodities transported by rail differ considerably, with 70% of coal and coke, 3% of petroleum products and 7% of other tonne km being transported by rail in 2010<sup>510</sup>. If the rail market shares for each of the three commodities are weighted together by their shares in rail freight, the overall average market share is 25% for tonne km. Using the formula in Myatt's analysis, this would result in 88% of freight operator user costs being borne by freight operators, which using the analysis above, would suggest a Network Rail payment rate of £19.70 to £23.80 would be appropriate.
- 20.210 However, we consider this simple application of Myatt's analysis would be likely to lead to an over-estimate of the Network Rail payment rate, for the following reasons:
- (a) were there data available to conduct the analysis at a greater degree of disaggregation including to and from specific locations, and excluding markets where rail freight is not present, it is likely the weighted average share would be considerably higher. This is because the rail market share tends to be higher for the specific commodities within the categories captured above that form a larger part of the rail freight market; and
  - (b) Myatt's assumption that freight operators operate in perfectly competitive markets and have no influence on price is extreme. Rail freight does not operate in a perfectly competitive market. It faces significantly downward sloping demand curves, even with respect to intermodal, as used, for example, in MDST's work for ORR on the impact of the freight specific charge<sup>511</sup>.
- 20.211 We therefore do not consider the third scenario presented in Myatt's analysis as providing a realistic reflection of the proportion of operator and user costs of delay that are incurred by freight operators.
- 20.212 An alternative approach would be to compare the impact of delay costs with that of the incidence of a tax, which is similar to an external cost increase affecting all operators. It is a standard economic result<sup>512</sup> that the proportion of a tax that is incurred by the seller can be estimated as the ratio of the demand elasticity to the sum of the supply and demand elasticities<sup>513</sup>. If this analysis is applied to delay costs, 78%

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<sup>510</sup> Source: Transport Statistics Great Britain (TSGB).

See: <https://www.gov.uk/government/publications/transport-statistics-great-britain-2012>.

<sup>511</sup> 'Impact of changes in track access charges on rail freight traffic', MDS Transmodal Ltd.

See <http://www.rail-reg.gov.uk/pr13/PDF/mdst-freight-tac-changes-feb2012.pdf>.

<sup>512</sup> The result is from partial equilibrium analysis. Partial equilibrium analysis is of a single market, assuming other markets are unchanged.

<sup>513</sup> Demand elasticity in this instance estimates the extent demand for rail freight will fall (rise) as a result of an increase (decrease) in costs associated with delays. Demand can be considered elastic, when it changes by a large amount in response to a change in costs associated with delays. Supply elasticity in this instance estimates the extent supply of rail freight will fall (rise) as a result of an

of the delay costs would be incurred by freight operators<sup>514</sup> if the elasticity of demand for rail freight were approximately four times the elasticity of supply of rail freight. More elastic supply or less elastic demand would reduce the burden on freight operators. It would not be surprising if the elasticity of supply was greater than that for demand, in which case less than 50% of the delay costs would be incurred by freight operators.

20.213 Myatt also considered the situation when markets are not competitive, which was not explained in detail in the analysis attached to RFOA's consultation response on 4 September 2013. In follow up to a request we made on 19 September 2013, we were sent an e-mail on 1 October 2013 containing a summary of Myatt's analysis based on markets not being competitive. This was several weeks after the closing date for responses. Given the nature of this work, analysis of it would require further discussion and detailed explanation of each of the steps that were taken, so we have not been able to assess it fully in the time available. Our initial view of this analysis is that it would not change our position but we will take it into account in any future work on the topic.

20.214 Overall, the evidence commissioned by RFOA does not provide us with sufficient justification to change the Network Rail payment rate of £19.13 per minute in our draft determination.

20.215 While we do not regard the evidence provided by RFOA as justifying an adjustment to the CP5 Network Rail payment rate in our draft determination, we very much welcome this evidence as a first step towards developing a more transparent, evidence based payment rate for CP6.

### **Network Rail cancellation payments**

20.216 Network Rail cancellation payments compensate freight operators for the financial impact of each freight train cancellation attributable to Network Rail. If cancellations exceed a threshold representing the historic normal number of cancellations, a higher cancellation payment applies. We will continue to set this cancellation threshold at 0.41% of services scheduled<sup>515</sup>.

20.217 Unlike the Network Rail payment rate, cancellation payments are not part of the benchmarked regime. In CP4, Network Rail was funded for this part of the regime and it will continue to be funded for this aspect in CP5.

20.218 Our previous research used to establish an appropriate freight Schedule 8 Network Rail payment rate also provided limited evidence regarding an appropriate level for

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increase (decrease) in costs associated with delays. Supply can be considered elastic, when it changes by a large amount in response to a change in costs associated with delays.

<sup>514</sup> which is what is implicitly assumed in the CP4 Network Rail payment rate if we apply the L.E.K analysis to the ORR analysis of the freight user value of time study, as shown in Table 20.3.

<sup>515</sup> In the 2010-11 and 2011-12 recalibration period, 0.42% of services were cancelled, which is similar to 0.41%.

Network Rail cancellation payments. Further empirical work would be required to determine cancellation payments that fully reflect cost and revenue impacts on operators due to freight train cancellations attributable to Network Rail.

20.219 For CP5, the Network Rail cancellation payment rates will remain the same but uplifted for inflation. In 2012-13 prices the below threshold cancellation payment will be £1,813 and the above threshold cancellation payment will be £4,835. These cancellation payments imply a Network Rail funding requirement of £20.1m in CP5 (in 2012-13 prices). This is shown in Table 20.4.

**Table 20.4: Our determination of Network Rail’s funding requirement to cover the expected costs of Schedule 8 Network Rail cancellation payments to freight operators**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Great Britain	3.6	3.8	3.9	4.0	4.2	4.3	20.1
England & Wales	3.3	3.4	3.5	3.7	3.8	3.9	18.3
Scotland	0.3	0.3	0.4	0.4	0.4	0.4	1.8

Note: Numbers may not reconcile due to rounding.

### Freight operator benchmark

20.220 As with the Network Rail benchmark we have set the freight operator benchmark at a challenging but realistically achievable level. Our calculation of the freight operator benchmark is 2.37 minutes of delay per 100 freight operator miles for the beginning of CP5. This is based on an average of 2.29 minutes of delay per 100 freight operator miles caused by freight operators to third parties during a two year recalibration period from the beginning of April 2010 to the end of March 2012, adjusted for traffic growth<sup>516</sup>. The recalibration period is consistent with that used to update passenger train operator benchmarks. Our reasons for choosing this period are outlined in paragraph 20.135.

20.221 In response to our November 2012 consultation and draft determination, freight operators have argued that we should set the freight operator benchmark at the same level as in CP4 to encourage and reward long term investment.

20.222 While we acknowledge that ORR updating the freight Schedule 8 benchmark every five years could have some dampening effect on the returns larger freight companies receive on investments to improve performance, we have decided to set the benchmark based on performance during CP4 for the following reasons:

- (a) it is consistent with our approach for updating franchised and open access passenger operator Schedule 8 benchmarks;

<sup>516</sup> Actual traffic growth to 2012-13, draft delivery plan forecast traffic growth from this point to the beginning of CP5.



- (b) it ensures this element of Schedule 8 remains financially neutral, providing freight operators continue to perform at the level they did during the two year calibration period. If we were to set the freight Schedule 8 benchmark at the same level it was set for the first year of CP4, but adjusted for traffic growth, we estimate that Network Rail would require an average of £5.4m additional funding per year to cover the expected level Schedule 8 bonus payments to freight operators; and
- (c) Schedule 8 payments are not the only driver of investment by freight operators to improve performance and freight operators are still able to benefit from Schedule 8 payments arising from improvements they make to their performance between when the improvement is made and when it is reflected in the next update of the freight operator benchmark.

20.223 Our view is that updating the freight operator benchmark every five years at periodic review achieves the right balance between maintaining the financial neutrality of the delay minute element of the freight Schedule 8 and incentivising investment to improve performance.

***Adjustment to reflect congestion on network***

20.224 During CP4, if overall traffic growth on the network was above (or if traffic reduction was below) 2.5%, an adjustment was made to the freight operator benchmark.

20.225 The formula adjusting the freight operator benchmark when the materiality threshold is exceeded is as follows:

$$\text{Adjusted freight operator benchmark} = \text{Current train operator benchmark} \times [(\text{Traffic growth} \times \text{congestion factor}) + 1]$$

20.226 We have used this formula to adjust average delay caused by freight operators to third parties per 100 miles during the recalibration period to the freight operator benchmark for the beginning of CP5, which reflects traffic growth.

20.227 The congestion factor is designed to represent the increased extent to which freight operator delay to their own trains will result in delay to third party trains, when there is increased traffic on the network. During CP4 it was set at 1.5, which is a standard assumption often used in economic analysis relating to networks.

20.228 For CP5, we have made two changes:

- (a) updated the congestion factor to 1.044 to reflect work carried out by Arup on the actual impact of traffic growth on delay minutes caused by freight operators to third parties, as part of the update of the capacity charge. The industry has been given the opportunity to comment on Arup’s work through the industry group. The calculation of the updated congestion factor relies to a large extent on the work



Arup has done as part of Network Rail's work to recalibrate the capacity charge; and

- (b) require Network Rail to update the freight operator benchmark every year to reflect changes in traffic levels, rather than only if a 2.5% threshold is crossed. This is something which has been suggested at the freight Schedules 4 and 8 industry group. It is a relatively straightforward calculation, and since the process of reviewing the traffic levels to determine whether the benchmark needs changing takes place each year anyway, we view it as more appropriate to update the benchmark each year instead.

20.229 If we had used the previous, assumption based, congestion factor of 1.5 to adjust the freight benchmark to reflect traffic growth, the freight operator benchmark would have been 2.41 instead of 2.37 delay minutes to third party operators per 100 miles. Since we are of the view the congestion factor of 1.044 is the most appropriate to use, we estimate that using a congestion factor of 1.5 would result in Network Rail requiring an average of £600k per year funding to cover the cost of expected bonus payments to freight operators.

### Freight operator payment rate

20.230 The purpose of the freight operator payment rate is to reflect the average impact of a minute of delay caused by a freight operator to another train operator. The CP5 freight operator payment rate will be £43.44 (in 2012-13 prices) per minute of delay to third party trains which is attributable to the freight operator<sup>517</sup>. The calculation was carried out by Network Rail and has been reviewed by the reporters.

20.231 This is an increase from the current payment rate of £37.10 and represents a 17% real terms increase in the CP4 payment rate. The increase has been driven by large increases in the Network Rail payment rates in the passenger Schedule 8, which has been partially offset by an improvement in the methodology Network Rail used in its calculation.

20.232 Network Rail calculated the freight operator payment rate by weighting the Network Rail £ per delay minute payment rates in each service group<sup>518</sup> by **third party freight operator delay** affecting each service group. In PR08, the freight operator payment rate was calculated using Network Rail £ per delay minute payment rates weighted by delays caused by **Network Rail and all third party train operators**. This change in methodology for CP5 therefore represents a major improvement, with the freight operator payment rate being a much better representation of the actual average financial impact on third party train operators of delays caused by **freight operators**.

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<sup>517</sup> This is lower than our draft determination CP5 freight operator payment rate of £51.98 due to the final passenger Schedule 8 Network Rail payment rates being lower than the draft ones.

<sup>518</sup> Payment rates under the Schedule 8 performance regime are based on weighted average lateness across a service group, but can be converted into £/ delay minute for the purposes of this calculation

## Summary of CP5 benchmarks and payment rates

20.233 Table 20.5 summarises the CP5 benchmarks and payment rates. All payment rates are in 2012-13 prices.

**Table 20.5: Summary of CP5 Schedule 8 benchmarks and payment rates for freight operators**

	CP4	CP5	Reason for change
Network Rail benchmark	6.39 minutes delay per 100 freight operator miles, in 2013-14	7.20 minutes delay per 100 freight operator miles	Adjustment to ensure consistency with end of CP4 delay minute target
Freight operator benchmark	3.05 minutes delay per 100 freight operator miles, in 2013-14	2.37 minutes delay per 100 freight operator miles	Recalibration of freight operator benchmark to reflect delay per 100 miles caused by freight operators in 2010-11 and 2011-12, with adjustment for traffic growth
Network Rail payment rate	£19.13 per minute of delay to services which are attributable to Network Rail	£19.13 per minute of delay to services which are attributable to Network Rail	No change
Network Rail cancellation payment rate	£1,813 for each cancellation below cancellation threshold and £4,835 for each cancellation equal to or above threshold	£1,813 for each cancellation below cancellation threshold and £4,835 for each cancellation equal to or above threshold	No change
Cancellation threshold	0.41% of total number of services operated by freight operator	0.41% of total number of services operated by freight operator	No change
FOC payment rate	£37.10 per minute of delay to third party trains, attributable to the freight operator	£43.44 per minute of delay to third party trains, attributable to the freight operator	Increase due to increase in passenger Schedule 8 payment rates, partially offset by improvement in calculation methodology

## Bonus payment rate

20.234 In CP4, bonus payments, paid when Network Rail or a freight operator outperforms its benchmark, are paid at rates which are 50% of the compensation payment rates. This applies to both the Network Rail payment rate and the freight operator payment rate.

20.235 In our November 2012 consultation we said that we were considering our options in relation to this, but were minded to continue to set bonus payment rates at 50% of the compensation rate. Our reason for setting the bonus payment rate at 50% in PR08 was due to concerns that a 100% bonus payment rate would represent a significant

increase compared to the previous regime, and could present a barrier to entry for small operators, or potentially make existing small operators unviable.

20.236 Responses to our consultation were in general very much against us continuing to set bonus payment rates at 50%. In CP5, bonus payment rates will be set so they are equal to compensation payment rates. This is for the following reasons:

- (a) due to seasonal fluctuations in performance, even when performance is at benchmark on average throughout the year, a net payment would be made when bonus payment rates are set at 50%. We estimate that it is most likely that this net payment would be from freight operators to Network Rail. This is driven by the fact that the CP5 freight operator payment rate is considerably higher than the Network Rail payment rate; and
- (b) it makes it difficult for freight operators and Network Rail to accurately incorporate Schedule 8 payments into business cases for investments to improve performance, as the magnitude of the Schedule 8 savings/ income would differ depending on whether performance is better or worse than the benchmark.

20.237 We have considered the implications on small operators and new entrants and consider the existing protection offered by incident caps and annual caps on Schedule 8 payments is adequate. We are also concerned that the expected net cost to freight operators arising from setting bonus rates at 50% would be likely to outweigh the benefits arising from freight operators not needing to pay Network Rail full bonuses for improved performance that has yet to have an impact on revenue. For CP5 we have therefore set the bonus payment rate at 100% of the compensation payment rate.

### **Incident cap menu**

20.238 A freight operator may opt to pay Network Rail an ACS to have an incident cap on its Schedule 8 liabilities for lateness and cancellations it causes to other train operators resulting from a single incident. As a result, an incident cap protects the freight operator from the risk of significant costs arising from a particular incident. The ACS reflects the fact that performance payments to third party operators still need to be made by Network Rail even if there are no incoming payments from the freight operator because the incident cap has been reached.

20.239 In our November 2012 consultation, we questioned whether we should continue to require Network Rail to offer this protection, which is, to a large extent, insurance to freight operators in relation to incidents they cause. We stated that we were minded to remove this requirement on the basis that it is something that could in principle be provided by the private insurance market.

20.240 Responses from stakeholders expressed strong concern that this is something the private market would not be able to provide at an affordable price, particularly given that it would be a new area of cover. We have a particular concern that this could

have negative consequences on smaller operators or new entrants, whose cash-flows may be more adversely impacted from a single major incident, and therefore may be more reliant on this type of insurance.

20.241 Given there are no adverse funding implications associated with us requiring Network Rail to provide this coverage, we will therefore continue to require Network Rail to offer incident caps in return for an ACS. However, between now and the final determination we are exploring with Network Rail and the industry what data it can release to enable private insurers to enter the market.

20.242 Network Rail has produced an indicative menu of incident caps and associated ACSs, as shown in Table 20.6. The ACSs have been calculated by Network Rail using a methodology that estimates the expected cost to Network Rail of providing the incident cap, using data from the beginning of April 2010 to the end of March 2012. A contingency uplift of 10% is then applied to reflect the risk incurred by Network Rail and moral hazard (operators that cause more incidents are more likely to purchase a lower cap) that arises as a result of Network Rail providing this protection.

20.243 The ACSs are higher than in CP4. This reflects the fact that the freight operator payment rate will be higher in CP5 and therefore the cost to Network Rail of providing incident caps will also increase.

**Table 20.6: Menu of Schedule 8 incident caps and corresponding ACSs for freight operators to choose from**

Incident cap (minutes of delay per incident)	ACS (£ per mile)
1,000	0.1041
2,000	0.0473
3,000	0.0292
4,000	0.0215
5,000	0.0152
6,000	0.0104
7,000	0.0066
8,000	0.0037
9,000	0.0008
10,000	0.0007
No cap	None

### Annual caps on Schedule 8 payments

20.244 Freight operators and Network Rail have reciprocal caps on the net annual liability they face under the Schedule 8 performance regime. These provide an important protection to freight operators by providing certainty about the maximum liabilities they could face.

- 20.245 For CP5, annual caps on Schedule 8 payments will remain specific to each freight operator, as the appropriate level depends on its scale of operations. Freight operators and Network Rail will still be entitled to negotiate their own reciprocal annual caps. These caps are subject to our approval, and should be set at a level with a low likelihood of being reached. This is because once an annual liability cap has been exceeded; the incentive and compensation effects of Schedule 8 are lost.
- 20.246 For small freight operators and new entrants, we will continue to set a default reciprocal annual liability cap of £547k, which is the same level as we set for CP4, but uplifted for inflation. We consider a small freight operator to be any operator with less than 5% market share of total freight train miles, in a given year.
- 20.247 All parties with a market share of total freight train miles of 5% or more in 2012-13 wishing to have an annual liability cap in CP5 will need to submit a proposal to us by 21 November 2013. These will need to have been agreed by the freight operator and Network Rail. In the event that parties disagree, we will review the submissions from both parties before making a judgement on the appropriate cap.
- 20.248 Since the appropriate size of an annual cap depends on the scale of operations, as in CP4, both parties will be required to update the cap at the end of the year if annual contract mileage has varied by 2.5% or more since the cap was last updated. For operators with below 5% market share, the default annual cap will remain available.

### **ETCS re-opener**

- 20.249 As with the Schedule 8 for passenger operators, we will be including a re-opener in the Schedule 8 provisions for freight operators, relating to the introduction of ETCS. This is because ETCS will be implemented on some parts of the network before the end of CP5. We have designed the re-opener to be as flexible as possible since further work is needed to determine exactly how the introduction of ETCS should be reflected in the metrics of Schedule 8. More information on the re-opener is contained in paragraphs 20.180 to 20.183.

### **Schedule 8 for charter operators**

- 20.250 Charter operators are currently subject to different performance arrangements compared to other passenger operators. For CP5 we will be introducing benchmarks into the Schedule 8 for charter operators to ensure financial neutrality of the Schedule 8 regime, and bring it in line with the Schedule 8 used by other types of operator. We will also be increasing the charter operator payment rate to reflect the increase in Schedule 8 Network Rail payment rates for franchise passenger operators.
- 20.251 The introduction of Schedule 8 benchmarks sits alongside our planned introduction of a capacity charge for charter operators, which is discussed in chapter 16 on access charges. The introduction of Schedule 8 benchmarks will reduce the impact on charter operators of the increase in the charter operator payment rate. However, we expect

the increase in the charter operator payment rate to increase the incentive on charter operators to minimise the disruption they cause to other services.

- 20.252 After careful consideration and consultation with charter operators, we have also decided to introduce a menu of incident cap options and associated access charge supplements (ACS) for charter operators, to replace the existing £5,524 cap, without an ACS. This proposal was explained in our August 2013 draft conclusions letter, and is further discussed in the section on incident caps below.<sup>519</sup>
- 20.253 We have also decided to introduce an annual adjustment to the charter operator benchmark to reflect traffic growth, and to introduce reciprocal annual Schedule 8 caps, consistent with freight Schedule 8. The annual caps will provide charter operators with protection against the maximum liability they face under Schedule 8.
- 20.254 On the basis of CP4 delays and CP5 payment rates, we estimate that combined impact of the changes we are making to Schedule 8 and charges for charter operators will result in charter operators being better off financially than with the current arrangements.

### **Network Rail payment rate**

- 20.255 In PR08, the Network Rail payment rate under the Schedule 8 for charter operators was set to be the same as the Network Rail payment rate for freight operators. Ideally there would be a separate Network Rail payment rate for charter operators to more accurately reflect the actual impact of Network Rail-caused delay on charter operators' costs and revenues.
- 20.256 We are not aware of any evidence on the impact of delays to charter operators on long term revenue and are also mindful that it could be burdensome for charter operators if we require them to provide us with evidence on this and involve resource disproportionate to the benefit of achieving a more accurate payment rate.
- 20.257 As in PR08, for CP5 we will set the Network Rail payment rate in the charter operator Schedule 8 regime so it is equal to the Network Rail payment rate in the freight operator regime, at £19.13 per minute of delay (in 2012-13 prices).
- 20.258 This is a very slight reduction in the current Network Rail payment rate of £19.29 per minute of delay (in 2012-13 prices) and is due to there being different inflation formulae in the freight and charter operator track access contracts, which has led to the Network Rail payment rates within the freight and charter operator Schedule 8s to drift apart over time.

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<sup>519</sup> Our 23 August 2013 consultation can be found at: <http://www.rail-reg.gov.uk/pr13/PDF/charter-operators.pdf>



## Charter operator payment rate

- 20.259 The charter operator payment rate was set equal to the Schedule 8 freight payment rate in CP4. The charter operator payment rate should reflect the average impact of a minute of delay caused by a charter operator to other train operators.
- 20.260 There is now data available on the delay that charter operators cause to other train operators and this data has been used to calculate a specific charter operator payment rate, using the same methodology as that used to calculate the freight operator payment rate. Specifically, the charter operator payment rate has been calculated using the Network Rail £/ delay minute payment rates for each service group weighted by the proportion of third party charter operator delay affecting each service group. This results in a charter operator payment rate that better reflects the actual impact of delays caused by charter operators to other train operators than that used during CP4.
- 20.261 Using this improved methodology, the CP5 charter operator payment rate will be £59.35 per minute of delay. The calculation was carried out by Network Rail and has been reviewed by the reporters. The new rate better reflects the actual impact of delays caused by charter operators to other train operators and is 60% higher than the CP4 charter operator payment rate. The increase has been driven by the increase in draft Schedule 8 payment rates for passenger operators. We recognise the potential impact this increase in the charter operator payment rate would have if we were to continue with the charter operator Schedule 8 without benchmarks. Hence, for CP5, we will introduce benchmarks into the charter operator Schedule 8.
- 20.262 The final CP5 charter operator payment rate is lower than our draft determination CP5 freight operator payment rate of £69.31 due to the final passenger Schedule 8 Network Rail payment rates being lower than the draft ones.

## Introduction of benchmarks

- 20.263 The aim of introducing benchmarks into the charter operator Schedule 8 is to ensure financial neutrality of the Schedule 8 regime, and to bring it in line with the Schedule 8 regimes for franchised and open access passenger, and freight operators. This is particularly important, given the large increase in the charter operator payment rate, which without the introduction of benchmarks could leave charter operators considerably worse off financially. Our intention is that the benchmarks will be calculated using the record of Network Rail and charter operator-caused delay minutes during CP4.
- 20.264 In its response to our August 2013 consultation, Network Rail said it thought it appropriate to include the line side fire incident on the East Coast Mainline in the calculation of the benchmarks.
- 20.265 Table 20.7 shows the CP5 benchmarks and payment rates for the charter Schedule 8 regime. The benchmarks have been calculated using data on delay minutes per 100 miles during 2011-11 and 2011-12, including the delay minutes due to the line side fire



incident mentioned above. The charter operator benchmark has been adjusted to reflect traffic growth since the recalibration period, using the same methodology as for the freight Schedule 8 freight operator benchmark.

**Table 20.7: Summary of CP5 Schedule 8 benchmarks and payment rates for charter operators**

	CP4	CP5
Network Rail benchmark	N/A	4.61 minutes delay per 100 charter operator miles
Charter operator benchmark	N/A	5.82 minutes delay per 100 charter operator miles
Network Rail payment rate (2012-13 prices)	£19.29 per minute of delay to services which are attributable to Network Rail	£19.13 per minute of delay to services which are attributable to Network Rail
Charter payment rate (2012-13 prices)	£37.42 per minute of delay to third party trains, attributable to the charter operator	£59.35 per minute of delay to third party trains, attributable to the charter operator

### Incident caps

20.266 In CP4, incident caps limited the amount of compensation per incident paid by charter operators to Network Rail under the Schedule 8 regime to £5,524. The same incident cap applied to compensation paid by Network Rail to charter operators, but has rarely been employed in practice, with Network Rail compensation to charter operators typically being for minor delays. In CP4 charter operators do not pay an ACS for incident caps.

20.267 Following our November 2012 consultation on Schedules 4 & 8, we set out in our draft determination that we are minded to leave the incident cap (with no ACS) unchanged.

20.268 We published our draft determination on Schedule 8 for charter services prior to the completion of Network Rail's work on charges for charter services and associated conclusions. We subsequently discussed the PR13 package with charter operators at two workshops and received Network Rail's conclusions on charges for charter services. We also updated our analysis of the overall financial impact of PR13 for charter services.

20.269 In the light of the new information (including the reduction in the draft charter Schedule 8 payment rate calculated by Network Rail and discussion at the workshops, in our August 2013 draft conclusions letter we revisited some aspects of our draft determination with respect to Schedule 8. This included a proposal to set an incident cap menu with associated ACSs for charter operators.

20.270 As proposed in the letter, for CP5 we will be introducing an incident cap menu with associated ACSs for charter operators. This will allow operators to choose their level

of protection against costs of individual delay incidents for an associated ACS. The ACSs will be calculated so that the regime is financially neutral, but with a 10% uplift to reflect the risk Network Rail incurs through providing this protection.

20.271 In its response to our August 2013 consultation, Network Rail said it thought that it would be appropriate for the minimum cap to be set at the same level – in terms of minutes – as during CP4 and also suggested that it would be appropriate to provide a menu of caps that has a larger number of options than those set out by the ORR in its consultation, in order to ensure that the differing needs of operators would be catered for.

20.272 After careful consideration, for CP5 we will require Network Rail to offer:

- (a) a cap in minutes equivalent to the current £5,524 cap (with the charter operator payment rate of £59.35, this will be equivalent to delays of around 93 minutes to other operators);
- (b) a no cap/ zero ACS option; and
- (c) a menu of caps that has a larger number of options, to include those offered to freight operators.

20.273 Table 20.8 below shows the incident cap and ACS menu for charter operators in CP5<sup>520</sup>.

**Table 20.8: Menu of Schedule 8 incident caps and corresponding ACSs for charter operators to choose from**

Incident cap (minutes of delay per incident)	ACS (£ per mile)
93	1.30
147	1.03
500	0.56
1,000	0.41
5,000	0.14
No cap	None

### Annual caps

20.274 At one of our workshops with charter operators and Network Rail, a charter operator suggested that for consistency with freight Schedule 8 we should also introduce reciprocal annual Schedule 8 caps. These would be aimed at capping the net Schedule 8 liability faced by a charter operator or Network Rail.

<sup>520</sup> The 147 minutes incident cap in Table 20.8 is equivalent in minutes to the reciprocal incident cap in CP4. We have included this option in the CP5 incident cap menu in order to enable charter operators to continue with the same level of incident cap in minutes, should they choose to.

20.275 We will be introducing annual caps consistent with the ‘small operator’ caps currently in place for the freight Schedule 8 i.e. an annual cap of approximately £547k with all charter operators treated as ‘small operators’, as outlined in our August 2013 draft conclusions letter.

### **ETCS re-opener**

20.276 As with the Schedule 8 regimes for other types of operator, we will be including a re-opener in the Schedule 8 provisions for charter operators, relating to the introduction of ETCS. This is because ETCS will be implemented on some parts of the network before the end of CP5. We have designed the re-opener to be as flexible as possible since further work is needed to determine exactly how the introduction of ETCS should be reflected in the metrics of Schedule 8. More information on the re-opener is contained in paragraphs 20.180 to 20.183.

## **Schedule 4 possessions regime**

### **Passenger possessions regime**

20.277 The Schedule 4 passenger regime was significantly overhauled in PR08. We have not made major changes to the regime as part of this periodic review, but there are a number of aspects we have reviewed in order to improve the incentives for Network Rail to plan possessions effectively and efficiently and to reduce the impact of possession disruption to passengers and freight customers. The main issues where we have made changes are in relation to replacement bus cost compensation and the level of compensation payable to operators when Network Rail makes late changes to Type 1 possessions<sup>521</sup>.

### **Bus cost compensation formula**

20.278 Franchised passenger train operators receive compensation for the cost of running rail replacement bus services where train services are cancelled due to possessions. Some stakeholders raised concerns in this periodic review about whether the level of bus compensation reduces the incentive on train operators to fully explore timetable solutions when dealing with service disruption as a result of possessions and encourages them to over rely on running rail bus replacement services, instead of running trains. This is of concern as rail replacement bus services are unpopular with passengers: for example, in a Passenger Focus survey of passengers’ attitudes to possessions in September 2012, 55% of passengers surveyed said they would not travel by train if it involved the use of a bus for part or all of their journey. Conversely,

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<sup>521</sup> Type 1 possessions are possessions generally less than 60 hours in duration and which attract formulaic Schedule 4 revenue loss and costs compensation. The majority of possessions are of this type. Type 2 possessions are generally of duration above 60 hours but less than 120 hours; Type 3 possessions are greater than 120 hours. Both types receive formulaic compensation but can also claim for actual revenue losses and costs above a materiality threshold.

in industry discussions a number of train operators stated that the current formula does not fully compensate them for bus costs.

20.279 Bus cost compensation is based on estimated bus miles (EBMs) and EBM payment rates, which are the rate of compensation operators receive in £ per replacement bus mile operated. EBM payment rates are paid at two rates - one for London & South East services and one for services in the rest of the country. In our November 2012 consultation we proposed uprating EBM payment rates so that they reflect better the cost per mile of running replacement buses.

20.280 We collected data from train operators on how much bus cost compensation they received and how much they actually spent on providing replacement buses in financial years 2010-11 and 2011-12. The results are summarised in Table 20.9, based on 89% coverage of train operators surveyed. They show that franchised operators which attract the London & South East EBM payment rate were, on average, overpaid bus cost compensation by 10.7% and 5.4% in 2010-11 and 2011-12 respectively<sup>522</sup>. And those that attract the EBM payment rate for the rest of the country were over-paid by 9.4% and 8.2% over the same period.

**Table 20.9: Percentage difference between passenger Schedule 4 replacement bus cost compensation and actual bus costs**

EBM Rate	2010-11	2011-12
London & South East	10.7%	5.4%
Rest of the country	9.4%	8.2%

20.281 In our draft determination we decided to adjust bus compensation rates down by 7.9% for London & South East and 8.9% for the rest of the country, so they reflect our estimate of the real costs of providing replacement buses. In making our adjustment we calculated the average rate of bus cost compensation overpayment based on the combination of the two years' data in order to smooth out the impact of variation in the level of possessions activity between years.

### **Impact of removal of Bus Service Operators Grant (BSOG) payments for rail replacement bus services**

20.282 Since publishing our draft determination, we have reflected the changes made by DfT, Transport Scotland and the Welsh Government in relation to the eligibility criteria for BSOG payments for rail replacement services in our determination of replacement bus compensation payment rates.

20.283 DfT does not collect data on the amount of BSOG paid specifically for rail replacement bus services (and neither the Welsh Government or Transport Scotland were able to

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<sup>522</sup> London & South East EBM rate is £15.10 per EBM and for the rest of the country £10.15 per EBM, (2012-13 prices).

supply data on the amount of BSOG they paid). We therefore carried out our own estimate of the amount of BSOG paid based on mileage data from Network Rail's bus cost possessions payments database and publicly available estimates of bus fuel consumption rates. Based on this estimate we have revised down the amount by which we will be reducing compensation rates. We have decided to revise down bus cost compensation rates for London and South East by 5.4 % and for services in the rest of the country by 4.9%. As a result, EBM rates for London and South East services will fall from £15.10 to £14.29 and for Regional services from £10.15 to £9.66 (2012-13 prices).

20.284 We consider this decrease in EBM payment rates represents value for money for the taxpayer and removes any doubts of perverse incentives. It also will encourage train operators to drive down replacement bus costs. The removal of BSOG for rail replacement bus services increases transparency as all of the funding for train operators running replacement bus services will now come from a single source.

### **Access Charge Supplement**

20.285 Schedule 4 payments are funded through an access charge supplement (ACS) paid to Network Rail by franchised passenger train operators in return for receipt of full Schedule 4 compensation<sup>523</sup>. The ACS total reflects the amount Network Rail is expected to pay out in Schedule 4 possession compensation over the control period.

20.286 Network Rail's estimate of the total Schedule 4 cost for each control period is based on planned maintenance and renewals activity volumes and a Schedule 4 unit cost per asset type (e.g. track, signalling etc.) maintained or renewed. The base Schedule 4 cost for a control period is estimated by multiplying the planned volumes of each activity by the relevant Schedule 4 unit cost. For some asset types, such as bridges and tunnels, Network Rail broke down activity volumes into a large number of distinct activities, and this breakdown is not suitable for the purposes of estimating Schedule 4 costs; for these asset types it uses forecast levels of maintenance and renewals spend as a proxy for volumes.

20.287 For CP5, Network Rail has improved its methodology for calculating the ACS by forecasting planned activity volumes at route, rather than national level. This will help to bring Schedule 4 costs closer to the actual level of possessions faced by franchised passenger operators in each area. The ACS will continue to be apportioned pro-rata amongst franchised passenger operators based on historic Schedule 4 compensation payments paid to operators.

20.288 As in PR08, Network Rail estimated the per activity CP5 Schedule 4 unit costs at a national level because of the difficulty of producing robust estimates at route level due to the variability of data between routes for certain asset types such as signalling.

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<sup>523</sup> Open access operators can opt to pay the ACS if they wish to receive full Schedule 4 compensation.

- 20.289 In response to our November 2012 consultation, respondents generally approved Network Rail's approach but requested we closely scrutinise Network Rail's ACS estimate. Respondents also called for further consideration of how Network Rail might develop a means to calculate route-based Schedule 4 cost estimates for CP6.
- 20.290 In response to our draft determination East Coast raised a concern about the difference between the amount of ACS it paid and the amount it received in Schedule 4 payments and suggested some form of wash-up mechanism whereby operators would be refunded ACS for work not carried out by Network Rail for which it had been funded.
- 20.291 For the following reasons we are not convinced of the need for a wash-up mechanism. Although where possession activity is lower than expected train operators receive less in Schedule 4 payments, this is off-set because they earn higher revenues than expected due to the lower level of disruption.
- 20.292 Network Rail benefits from lower Schedule 4 payments where it takes fewer possessions through efficient possession planning and/ or maintenance and renewal activity. We think this acts as an important incentive for Network Rail to plan possessions efficiently, and a wash-up mechanism would weaken this incentive.
- 20.293 It would be difficult to separate the financial impact of fewer possessions due to efficiencies in possession management from those due to reduced activity. We consider East Coast's concerns are best addressed by ensuring Network Rail's maintenance and renewals forecasts are based on efficient and deliverable levels of activity in the first place.
- 20.294 Moreover as discussed above Network Rail has improved its ACS calculation methodology as part of this periodic review, a development acknowledged by East Coast. Nevertheless we intend to keep this issue under review in CP5 and we will consider this matter further for CP6 if possession payments are significantly out of line with the ACS.

### **Network Rail's SBP ACS submission**

- 20.295 Network Rail provided an estimate of Schedule 4 costs as part of its SBP submission.
- 20.296 We have closely scrutinised Network Rail's ACS estimate and methodology. Our own engineers have assessed Network Rail's volume forecasts and pre-efficient expenditure levels to ensure that these reflected the levels of planned maintenance and renewals in Network Rail's SBP submission. We also appointed our independent reporters to carry out a detailed audit of Network Rail's ACS calculation, its use of historic possessions and forecast volumes data in calculating the ACS as well as comment on its ACS calculation methodology<sup>524</sup>.

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<sup>524</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.



- 20.297 The audit focused on
- (a) data quality; and
  - (b) process accuracy and reliability.
- 20.298 The reporters found that Network Rail's overall approach to calculating the ACS by calculating Schedule 4 unit costs based on historic data and applying forecast CP5 volumes was an appropriate methodology with no obvious alternative.
- 20.299 The reporters concluded that the computations within the spreadsheet were accurate, finding only minor errors which were subsequently corrected by Network Rail but which did not have a material impact on the ACS calculation. The reporters made a number of recommendations to improve data input and handling in the model and on improving its functionality.
- 20.300 The reporters suggested that Network Rail should explore the feasibility of using multiple years' historic possessions data to represent unit costs for future control periods.
- 20.301 There exists the risk that if Network Rail does not carry out the amount of maintenance and renewal activity it forecast when calculating the ACS it will not need as many possessions and will gain a windfall from not having to pay out as much Schedule 4 compensation. Conversely, it may pay out more in compensation than it receives in ACS payments if Network Rail carries out more maintenance and renewals activity than it forecast, and consequently needs more possessions.
- 20.302 We carried out our own assessment of the volumes data used in Network Rail's ACS calculation and found this to be broadly consistent with our assessment of Network Rail's maintenance and renewal programme for CP5. We made minor adjustments to reflect inconsistencies.
- 20.303 The reporters did not assess volumes data used in the ACS model directly as this was subject to a separate assessment. In summary this separate volumes assessment found elements of best practice in Network Rail's SBP submission but also indicated a degree of uncertainty about the accuracy and consistency of the data as it is drawn from a wide range of sources.
- 20.304 Subsequent to its SBP submission, Network Rail updated its ACS calculation to take account of the final CP5 Schedule 8 Network Rail payment rates, as discussed in the Schedule 8 section above and made changes to the level of notification discount factors as a result of revised late time multipliers.
- 20.305 At the time of the draft determination, Network Rail informed us that it had not included an ACS for Heathrow Connect in its ACS calculation. It has now supplied its ACS estimate for Heathrow Connect of approximately £7,000 per annum. We have reflected this in our final determination.



20.306 As a result of changes to our draft Schedule 8 payment rates, the amount by which we will reduce EBM rates and other adjustments discussed above, Network Rail will need funding of £976m for its passenger Schedule 4 costs over CP5, compared with its SBP estimate of £710m. This represents an increase of 37% on its SBP submission.

20.307 Network Rail projected Schedule 4 costs to be £168m for the final year of CP4. This compares with our final determination average of £195m per year during CP5. The difference is due to the increase in Schedule 4 payment rates, but there is also an increase in planned maintenance and renewals activity in CP5 compared to CP4.

20.308 In CP5, there will be a disproportionately large increase in Schedule 4 costs in Scotland, compared with Great Britain as a whole. This is due to the increase in the amount of renewal activity in Scotland. The largest increase is in signalling renewals volumes, which in CP5 will be almost 700% higher than in CP4.

20.309 Table 20.10 sets out our final determination of Network Rail's Schedule 4 costs and ACS for CP5. Table 20.11 sets out the Schedule 4 ACS by train operator.

**Table 20.10: Our final determination Network Rail's passenger Schedule 4 costs and ACS income for CP5**

£m (2012-13 prices)	CP4			CP5			CP5
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>Great Britain</b>							
Franchised passenger Schedule 4 costs	(168)	(191)	(202)	(207)	(188)	(187)	(976)
Franchised Passenger ACS	141	191	202	207	188	187	976
<b>Total</b>	<b>(26)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>England &amp; Wales</b>							
Franchised passenger Schedule 4 costs	(155)	(173)	(180)	(180)	(168)	(167)	(867)
Franchised passenger ACS	137	173	180	180	168	167	867
<b>Total</b>	<b>(18)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Scotland</b>							
Franchised passenger Schedule 4 costs	(13)	(19)	(23)	(28)	(21)	(20)	(110)
Franchised passenger ACS	4	19	23	28	21	20	110
<b>Total</b>	<b>(9)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Note to Table 20.10:

1. CP4 2013-14 Schedule 4 figures are projections contained within Network Rail's SBP submission.
2. Numbers may not reconcile due to rounding.

**Table 20.11: Our final determination of Schedule 4 ACSs for passenger operators**

£m 2012-13 prices	CP5					CP5
	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Arriva CrossCountry	15.1	15.4	15.3	14.2	13.9	73.9
Arriva Trains Wales	10.5	6.3	9.8	5.4	4.6	36.7
c2c	2.3	2.8	3.2	2.5	2.2	12.9
Chiltern Railways	0.8	0.8	0.9	0.9	0.7	4.1
East Coast	25.8	32.5	32.9	29.9	36.7	157.9
East Midlands Trains	9.7	8.7	7.8	6.8	5.9	38.9
First Capital Connect	7.0	7.9	7.1	6.7	7.6	36.2
First Great Western	26.1	24.0	24.2	21.6	23.0	118.9
First ScotRail	7.0	8.5	10.3	7.7	7.4	40.9
First/Keolis Transpennine	4.9	5.6	5.6	5.5	5.4	27.1
Greater Anglia	12.0	14.6	16.9	13.2	11.4	68.0
Heathrow Connect	0.01	0.01	0.01	0.01	0.01	0.03
London Midland	5.1	5.3	5.4	5.5	4.6	26.0
London Overground	3.6	4.1	4.3	3.6	3.6	19.2
Merseyrail	1.5	1.5	1.6	1.6	1.3	7.4
Northern Rail	6.2	6.9	6.9	6.9	6.8	33.8
South West Trains	12.5	11.9	13.6	15.4	11.5	64.9
Southeastern	12.7	15.1	11.8	12.1	11.9	63.6
Southern Railway	10.4	11.3	9.3	9.2	11.7	51.9
Virgin (West Coast)	18.1	19.3	20.6	19.3	16.7	94.0
<b>Total</b>	<b>191.2</b>	<b>202.5</b>	<b>207.5</b>	<b>188.2</b>	<b>187.0</b>	<b>976.3</b>

Note: Numbers may not reconcile due to rounding.

## Notification discount factors

20.310 As discussed above, Network Rail receives a discount on the amount of Schedule 4 revenue loss compensation it pays to franchised passenger train operators for early notification of planned possessions; this is known as the notification discount factor<sup>525</sup>. The discount reflects the reduced impact on train operators' revenues when passengers receive early notice of service disruption due to possessions.

20.311 There are three levels of notice (known as notification discount thresholds) and the amount of discount differs for each threshold. Table 20.12 summarises the notification factors applied at each notification threshold for the majority of rail services as set at PR08. Notification discount thresholds are the same for all franchised train operators, whereas the level of discount varies slightly depending on the characteristics of particular services.

**Table 20.12: Passenger Schedule 4 CP4 Notification factors and thresholds**

	By New Working Timetable <sup>526</sup>	By 22 weeks before possession <sup>527</sup>	By Applicable Timetable <sup>528</sup>
Service groups with late time multiplier <sup>529</sup> of 2.5	55% of MRE <sup>530</sup> Payable	70% of MRE Payable	85% of MRE payable
Service groups with late time multiplier 5.1/6.5	45% of MRE Payable	65% of MRE Payable	85% of MRE payable

20.312 Notification factors differ according to the late time multiplier used to calculate the Network Rail Schedule 8 payment rates.

20.313 The higher the late time multiplier, the more passengers are inconvenienced by unscheduled delay relative to timetabled increases in journey time, and therefore, the greater benefit to passengers of early notification of possessions. As discussed above, late time multipliers vary for different types of passenger journey and have been updated for PDFH 5.1.

<sup>525</sup> Defined as percentage of marginal revenue effect (MRE) payable.

<sup>526</sup> The version of the timetable issued 26 weeks before it comes into operation. It broadly reflects the earliest operators are able to inform passengers of planned service disruption.

<sup>527</sup> Notification by this point allows the possession to be reflected in the informed traveller timetable.

<sup>528</sup> The timetable for any day as issued at 10pm, the previous night.

<sup>529</sup> Formerly known as delay multipliers.

<sup>530</sup> MRE refers to the Marginal Revenue Effect. This is the amount of long-term revenue estimated to be lost by a passenger operator per minute of lateness per passenger. The revenue is lost because a proportion of passengers switch away from travelling by rail because of delays. The Network Rail payment rate therefore reflects the MRE.

20.314 As part of the Schedule 8 recalibration, Halcrow calculated an average late time multiplier for each service group, which is the weighted average of the late time multiplier for passenger journeys within that service group. We have used the new late time multiplier values in setting notification discount thresholds.

20.315 Table 20.13 sets out the range of late time multipliers for which respective notification discount factors will apply.

**Table 20.13: Passenger Schedule 4 CP5 revised notification factors for service groups, by late time multiplier**

Average late time multiplier	By New Working Timetable	By 22 weeks before possession	By Applicable Timetable
4.3 or higher	40% of MRE Payable	63% of MRE Payable	85% of MRE Payable
3.4 to 4.2	45% of MRE Payable	65% of MRE Payable	85% of MRE Payable
2.8 to 3.3	50% of MRE Payable	68% of MRE Payable	85% of MRE Payable
2.7 or less	55% of MRE Payable	70% of MRE Payable	85% of MRE Payable

### Additional protection for late changes to possession plans

20.316 In response to our May 2011 and December 2011 consultations, a number of franchised passenger train operators said that currently Schedule 4 incentivises Network Rail to book possessions early in order to receive the maximum discount, even where the work to be undertaken is not very certain. Train operators have argued that as a consequence too many possessions are poorly planned and/ or subject to late notice changes or cancellations. These late changes, they argue, impact on franchise operators in terms of reputational damage and because they incur direct costs that cannot be recovered under Schedule 4, if services are reinstated.

20.317 It is right that Network Rail is encouraged to inform operators about possessions as early as possible; provided that they are not booked so far in advance that they cannot be planned properly. We are aware that there is sometimes a misperception that the cause of Network Rail booking possessions too far in advance is principally due to the notification discount factors and thresholds within Schedule 4, in particular where the maximum discount threshold is set. Possessions are often planned long before the first notification discount threshold, which is set at publication of the new working timetable.

20.318 It is our view that it is Network Rail's timetable and engineering planning process and, in particular, the timescales for completing the Engineering Access Statement that are the primary drivers of some possessions being booked very far in advance. We consider changes to the timetable planning process would be more effective in addressing this problem than a change to the first notification discount threshold within Schedule 4. Changes to the timetable planning process are dealt with under the Network Code and as such are not part of this periodic review.

- 20.319 We do, however, think it is right that operators should be compensated for costs incurred where cancellations or late changes are made to possessions by Network Rail. In order to recover these additional costs incurred and also act as an incentive on Network Rail to plan possessions more carefully at the outset, ATOC proposed extending the scope of the protection provided by paragraph 2.9 of Schedule 4<sup>531</sup> to enable the recovery of direct costs related to amended or cancelled Type 1 possessions. ATOC suggested that the threshold for triggering a claim should be set at £5,000 per possession<sup>532</sup>.
- 20.320 Subsequent to our November 2012 consultation, Network Rail proposed that this protection should be based on a liquidated damages regime to reduce transaction costs and uncertainty. Network Rail consulted with industry stakeholders in June 2013<sup>533</sup> but as a result of responses to its consultation has decided not to pursue this proposal in favour of the claim based approach described above<sup>534</sup>.
- 20.321 We have decided to increase the protection provided by paragraph 2.9 of Schedule 4 to enable the recovery of direct costs related to amended or cancelled Type 1 possessions, for cancelled possessions where the resulting costs incurred are £5,000 or more.
- 20.322 Network Rail requested additional funding of approximately £1m per annum to cover the costs of compensation for late possession cancellations. We do not agree Network Rail should receive funding for the cost of cancelled possessions compensation during CP5. We do not consider there is currently enough available evidence on which Network Rail can rely to provide a robust estimate of the likely cost of paying compensation for late cancellations of possessions. Crucially, we also do not consider Network Rail has provided enough evidence on the likely number of late cancelled possessions or of the proportion of late cancellations that are out of Network Rail's control. In the absence of evidence to the contrary we consider the majority of late notice cancellation to Network Rail's possessions to be under its control.
- 20.323 Overall, we consider the amount of payments under the new protection is likely to be relatively small in relation to Network Rail's total Schedule 4 funding. We consider the

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<sup>531</sup> In broad terms, under paragraph 2.9, where a booked possession is changed from one type to another (or even cancelled entirely), and the affected operator's compensation rights are limited to what would have been available as if the new type of possession had been booked in the first place. If the operator has already committed or incurred reasonable costs before the amendment, however, it may still recover those, but only to the extent that the same would have been recoverable for the original type of possession anyway.

<sup>532</sup> For Type 2 and 3 possessions, the threshold for claiming additional compensation is £10,000. We have set the threshold for Type 1 possessions at £5,000 as this is closer to the typical level of cost faced by operators where cancellations or changes to Type 1 possessions are made at short notice.

<sup>533</sup> <http://www.networkrail.co.uk/using-our-network/on-train-metering/cancellation-of-consultation-type-1-possession.pdf?cd=1>.

<sup>534</sup> <http://www.networkrail.co.uk/PR13/conclusions-on-compensation-for-cancelled-type-1-possession.pdf>.

issue of whether or not additional funding is required and what amount should be left until the next periodic review, where any appropriate funding could be estimated based on robust data in the light of experience of how the new scheme has operated over CP5.

20.324 We do not agree with the suggestion made by some train operators that the enhanced protection for late cancellation of possessions available in CP5 should be extended to include compensation for revenue loss. We recognise that even where a full timetable is reinstated, there is likely to be a proportion of passengers who would have made alternative travel arrangements or decided not to travel at all even though train services would now run.

20.325 However, currently there is not a robust methodology for estimating any revenue effect under these circumstances. We think it more appropriate to consider how we might extend protection for revenue loss based on experience of how the new cost compensation regime has worked over CP5.

### **Sustained planned disruption**

20.326 The sustained planned disruption (SPD) mechanism is designed to protect train operators from instances where there is severe disruption caused by possessions over a sustained period. Additional compensation for SPD is triggered when the impact of severe disruption crosses a pre-defined level (in terms of revenue lost and increased costs) at which point train operators may claim additional revenue/ cost compensation above that covered by the liquidated sums payable under Schedule 4.

20.327 As part of the Schedules 4 and 8 working group, papers submitted by both Network Rail and ATOC agreed that there was no desire for a major change to the existing system apart from clarification of the contractual wording to provide greater clarity between franchised passenger operators and Network Rail over the interpretation of the SPD provisions. ATOC in particular stated that different interpretations of contractual provisions relating to the SPD mechanism can make claiming compensation more contentious and difficult to price than ought to be the case.

20.328 We have decided to make minor changes to the SPD provisions within the passenger track access contract to ensure that they are consistent with the purpose of the SPD mechanism as determined at PR08 and that criteria set out for claiming additional revenue loss and cost compensation are clear and unambiguous to all parties. These changes have been included in our revised drafting of the template track access contracts, on which we consulted in July 2013<sup>535</sup>.

### **Revenue loss formula**

20.329 In our November 2012 consultation, we also considered making changes to the replacement bus revenue formula aspect of Schedule 4 to address anomalies in how

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<sup>535</sup> <http://www.rail-reg.gov.uk/pr13/PDF/pr13-implementation-consultation.pdf>

the revenue loss formula compensates franchised passenger train operators where replacement buses are used as substitutes for cancelled train services. We have decided not to make changes to this aspect of Schedule 4. This is because the 'average regime' nature of Schedule 4 means it is likely to result in cases where it over or undercompensates operators, and we are keen not to make changes unless they are likely to result in real benefits. This is supported by responses to our November 2012 consultation and in discussions with the Schedules 4 and 8 industry working group.

## Freight possessions regime

20.330 Freight operators receive compensation within Schedule 4 for planned disruption. Compensation for planned disruption notified before T-12<sup>536</sup> is based on three tiers of disruption, each tier representing different levels of disruption faced by freight operators. Flat rate liquidated sums are paid for the first two tiers, with the possibility of additional actual costs / losses available for the most disruptive possessions. The criteria for possession types and compensation rates (2012-13 prices) for each tier is set out below in Table 20.14. Unlike franchised passenger operators, freight operators do not pay an ACS in order to be able to receive compensation under Schedule 4. The expected costs of freight Schedule 4 are instead funded by the government as part of Network Rail's funding requirement.

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<sup>536</sup> T-12 refers to twelve weeks before the date the service is planned to depart from its origin.



**Table 20.14: Structure of freight Schedule 4 possessions regime**

Possession notified before T-12	Possession notified after T-12
<p><b>Category 1 compensation - £300 per service</b></p> <ul style="list-style-type: none"> <li>• Additional end to end journey distance greater than 10 miles; or</li> <li>• Planned departure time from Origin differs by more than 60 minutes; or</li> <li>• Planned arrival time at Destination differs by more than 60 minutes; or</li> <li>• More demanding length or weight restrictions imposed.</li> </ul>	<p><b>Service variation - £596 per service</b></p> <ul style="list-style-type: none"> <li>• Additional end to end journey distance is greater than five miles; or</li> <li>• The addition of at least one Planned reversing movement; or</li> <li>• More demanding length, weight or gauge restrictions imposed; or</li> <li>• The use of at least one additional locomotive; or</li> <li>• The use of diesel instead of an electric locomotive is required; or</li> <li>• Planned departure time from Origin differs by more than 30 minutes; or</li> <li>• Planned arrival time at Destination differs by more than 30 minutes; or</li> <li>• The service is treated as a train operator variation request.</li> </ul>
<p><b>Category 2 compensation - £800 per service</b></p> <ul style="list-style-type: none"> <li>• The affected service is cancelled; or;</li> <li>• More demanding gauge restrictions; or;</li> <li>• The use of at least one additional locomotive is required; or</li> <li>• The use of a diesel locomotive as a substitute for an electric locomotive is required.</li> </ul>	<p><b>Late Notice - £1,566 per service</b></p> <ul style="list-style-type: none"> <li>• The service is cancelled.</li> </ul>

Possession notified before T-12	Possession notified after T-12
<p><b>Category 3 - possibility of actual costs/losses in addition to liquidated damages</b></p> <ul style="list-style-type: none"> <li>• Access from Origin or to Destination is blocked (incl. where a suitable gauge cleared route is not available for longer than 60 hours); or</li> <li>• Any of the freight conveyed on the service has to be transported by other means; or</li> <li>• The use of at least one additional locomotive is required; or</li> <li>• The use of a diesel locomotive as a substitute for an electric locomotive is required.</li> </ul>	<p><b>Category 3 - possibility of actual costs/losses in addition to liquidated damages</b></p> <ul style="list-style-type: none"> <li>• Access from Origin or to Destination is blocked (incl. where a suitable gauge cleared route is not available for longer than 60 hours); or</li> <li>• Any of the freight conveyed on the service has to be transported by other means; or</li> <li>• The use of at least one additional locomotive is required; or</li> <li>• The use of a diesel locomotive as a substitute for an electric locomotive is required.</li> </ul>

20.331 Currently, freight compensation is set at a level broadly reflecting the amount paid out under Part G of the Network Code prior to PR08. (The Schedule 4 provisions under Part G were removed when Schedule 4 was overhauled as part of PR08.)

20.332 Freight operators consider that this level of funding no longer reflects the costs incurred due to possessions and that we should adopt a different basis for setting compensation rates.

20.333 Currently Network Rail is funded around £8.2m per annum (2012-13 prices) to compensate freight operators for disruption due to maintenance and renewal possessions. This is funded through the fixed track access charge (FTAC) or network grant in lieu of the FTAC. It remains open for freight operators to receive increased Schedule 4 payment rates in return for paying an ACS.

20.334 In our November 2012 consultation, we stated that we were not minded to increase the level of funding for the freight regime unless we received compelling arguments as to why we should do so.

20.335 Since then we have received information from Network Rail about the forecast levels of possession activity, and therefore the disruption freight operators are likely to face during CP5. Based on this information, freight operators are likely to face a considerable increase in the level of disruption compared to CP4. If we were to keep the level of funding constant, this would mean compensation rates for freight operators would fall by approximately 30%.

20.336 We have assessed the information supplied by Network Rail about the forecast level of possessions disruption faced by freight operators in CP5 and found this to be correct.

20.337 We consider such a forecast 30% fall in compensation rates would significantly reduce the incentive on Network Rail to limit the amount of disruption faced by freight operators. It would also lead to a significant reduction in the levels of compensation received by freight operators. We therefore have decided to maintain the current compensation rates in real terms; adjusting the level of funding accordingly to reflect the forecast increase in activity levels.

20.338 Also at the time of the draft determination Network Rail informed us that it had not included funding for service variation cancellations for freight services. It subsequently supplied its estimate to cover these payments at £612,000 per annum. We revised this amount down by 10%, to £551,000 per annum because Network Rail used data from 2012-13 in its calculation which is not consistent with the base years 2010-11 and 2011-12 used for updating the other elements of Schedule 4 and 8. We have reflected this amount in our final determination.

20.339 As a result of these two changes, the average annual freight Schedule 4 maintenance and renewal possessions compensation funding will increase to £12.3m per annum, an increase of around 49%.

20.340 Table 20.15 summarises our determination of the level of funding Network Rail will require in CP5 to cover its expected freight Schedule 4 costs.

**Table 20.15: Our determination of Network Rail’s freight Schedule 4 funding requirement for CP5**

£m (2012-13 prices)	CP5					CP5 Total
	2014-15	2015-16	2016-17	2017-18	2018-19	
Great Britain	12.0	12.6	13.2	11.9	12.0	<b>61.6</b>
England & Wales	10.7	11.0	11.2	10.4	10.5	<b>53.8</b>
Scotland	1.3	1.6	2.0	1.5	1.4	<b>7.8</b>

Note: Numbers may not reconcile due to rounding.

### Summary of main differences between CP4 and CP5

20.341 Table 20.16 summarises the main changes in CP5 compared to CP4

**Table 20.16: Main changes in to Schedules 4 and 8 in CP5, compared to CP4**

Schedule and operator type	What has changed?
Schedule 8 for franchised and open access passenger operators	<ul style="list-style-type: none"> <li>• Payment rates have been updated to reflect the best available evidence on the impact of performance on fare revenue;</li> <li>• Benchmarks have been updated to reflect our expectation of performance in CP5; and</li> <li>• Passenger charter element of Schedule 8 has been removed.</li> </ul>

Schedule and operator type	What has changed?
Schedule 8 freight operators	<ul style="list-style-type: none"> <li>Freight operator payment rate has been updated to reflect the increase in passenger Schedule 8 payment rates;</li> <li>Benchmarks have been updated to reflect our expectation of performance in CP5; and</li> <li>Bonus payment rates will be set at same level as compensation payment rates.</li> </ul>
Schedule 8 for charter operators	<ul style="list-style-type: none"> <li>Introduction of benchmarked Schedule 8 to be consistent with Schedule 8 for freight operators;</li> <li>Charter operator payment rate has been updated to reflect the increase in passenger Schedule 8 payment rates;</li> <li>Charter operators and Network Rail will be given reciprocal annual caps on Schedule 8 payments; and</li> <li>Charter operators will be required to pay an ACS to receive incident caps, with charter operators being able to choose from a menu of incident caps and associated ACSs.</li> </ul>
Schedule 4 for franchised passenger operators	<ul style="list-style-type: none"> <li>Schedule 4 revenue loss payment rates are being updated to reflect the increase in Schedule 8 payments;</li> <li>Replacement bus cost compensation rates have been reduced to reflect actual cost of operating replacement buses;</li> <li>Notification discount factors have been updated to reflect revised late time multiplier values;</li> <li>The Schedule 4 ACS has been updated to reflect the change in Schedule 4 payment rates and notification discount factors; and</li> <li>Compensation for costs incurred as a result of Network Rail cancelling or amending possessions at late notice has been extended to Type 1 possessions.</li> </ul>
Schedule 4 for freight operators	<ul style="list-style-type: none"> <li>Network Rail's funding to cover the expected cost of freight Schedule 4 compensation has been increased to maintain compensation payment rates at CP4 levels in real terms; and</li> <li>Network Rail will be funded to cover the expected cost of service variations.</li> </ul>

## Implementation

20.342 On 8 November 2013, we will be circulating to Network Rail and train operators the CP5 updates to the elements of the appendices and annexes of Schedules 4 and 8 that are specific to each train operator. This includes the updates Schedule 8 benchmarks, payment rates and SPP thresholds and the Schedule 4 access charge supplements and notification discount factors. This is in order for Network Rail and train operators to check there are no errors by 22 November 2013 in advance of us publishing the review notices on 20 December 2013.

20.343 The one exception to this is the annual caps in Appendix 1 of Schedule 8 of the freight operator track access contracts. As explained in paragraphs 20.244 and 20.248, all

freight operators with a market share of total freight train miles of 5% or more in 2012-13 wishing to have a reciprocal annual cap will need to submit a joint proposal with Network Rail to us by 21 November 2013. Freight operators with a market share lower than this will receive a default reciprocal annual cap of £547k.

20.344 More information on the implementation of our determination is contained in chapter 22.

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# 21. Affordability of the HLOSs

## Key messages in this chapter

- We have reviewed the financial forecasts provided by DfT and Transport Scotland to support their HLOSs.
- We have combined our determination assumptions of Network Rail's revenue requirements with the costs and revenues that the governments have forecast for franchised train operators and the amount of public funding that is available in CP5.
- On the basis of our latest analysis, we consider that both the England & Wales and Scotland HLOSs can be delivered for the public funds available (as set out in the SoFAs). However, we do not consider that we are able to conclude there is a material surplus for either England & Wales or Scotland.

## Introduction

21.1 This chapter sets out our assessment of whether the England & Wales and Scotland HLOSs can be delivered for the public funds (SoFAs) available.

21.2 The chapter has the following structure:

- (a) background and context;
- (b) draft determination affordability assessment;
- (c) final determination affordability assessment; and
- (d) summary of the affordability position for England & Wales and Scotland.

## Background and context

### Our approach

21.3 Our affordability calculation is a whole industry calculation, i.e. we must consider franchised train operators, freight and Network Rail. It is based on:

- (a) the information on franchise support costs and revenues that DfT and Transport Scotland have provided to us;
- (b) our analysis of those forecasts; and
- (c) our calculation of Network Rail's SoFA revenue requirements.

21.4 We need to ensure consistency between the basis of the SoFA and our analysis. The franchised operators pay access charges to Network Rail and, in producing their franchise subsidy forecasts, DfT and Transport Scotland included estimates of these costs. We have adjusted for these franchise payments to Network Rail.

## DfT's financial forecasts and our analysis

- 21.5 DfT provided us with commercially confidential data underpinning its financial forecasts, including:
- (a) base revenues and costs for each of the franchised operators, before changes expected as a result of the HLOS;
  - (b) a risk analysis including the forecast impact of revenue sharing arrangements; and
  - (c) forecast incremental costs, mainly assumptions on new rolling stock required and the associated lease costs.
- 21.6 We were also provided with underlying policy assumptions, including the assumptions made by both governments on any increases in regulated fares over CP5. Unregulated fares are assumed to increase in line with regulated fares for forecasting purposes.
- 21.7 DfT excluded some capital programmes such as non-Network Rail parts of Crossrail and High Speed 2 from its SoFA because these are treated separately by DfT. DfT's SoFA also does not reflect any funding provided by the Welsh Government.
- 21.8 We reviewed DfT's analysis in terms of whether the assumptions made were reasonable.
- 21.9 As in PR08, we decided it was not sensible for us to produce our own passenger demand forecasts as this would just duplicate DfT's role. Instead, we carried out a high-level check of DfT's forecasts for their completeness and their reasonableness.
- 21.10 After we received Network Rail's SBP, it became apparent that DfT's calculation had underestimated the likely costs of depots and stabling and hence we assumed a further capital cost of £224m. We calculated the funding impact of this expenditure for CP5 as if it had been added to Network Rail's RAB.
- 21.11 We found DfT's assumptions on franchise revenues to be reasonable. DfT forecast revenues to rise by 3% per annum over CP5, which is below recent trends (over the last five years franchise revenue has grown by more than 50%).
- 21.12 Base franchise costs were assumed to be stable in CP5, which again we found to be reasonable. DfT considered efficiency improvements for franchise train operators, particularly in the light of the RVfM study.
- 21.13 We reviewed the efficiency assumptions and found them to be reasonable, based on examples of potential efficiency improvements that DfT provided. However, after the cancellation of the WCML franchise competition in October 2012, we asked DfT whether the initial assumptions were still reasonable, given the delays to the franchise letting programme and the increased emphasis on negotiating direct awards with existing franchises. DfT provided us with further evidence to support its numbers.



21.14 As HLOS capacity enhancements had not been fully defined at the time of the HLOS, DfT assumed that any additional revenue would broadly cover the operating costs of the additional rolling stock required, which is reasonable.

## **Transport Scotland's financial forecasts and our analysis**

21.15 The financial forecasts are simpler in Scotland as there are only two franchises – the ScotRail franchise and the franchise for Caledonian Sleeper services. We carried out a similar assessment for Scotland as we did for England & Wales and concluded that the forecasts were reasonable.

## **Draft determination affordability assessment**

### **Summary of our draft determination assessment**

21.16 In our draft determination, our analysis showed that the total cost of the Scottish Ministers' specification was slightly above the funds available (£94m over CP5), while the Secretary of State's was slightly below (£22m over CP5).

21.17 Our England & Wales analysis showed a mix of positive and negative years, while the analysis for Scotland had four negative years. Although the overall figure for Scotland was negative, in our draft determination we said that we considered that the gap would be closed by the time of the final determination, partly because the exact funding levels for projects in CP5 had not yet been finalised and because other assumptions could change before our final determination. We also expected some re-profiling of expenditure and revenue for the final determination, which we considered would remove the negative years in England & Wales.

### **Summary of the responses to our draft determination**

21.18 In its consultation response, DfT welcomed our finding that its HLOS was affordable within the funds available.

21.19 Whilst Transport Scotland acknowledged the funding gap of £94m in the draft determination against its SoFA, it welcomed our view that this gap would be closed by the final determination. It also stated that budget certainty was vital for the Scottish Government and that it looked to us to protect the Scottish Ministers' funding position and to ensure that our final determination provided an affordable and certain funding settlement, which must improve on the position set out in the draft determination.

21.20 Passenger Focus welcomed our finding that the HLOS for England & Wales was deliverable within the SoFA and noted our expectation that the current funding gap in Scotland would narrow.

21.21 Since the draft determination, we have received further information from Transport Scotland on the likely net public costs of franchising, which has allowed us to re-assess the risks around the SoFA calculations made by the Scottish Ministers, and this has increased the level of headroom for Network Rail funding.

21.22 Outside of their consultation response, both governments have confirmed that the financial forecasts supporting their SoFAs (e.g. including their franchised train operations assumptions), are still valid for our final determination assessment of affordability.

## Our final determination affordability assessment

### Network Rail's revenue requirement

21.23 We need to include Network Rail's revenue requirement in our affordability calculation. For our assessment we use Network Rail's SoFA revenue requirement<sup>537</sup>. This is the gross revenue requirement that we determine will be received from all funding sources less our assumptions for the income that Network Rail will receive from sources other than franchised passenger train operating companies, which offsets the gross revenue requirement. This 'SoFA other single till income' is principally from property rental and sales, freight charges, Crossrail charges and facility charges.

21.24 It is the SoFA revenue requirement – the level of Network Rail's revenue requirement that is funded by access charges (track and station) from franchised passenger operators, or grants paid by the governments 'in lieu' of track access charges – that is relevant for the level of public financial support for the railways, as set out in the SoFAs.

21.25 In our draft determination, we adjusted our affordability assessment to include funding for additional depots and stabling costs in CP5 for England & Wales because these costs were not included in the HLOS. We assumed these would be funded through the franchises. We have now included, in our determination of Network Rail's CP5 revenue requirement, £312m of enhancement expenditure on depots and stabling because we have agreed with DfT that Network Rail will fund and programme manage the delivery of this work in CP5. We discuss this issue further in our enhancements chapter (chapter 9). Given that funding for these costs is now reflected in Network Rail's revenue requirement, instead of being part of franchise costs, we have not made any further adjustments to our final determination affordability assessment.

21.26 Tables 21.1 and 21.2 summarise our final determination revenue requirement calculations in England & Wales and Scotland<sup>538</sup>.

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<sup>537</sup> This definition is consistent with the SoFA revenue requirement presented in Network Rail's IIPs, our May 2012 advice to ministers and Network Rail's strategic business plans.

<sup>538</sup> CP4 equivalents have not been included as this would not be a meaningful comparison because the HLOSs published in PR08 were different to those in PR13.

**Table 21.1: Our final determination assessment of Network Rail's CP5 SoFA revenue requirement to deliver the HLOS – England & Wales**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Gross revenue requirement	5,492	5,573	5,693	5,865	5,948	28,572
SoFA other single till income	(440)	(487)	(535)	(581)	(627)	(2,670)
<b>SoFA revenue requirement</b>	<b>5,051</b>	<b>5,085</b>	<b>5,158</b>	<b>5,285</b>	<b>5,322</b>	<b>25,901</b>

**Table 21.2: Our final determination assessment of Network Rail's CP5 SoFA revenue requirement to deliver the HLOS – Scotland**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Gross revenue requirement	608	630	651	660	655	3,204
SoFA other single till income	(26)	(27)	(29)	(32)	(35)	(150)
<b>SoFA revenue requirement</b>	<b>582</b>	<b>602</b>	<b>621</b>	<b>628</b>	<b>620</b>	<b>3,054</b>

## Final determination affordability analysis

### Overview of calculations

21.27 In our draft determination, we presented our affordability analysis in 2012-13 prices. We converted the funds available into 2012-13 prices from nominal prices (the governments published their SoFAs in nominal prices), using DfT's and Transport Scotland's own SoFA assumptions for CP5 inflation.

21.28 The affordability calculation depends on the inflation assumptions we use. For our final determination, we have tested the affordability calculation using both the original assumptions from the HLOSs and more recent forecasts. We have presented our affordability analysis below in three different ways:

- (a) nominal prices. This is consistent with how the governments presented the funds available in their published SoFAs;
- (b) 2012-13 prices, based on our final determination inflation assumptions. We have revised our inflation assumptions since the draft determination and so we consider that it is appropriate to show the impact of these assumptions in our affordability assessment; and
- (c) 2012-13 prices, based on DfT's and Transport Scotland's own SoFA assumptions for CP5 inflation. This is consistent with our draft determination assessment.

21.29 Tables 21.3, 21.4 and 21.5 summarise our final determination calculation for England & Wales, using the three different price bases.

21.30 To calculate the affordability position for England & Wales, we followed these steps:

- (a) starting from the SoFA (which was published in nominal prices):
  - (i) for our 2012-13 prices comparison, we converted the SoFA into real prices (2012-13 prices); and
  - (ii) for our nominal prices comparison, we converted our revenue requirement assumptions from 2012-13 prices into nominal prices;
- (b) we deducted the franchise support payment from the total funds available;
- (c) we added back the payments made by franchise operators to Network Rail as assumed by DfT; and
- (d) the resulting total was then compared to our calculation of Network Rail's SoFA revenue requirement to calculate a 'surplus' or 'deficit' of funds.

**Table 21.3: CP5 affordability calculation in nominal prices – England & Wales**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>SoFA*</b>	3,165	3,382	3,385	3,516	3,394	16,842
Less: Franchise support payment	(341)	(166)	(296)	(254)	(396)	(1,453)
Add: Franchise payments to Network Rail (as assumed in the SoFA)	2,127	2,218	2,278	2,411	2,476	11,510
<b>Funds available for Network Rail</b>	<b>5,633</b>	<b>5,766</b>	<b>5,959</b>	<b>6,181</b>	<b>6,265</b>	<b>29,804</b>
Less: Network Rail revenue requirement to deliver the HLOS	(5,359)	(5,551)	(5,800)	(6,144)	(6,357)	(29,212)
<b>Surplus / (deficit)</b>	<b>274</b>	<b>214</b>	<b>159</b>	<b>37</b>	<b>(92)</b>	<b>592</b>

\*Note: In our draft determination, we restated the SoFA and franchise support lines for the expected financial impact of the DfT's decision to reduce fares growth in CP5 from RPI+3% to RPI+1%. This change did not affect the funds available to Network Rail but simply meant that a reduction in franchise support payments was offset by an increase in the SoFA. However, given that we now show the SoFA in nominal prices, we have decided to present the unadjusted SoFA so that there is a direct comparison to the published SoFA. For the avoidance of doubt, this is simply a presentational issue and has no impact on our affordability calculation.

**Table 21.4: CP5 affordability calculation in 2012-13 prices (ORR inflation assumptions) – England & Wales**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>SoFA*</b>	<b>2,983</b>	<b>3,098</b>	<b>3,010</b>	<b>3,024</b>	<b>2,841</b>	<b>14,957</b>
Less: Franchise support payment	(322)	(152)	(263)	(219)	(331)	(1,287)
Add: Franchise payments to Network Rail (as assumed in the SoFA)	2,005	2,031	2,026	2,074	2,073	10,209
<b>Funds available for Network Rail</b>	<b>5,310</b>	<b>5,282</b>	<b>5,300</b>	<b>5,316</b>	<b>5,245</b>	<b>26,452</b>
Less: Network Rail revenue requirement to deliver the HLOS	(5,051)	(5,085)	(5,158)	(5,285)	(5,322)	(25,901)
<b>Surplus / (deficit)</b>	<b>258</b>	<b>196</b>	<b>142</b>	<b>32</b>	<b>(77)</b>	<b>551</b>

\*Note: See the note to Table 21.3.

**Table 21.5: CP5 affordability calculation in 2012-13 prices (DfT inflation assumptions) – England & Wales**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>SoFA</b>	<b>2,929</b>	<b>3,051</b>	<b>2,944</b>	<b>2,941</b>	<b>2,764</b>	<b>14,628</b>
Less: Franchise support payment	(316)	(150)	(258)	(213)	(322)	(1,258)
Add: Franchise payments to Network Rail (as assumed in the SoFA)	1,969	2,000	1,981	2,017	2,017	9,984
<b>Funds available for Network Rail</b>	<b>5,213</b>	<b>5,201</b>	<b>5,183</b>	<b>5,170</b>	<b>5,103</b>	<b>25,870</b>
Less: Network Rail revenue requirement to deliver the HLOS	(5,051)	(5,085)	(5,158)	(5,285)	(5,322)	(25,901)
<b>Surplus / (deficit)</b>	<b>162</b>	<b>115</b>	<b>25</b>	<b>(115)</b>	<b>(219)</b>	<b>(31)</b>

\*Note: See the note to Table 21.3.

21.31 Tables 21.6, 21.7 and 21.8 summarise our calculations for Scotland. To calculate the affordability position for Scotland, we followed these steps:

- (a) starting from the SoFA (which was published in nominal prices):
  - (i) for our 2012-13 prices comparison, we converted the SoFA into real prices (2012-13 prices);
  - (ii) for our nominal prices comparison, we converted our revenue requirement assumptions from 2012-13 prices into nominal prices;

- (b) as Transport Scotland's published SoFA reflected only the funds available for CP5 infrastructure spending (and also incorporated payments made by franchise operators to Network Rail), we did not need to adjust the SoFA to determine the total funds available;
- (c) we have included an adjustment for the further information that we have received from Transport Scotland since the draft determination, on the likely net public costs of franchising<sup>539</sup>; and
- (d) the resulting total was then compared to our calculation of Network Rail's SoFA revenue requirement to calculate a 'surplus' or 'deficit' of funds.

**Table 21.6: CP5 affordability calculation in nominal prices – Scotland**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>SoFA</b>	<b>639</b>	<b>664</b>	<b>664</b>	<b>672</b>	<b>684</b>	<b>3,323</b>
Adjustment	(3)	8	26	49	45	125
<b>Total funds available for Network Rail</b>	<b>636</b>	<b>672</b>	<b>690</b>	<b>721</b>	<b>729</b>	<b>3,448</b>
Less: Network Rail revenue requirement to deliver the HLOS	(618)	(658)	(699)	(730)	(741)	(3,445)
<b>Surplus/ (deficit)</b>	<b>19</b>	<b>15</b>	<b>(9)</b>	<b>(9)</b>	<b>(12)</b>	<b>3</b>

**Table 21.7: CP5 affordability calculation in 2012-13 prices (ORR inflation assumptions) – Scotland**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
<b>SoFA</b>	<b>602</b>	<b>608</b>	<b>591</b>	<b>578</b>	<b>573</b>	<b>2,952</b>
Adjustment	(3)	8	23	42	38	108
<b>Total funds available for Network Rail</b>	<b>600</b>	<b>616</b>	<b>613</b>	<b>620</b>	<b>610</b>	<b>3,059</b>
Less: Network Rail revenue requirement to deliver the HLOS	(582)	(602)	(621)	(628)	(620)	(3,054)
<b>Surplus/ (deficit)</b>	<b>18</b>	<b>13</b>	<b>(8)</b>	<b>(8)</b>	<b>(10)</b>	<b>5</b>

<sup>539</sup> This has allowed us to re-assess the risks around the SoFA calculations made by the Scottish Ministers and has increased the level of headroom for Network Rail funding.

**Table 21.8: CP5 affordability calculation in 2012-13 prices (TS inflation assumptions) – Scotland**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Total</b>
<b>SoFA</b>	<b>605</b>	<b>612</b>	<b>596</b>	<b>587</b>	<b>581</b>	<b>2,981</b>
Adjustment	(2)	5	21	41	37	102
<b>Total funds available for Network Rail</b>	<b>603</b>	<b>618</b>	<b>617</b>	<b>628</b>	<b>618</b>	<b>3,083</b>
Less: Network Rail revenue requirement to deliver the HLOS	(582)	(602)	(621)	(628)	(620)	(3,054)
<b>Surplus/ (deficit)</b>	<b>21</b>	<b>15</b>	<b>(4)</b>	<b>(0)</b>	<b>(2)</b>	<b>29</b>

### Summary of the affordability position for England & Wales and Scotland

- 21.32 Taking into account the assumptions underlying our analysis, the total cost of the Scottish Ministers' specification, in both nominal prices and 2012-13 prices (using both Transport Scotland's and our own CP5 inflation assumptions), is slightly below the funds available. Similarly, the cost of the Secretary of State's specification is below the funds available in nominal prices and in 2012-13 prices, using our own CP5 inflation assumptions. However, using DfT's CP5 inflation assumptions to restate the SoFA, the specification is slightly higher than the funds available.
- 21.33 The England & Wales and Scottish numbers show a mix of positive and negative years. We have discussed the phasing of the affordability position with both governments and we understand that this funding profile does not cause significant budgetary issues for either government.
- 21.34 Given the uncertainty of inflation forecasting, particularly over the medium-term, and taking our affordability analysis in the round, we consider both HLOSs to be affordable, given the funds that have been made available in CP5.
- 21.35 We said in the draft determination that, if it appears there will be a surplus at the time of the final determination we would agree with the relevant government how this should be treated. Depending on the inflation assumptions used, the overall affordability position can be marginal and there can be small deficits in some years. Hence we do not feel able to conclude there is a material surplus for either England & Wales or Scotland.



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## 22. Implementation of our determination

### Key messages in this chapter

- The implementation of PR13 will require the amendment of track and station access agreements and Network Rail's network licence. We will start the statutory process to do this on 20 December 2013.
- In July 2013, we consulted on the amendments we proposed to make to access contracts and the network licence (based on the draft determination). We also sought the views of Network Rail and each train operator on what bespoke provisions in their track access agreements (if any) should roll-forward to CP5. We will take the comments we received into account when we finalise the provisions.
- In the event of a delay to the statutory implementation process, a contingency plan is in place to ensure that the main access charges that fund the running of the railway are not disrupted.

### Introduction

22.1 This chapter sets out how we will implement our PR13 determination. It gives an overview of:

- (a) the background to the statutory implementation process and the access agreements that are within the scope of PR13;
- (b) the process for making changes to access agreements and the network licence to give effect to this determination; and
- (c) contingency arrangements if there is a delay to implementation.

### The implementation process – background

22.2 As an access charges review, PR13 ultimately involves the review and amendment of the amounts payable under, and associated provisions within, access agreements between Network Rail and its customers ("beneficiaries"). This includes the charges levied for the use of the track or stations, the possessions and performance compensation regimes, and efficiency benefit sharing mechanisms. Our overall decisions on PR13 will therefore need to be implemented through changes to track and station access agreements. We will also need to amend Network Rail's network licence (through which we hold it to account) so that it reflects key policy decisions.

22.3 The process for implementing access charges reviews is set out in Schedule 4A to the Railways Act 1993, which requires us to issue a series of notices:

- (a) a review initiation notice;

- (b) review notices;
  - (c) notices of agreement; and
  - (d) review implementation notices.
- 22.4 A review initiation notice formally sets out our intention to carry out an access charges review. On 15 March 2012, we issued a review initiation notice relating to both track and station access agreements<sup>540</sup>.
- 22.5 Once we have reached our conclusions (i.e. our final determination) in an access charges review, we then issue review notices which begin the implementation phase of the access charges review. These must:
- (a) state our conclusions and the reasons why we have reached those conclusions. We will do this by incorporating our published final determination document into the notice;
  - (b) specify the changes which we propose to make to any access agreements for or in connection with giving effect to our final determination;
  - (c) state the date on which we propose that each of those changes should come into operation; and
  - (d) specify a period of not less than six weeks from the date of issue of the review notices in which Network Rail may object to any of the proposed changes.
- 22.6 We will send a copy of the review notices containing revised provisions to Network Rail, each affected beneficiary, the Scottish Ministers, the Secretary of State and HM Treasury. We intend to issue the review notices on 20 December 2013. At the same time, we will approve the price lists produced by Network Rail that set out the charges to be paid by train operators that are incorporated into access contracts. We will publish the review notices on our website after making any appropriate redactions.
- 22.7 Consistent with previous practice, our review notices will also include a provision providing that if we approve or direct amendments to an access agreement after we have served the review notice but before it comes into effect, then those later amendments will come into effect subject to the changes we propose in the review. If there is any conflict between the changes we propose in the review notice and the changes we have approved or directed subsequently, the latter will take precedence.
- 22.8 Any access contracts entered into after the date we issue our review notices cannot be included within the scope of the notice. Nonetheless, from the start of CP5, the provisions in these contracts will need to be consistent with PR13. We will therefore ensure there are arrangements in those contracts to enable this to happen. We will

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<sup>540</sup> Our review initiation notice issued on 15 March 2012 is available at:  
<http://www.rail-reg.gov.uk/pr13/PDF/review-initiation-notice.pdf>.

also need to make similar arrangements for those contracts that may be entered into shortly before the review notice is issued.

- 22.9 If Network Rail objects to any review notice, we may issue a new review notice or make a reference to the Competition Commission. Should we issue a new review notice, then Network Rail would have a further period of not less than six weeks to make any objections to the new notice.
- 22.10 If Network Rail does not object to the review notices, we must serve a 'notice of agreement' on each beneficiary to an access agreement. The beneficiaries then have a period of 28 days to give notice to terminate their access agreements, should they wish to do so.
- 22.11 Following the expiry of this 28 day period, we will publish the review implementation notice, stating that our determination is to be implemented as proposed in the review notice. Through this process, the changes are implemented directly into the track and station access agreements specified in the review notice.
- 22.12 We intend to implement our PR13 determination on 1 April 2014. Our timetable is shown in Table 22.1 below.

**Table 22.1: Key dates for the implementation process**

Date	Milestone
November 2013	We issue a statutory consultation on our proposed modifications to Network Rail's network licence to update it for CP5. (Some 'core PR13' licence changes relating to condition 3 and part of condition 4 will, however, be made through the review notices we issue in December.)
By 8 November 2013	We circulate to passenger train operators the Schedules 4 and 8 values that we plan to include in their track access contracts for CP5. This will give them the opportunity to advise us if there are any errors before we implement them. (See chapter 20 for further details.)
21 November 2013	Deadline for Network Rail and those freight train operators with a market share of 5% or more of total freight train miles run to submit agreed levels of Schedule 8 liability caps to us for inclusion in their track access contracts. (See chapter 20 for further details.)
20 December 2013	We issue review notices, beginning the formal implementation of PR13. Network Rail publishes its CP5 price lists.
7 February 2014	Deadline for Network Rail to object to the review notices.
After 7 February 2014	If Network Rail does not object to our review notice, we issue a notice of agreement to beneficiaries of access contracts.
March 2014	We issue review implementation notices.
31 March 2014	Delivery plan published by Network Rail.
1 April 2014	Implementation of PR13 determination.

## Changes to access agreements and the network licence

### Consultation on proposed contractual changes to access agreements

- 22.13 PR13 will require changes to various aspects of passenger, freight and charter track access agreements (principally the access charges in Schedule 7 and financial compensation regimes in Schedules 4 and 8 where these exist, and will include operator specific information such as payment rates and benchmarks in Schedule 8). As part of these changes, in each track access agreement we will reference the new price lists so that these have effect.
- 22.14 PR13 will also require amendments to the station access agreements to incorporate changes to the stations long term charge (including changes to the indexation provisions) and the recovery of Stations Information and Security Systems (SISS) costs. These changes are discussed in more detail in chapter 16.
- 22.15 On 12 July 2013, we consulted Network Rail and its access beneficiaries on how we proposed to implement PR13 through changes to access contracts<sup>541</sup> (based on the decisions set out in our draft determination).
- 22.16 We also consulted on changes to the multilateral rules governing the use of on-train metering of traction electricity (the EC4T Metering Rules). These rules are currently incorporated into the track access contracts of train operators who are billed using meters. Amongst other things, we proposed to widen the scope of the EC4T Metering Rules to include the volume and cost reconciliation (wash-up) processes, which currently sit within individual track access contracts. The EC4T Metering Rules would then become the 'Traction Electricity Rules' and be incorporated into the contracts of all operators of electric trains. Chapter 16 sets out more detail on the Traction Electricity Rules.
- 22.17 Following our July 2013 consultation, we issued a number of further related consultations on implementation, including:
- (a) proposed changes to charter track access contracts to implement our draft policy conclusions on the structure of charges and performance regime for charter operators<sup>542</sup>;
  - (b) proposed contractual drafting to implement possible options for the capacity charge, following a process of engagement with the industry over the summer<sup>543</sup>; and

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<sup>541</sup> *Consultation on implementing PR13*, July 2013, available at <http://www.rail-reg.gov.uk/pr13/consultations/pr13-implementation.php>.

<sup>542</sup> *Consultation on proposed changes to charter track access contracts*, September 2013, available at <http://www.rail-reg.gov.uk/pr13/consultations/implementing-charter-operators.php>.

- (c) proposed contractual drafting relating to the cost reconciliation process for traction electricity<sup>544</sup>.

22.18 We would like to thank all the parties who responded to these consultations. We will be making refinements to the drafting to reflect, where appropriate, the points made. We will also consider the extent to which any further focused engagement would be desirable as we begin to finalise the provisions and take into account any further changes required to give effect to this determination.

## Network Rail's price lists

22.19 In April and May 2013, Network Rail published initial drafts of its CP5 price lists and invited comments on them for accuracy<sup>545</sup>. Network Rail then issued updated versions of these on 12 July 2013 to reflect the proposed decisions in our draft determination. It again invited comments, providing a further opportunity for interested parties to engage before the finalisation of the price lists. These final price lists, reflecting the decisions in this final determination, will be published by Network Rail on 20 December 2013.

## Consultation on bespoke provisions within track access agreements

22.20 Most existing track access agreements are broadly consistent with our model contracts, but many contain bespoke provisions. For example, facility charges for investments paid for by the train operator, or additional charges to recover the cost of an operator running services beyond the normal opening hours of a route. As part of PR13 implementation, we will be replacing the new model provisions in each agreement. We would therefore need to make special provision for any bespoke provisions that need to be continued into CP5.

22.21 Accordingly, in July 2013, we sought to confirm which bespoke provisions should be retained in CP5 and which were no longer needed or appropriate. To do this, we carried out a review of the consolidated versions of the access agreements provided to us by Network Rail and then wrote to Network Rail and each train operator in July 2013 setting out our proposed approach. We asked them to advise us if they disagreed with us or if we had missed any key provisions.

22.22 We are grateful to all those who responded to us. We will take account of the points made to us and may liaise further with affected parties where required.

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<sup>543</sup> *Consultation on contractual provisions to implement options for the capacity charge in CP5*, September 2013, available at <http://www.rail-reg.gov.uk/pr13/PDF/implementing-pr13-capacity-charge.pdf>.

<sup>544</sup> *PR13: consultation on contractual wording for EC4T cost reconciliation*, October 2013, available at <http://www.rail-reg.gov.uk/pr13/consultations/implementing-ec4t-cost-reconciliation.php>.

<sup>545</sup> *Structure of charges: publication of draft CP5 price lists*, Network Rail, May 2013, available at <http://www.networkrail.co.uk/PublicationofdraftCP5pricelists.pdf>.

## Changes to Network Rail's network licence

22.23 As set out in chapter 12, we plan to update and amend licence condition 3 (financial indebtedness) of Network Rail's network licence to:

- (a) reflect our policy on maximum levels of financial indebtedness for each year of CP5;
- (b) make the CP5 year 5 maximum level of financial indebtedness roll forward into CP6 until CP6's levels are set; and
- (c) update the FIM fee.

22.24 We also intend to amend licence condition 4 so that it more clearly reflects our policy on when Network Rail may pay a rebate to the governments or a dividend, as set out in chapter 12. Both these sets of changes are directly related to our PR13 determination.

22.25 We also propose to make improvements to other Network Rail network licence conditions. These will be either less significant updates or clarifications which we think will make the licence more fit for purpose in CP5.

22.26 We consulted on the proposed drafting of changes to the network licence in July 2013<sup>546</sup>.

## Process for amending the network licence

22.27 There are two processes that we can use to implement licence changes, as follows:

- (a) **schedule 4A of the Act** provides for us to amend any 'linked licence' (i.e. linked to the access agreements in respect of which we are carrying out PR13) through a review notice.

We plan to use this process for the amendments to condition 3 and the parts of condition 4 that are directly related to PR13. We will do this through the review notices we expect to issue on 20 December 2013; and

- (b) **section 12 of the Act** sets out the process for amending licences with the consent of the licence holder and requires a minimum 28 day statutory consultation.

We will use this process for the other changes we propose to make to the licence. Having taken into account stakeholders' responses to the July 2013 consultation, in November 2013 we will start a 28 day statutory consultation on the modifications we intend to make. Subject to this consultation and Network Rail's consent, we intend that the licence changes will take effect no later than 1 April 2014.

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<sup>546</sup> See chapter 8 of *Consultation on implementing PR13*, July 2013, available at <http://www.rail-reg.gov.uk/pr13/consultations/pr13-implementation.php>.

# Contingency planning for a delay to the statutory implementation process

## Background

- 22.28 There is a risk that the implementation process for PR13 could be delayed. As set out above, Network Rail has the right to object to our review notices. If it does, we can issue new review notices and restart the implementation process, or we can refer the matter to the Competition Commission. In either scenario, the impact on timescales would mean that PR13 could not be implemented in time for 1 April 2014. The process could also be delayed by other events, such as a judicial review<sup>547</sup>.
- 22.29 The Act does not specify what should happen in this scenario. In practice, it would mean a significant gap in Network Rail's funding because certain key charges (in particular the fixed charge paid by franchised operators) would not automatically roll-forward.
- 22.30 There are two broad options for addressing this: introduce a provision to either (1) roll-forward CP4 charges or (2) implement our PR13 determination (pending the ultimate resolution of the cause of the delay). In either case, depending on how the delay to implementation is resolved, there may be a need to issue new review notices with new charges and terms.
- 22.31 We do not think that the rolling forward of CP4 charges in operators' contracts would be viable because:
- (a) many of the charges in CP4 were profiled, and there is no reason to suppose that the charges payable for the final year of CP4 relate logically to the appropriate revenue which Network Rail should receive from 1 April 2014 onwards; and
  - (b) the charges set for CP4 relate to the delivery of outputs specified in the PR08 final determination. Network Rail should be committed to the new outputs for CP5.

## Our proposed contingency plan

- 22.32 On 17 April 2013, we wrote to Network Rail, train operators and other relevant parties proposing a contingency plan based on implementing the amendments specified in our PR13 review notices on 1 April 2014, notwithstanding a delay to the process for any reason<sup>548</sup>. This would then provide for Network Rail to start the delivery of

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<sup>547</sup> For the remainder of this chapter, we use a Network Rail objection to our review notice as the example, but a delay could be due to other reasons.

<sup>548</sup> *Consultation on contingency planning for PR13 implementation*, April 2013, available at: <http://www.rail-reg.gov.uk/upload/pdf/pr13-contingency-planning.pdf>.



regulated outputs as per our determination, with the revenue stream set by the determination.

- 22.33 Under this arrangement, if ultimately the Competition Commission disagreed with our determination, we would have to take its findings into account in the changes we propose to be made to access agreements.
- 22.34 In our letter, we suggested operators of regular scheduled passenger services (franchised and open access operators) and Network Rail agree to amend their contracts to include a provision that would provide for this arrangement. This was on the basis that their agreements contain provisions that would time out at the end of CP4 if PR13 implementation were delayed.
- 22.35 We proposed that freight and charter passenger operators did not need to enter into this arrangement as the provisions in their contracts would not ‘time out’ at the end of CP4, and would be uplifted by inflation in the event of a delay. However, we asked freight and charter operators whether they would want to make the amendment in any case.
- 22.36 We discussed this arrangement with the Competition Commission and it raised no objections to it. It also noted that the plan would not in any way undermine Network Rail’s statutory right to object to our review notice, nor would it prejudice the ability of ORR to take action following an objection such as issuing a new review notice or making a reference to the Competition Commission.
- 22.37 Following our consideration of the responses to the consultation letter, we confirmed in our draft determination that we would proceed with this contingency arrangement for operators of regular scheduled passenger services (i.e. franchised and non-franchised open access TOCs). On 9 August 2013, we issued a letter to Network Rail and the relevant train operators requesting that they enter into a template amendment to implement the contingency arrangement by 15 October 2013<sup>549</sup>.

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<sup>549</sup> Available at: <http://www.rail-reg.gov.uk/pr13/PDF/pr13-contintency-plan-2013-08-09.pdf>.

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## 23. Monitoring, enforcement and reporting

### Key messages in this chapter

- We will monitor and report on Network Rail's performance in CP5 and enforce where necessary. This will give stakeholders assurance it is meeting its obligations and delivering what it has been funded to do.
- Our monitoring will be risk based, proportionate and forward looking. We will monitor a wider range of outputs, indicators, enablers and other aspects of delivery than in CP4; this particularly reflects our concerns with Network Rail's asset management. We will review the way we monitor midway through CP5. We are willing to adapt our approach, for example where Network Rail can satisfy us that its own monitoring is effective.
- The crucial difference in terms of regulation between outputs and enablers / indicators is that if Network Rail is likely to fail, or fails, to deliver an output we would consider whether this amounts to a licence breach and we may take enforcement action against the company (outputs are often referred to as 'regulated outputs'). A failure to deliver either an enabler or an indicator would not in itself be considered as a potential licence breach. However, either may indicate trends which raise concern about Network Rail's likely future compliance with an output that we may want to take licence enforcement action to address.
- There are established industry processes by which Network Rail, TOCs and FOCs work together to deliver good performance; we can intervene if Network Rail falls short.
- We will enforce the delivery of outputs where we need to. Our approach to enforcement will continue to reflect the principles of better regulation and our enforcement policies. As well as enforcing compliance with Network Rail's licence, we will enforce health and safety law.
- Network Rail must agree operational performance targets with each franchised train operator. We will treat these as outputs alongside the national performance outputs. Most franchised England & Wales TOCs should reach 90% punctuality (measured by PPM) by the end of CP5 (and nationally PPM should be 92.5% or more). Punctuality for Virgin Trains and East Coast should reach at least 88% but with a more challenging CaSL target, reflecting the particular characteristics of those services. Alongside the overall 90% PPM minimum for First Great Western's services, Network Rail should also deliver a PPM of at least 88% for its high speed services by the end of CP5.

## Key messages in this chapter (continued)

- We will use our PR13 determination as the baseline for measuring Network Rail's financial performance, and will focus on total financial performance rather than just some elements of expenditure. We will work with Network Rail to specify and publish our detailed approach before the start of CP5.
- We will continue to publish independent, objective reports about Network Rail's delivery in CP5, including: our Network Rail Monitor; our annual efficiency and finance assessment; and our advice to Network Rail's remuneration committee.
- We will publish more information at the Network Rail route level to help local decision makers and establish a whole industry scorecard.
- There will be improvements in financial reporting in Scotland.

### Main changes since the draft determination

- In relation to the framework for monitoring financial performance in CP5, in a joint work programme we are discussing with Network Rail our requirements for the accuracy of its reporting systems and how performance should be adjusted where required outputs have not been delivered. We expect to conclude on these matters in our regulatory accounting guidelines (RAGs), which will be published by the end of March 2014.

## Introduction

- 23.1 One of our key responsibilities is to provide assurance to Network Rail's customers and funders that Network Rail is meeting its obligations and delivering what it has been funded to do.
- 23.2 This involves monitoring, enforcing and reporting on Network Rail's compliance with both health and safety law and with its licence obligations. This chapter sets out our approach to these tasks in PR13. We have considered four particular aspects:
- (a) how we will monitor Network Rail's delivery of economic and health and safety obligations;
  - (b) how we will enforce delivery, especially of operational performance outputs where we need to update our approach;
  - (c) how we can improve the monitoring of Network Rail's financial performance; and
  - (d) what we should report, particularly about the whole industry context.

We address comments from our draft determination consultation on each of these areas in the sections below.

## Monitoring in CP5

- 23.3 In CP5, our monitoring across all areas will continue to be risk-based, proportionate, targeted and forward looking. Where possible we will anticipate and head-off issues, ensuring Network Rail is managing risks effectively before they become problems.
- 23.4 The crucial difference in terms of regulation between outputs and enablers / indicators is that if Network Rail is likely to fail, or fails, to deliver an output we would consider whether this amounts to a licence breach and we may take enforcement action against the company (outputs are often referred to as 'regulated outputs'). A failure to deliver either an enabler or an indicator would not in itself be considered as a potential licence breach. However, either may indicate trends which raise concern about Network Rail's likely future compliance with an output that we may want to take licence enforcement action to address.
- 23.5 We will monitor whether Network Rail is likely to deliver the outputs we set. We will consider all the outputs detailed in the output framework chapter (chapter 3), including new ones for CP5 such as those around Network Rail's asset management and the reduction of risk at level crossings.
- 23.6 We will continue to monitor Network Rail's compliance with its obligations under health and safety law.
- 23.7 We will also monitor:
- (a) indicators to better understand the reasons for forecast and actual trends in outputs and the risks faced. Many of these are highlighted in chapter 3. For example, we will compare the volumes of work done maintaining and renewing the network against Network Rail's delivery plan. This will be a particular challenge in the case of civil engineering works where we need Network Rail to first develop much better plans for the later years of CP5. Similarly, we will monitor Network Rail's project design and development milestones as indicators. However, Network Rail recognises it has a great deal to do to develop these quickly for the early GRIP projects where the scope of the project is not well defined;
  - (b) where we have established ring-fenced funds, whether Network Rail is delivering schemes efficiently and on time and that planned benefits are realised. Schemes may have economic, environmental, social and safety benefits;
  - (c) whether Network Rail is financially sustainable and operating within the financial boundaries set by our determination;
  - (d) progress with the enablers we have identified that underpin longer term improvement. These include customer service maturity and continuous improvement of Network Rail's management of safety; and
  - (e) the whole industry context in which Network Rail works.

- 23.8 In CP5 we will also be monitoring much more route level information than in CP4. It is for Network Rail to manage its routes and other business units but we will expect the company to provide disaggregated information wherever appropriate. This will be valuable in helping us understand how Network Rail is performing as a business, the variations in performance, efficiency and safety we see across the network and for benchmarking. It will help us make rail industry delivery more transparent, and should facilitate greater local involvement in the funding and specification of the railway.
- 23.9 Network Rail has expressed its clear concern that our monitoring in CP5 will be burdensome and complex and at odds with our emphasis on outputs in CP4. It estimated we would routinely monitor 3,700 measures in CP5. We accept that, overall, we will be monitoring more in CP5. This mainly reflects how we are setting new outputs and indicators for asset management where we have had concerns about Network Rail's progress, and our increased focus on route information as a leading indicator for the delivery of outputs, such as train operator level performance outputs. We consider the monitoring framework properly reflects the complexity of the network, the scale of the investment being made and the expectations of Network Rail's customers and funders.
- 23.10 We will seek to minimise the regulatory burden on Network Rail by using the information it already uses for its own purposes wherever possible. Indeed, almost all of the outputs, indicators and enablers we are setting for CP5 are already produced by the company. Network Rail is keen to work with us to facilitate us using its own assurance processes where this will be effective and efficient.
- 23.11 Our framework provides extra and earlier assurance in those areas where the company's recent record suggests there are particular risks to delivery in the next five years. Where we are assured that these risks are well managed, we would expect to monitor less – we have already done this for enhancement projects in CP4 where we have mainly focused on those at risk of non-delivery and monitored other projects less. Longer term, we would like to see the need for monitoring delivery to diminish. This might come about as Network Rail convinces us it can deliver the progress needed with commitment and pace. In time our role could then shift more towards supporting and encouraging Network Rail and its stakeholders as they work together to deliver. We will review our approach at the midpoint of CP5. We are willing to adapt our approach, for example where Network Rail can show its own monitoring is effective.

## Enforcement in CP5

- 23.12 Our approach to enforcement in CP5 will continue to reflect the principles of better regulation, i.e. to be proportionate, transparent, consistent, targeted and accountable. We will act in line with our published enforcement policies.

- 23.13 If Network Rail is failing, or is likely to fail, to deliver an output we will consider whether to take licence enforcement action. We can do this because we consider the delivery of outputs to be the reasonable requirements of Network Rail's customers and funders, and its licence requires it to do everything reasonably practicable to meet such requirements.
- 23.14 If Network Rail is not complying with its health and safety obligations we will consider whether to take enforcement action under health and safety legislation. This may include prosecution and/or the serving of enforcement notices.

## **Enforcing TOC operational performance**

- 23.15 In the past we have made a separate policy statement on enforcing operational performance at the individual TOC level, most recently in June 2010. Our approach until the end of CP5 is set out in this section.
- 23.16 Throughout CP5, we expect Network Rail to engage with passenger TOCs to develop and agree a Joint Performance Improvement Plan (JPIP), or an equivalent replacement, to be in place by 1 April each year (we are actively engaged in the current industry-led Performance Planning Reform Programme). Each JPIP should cover the next two years. Each JPIP should include a PPM commitment, and also a CaSL commitment for those TOCs franchised by DfT. We will treat these, for the first year of each JPIP, as regulatory outputs.
- 23.17 JPIPs should also include performance indicators such as delay minutes and any other measures Network Rail and TOCs consider appropriate.
- 23.18 In the event Network Rail cannot agree a JPIP with a TOC we would expect to set an interim requirement taking the second year of the last agreed JPIP as our starting point (for the first year of CP5 this means the second year of the 2013-14 JPIPs). For franchised TOCs we would also work with the relevant franchising authority to ensure the JPIP process worked smoothly and a JPIP was agreed as soon as possible.
- 23.19 For franchised TOCs, JPIPs should be consistent with the franchise contract so far as possible. Network Rail will, as now, provide performance projections to inform potential franchise bidders and JPIPs should be updated in-year if needed to reflect franchise change. We will work with the franchising authorities to ensure that, in new franchise agreements, the performance targets specified for the TOC are aligned with Network Rail's outputs to encourage a more collaborative or alliance based approach to improving performance for passengers.
- 23.20 Network Rail will need to explain each year how delivery of the individual JPIPs relates to delivery of the required national performance. We expect it to have robust governance arrangements in place so that whenever the JPIPs taken together do not give us confidence the national requirements will be met, it develops clear and convincing plans to bridge any gap, which it must then deliver.



- 23.21 There are established industry processes through which Network Rail, TOCs and FOCs work together to deliver good train performance. While we can hold Network Rail to account, funders can hold their operators to account. We will work with the funders to ensure these performance management processes work well and we have a shared understanding of industry performance risks. We may intervene if called on by third parties such as an operator, a funder, Passenger Focus or London TravelWatch. We will not, however, wait for a complaint if our own monitoring suggests action is needed to address performance issues.
- 23.22 Achievement of the national annual output targets will almost inevitably mean that some TOCs will exceed their individual JPIP targets while others underperform. This is particularly likely where the sum of the JPIPs is very close to the national target. This means there is no justification for us to intervene automatically if a JPIP output were not being achieved. However, this would mean that Network Rail could achieve its national outputs while some TOCs experienced significantly worse performance. Therefore, we consider that we should specify a floor level for PPM and CaSL below which we will intervene. Above the floor, we will not normally intervene unless some other output is at risk (for example, the minimum PPM in year 5).
- 23.23 Network Rail suggested a floor for England & Wales PPM of 90% with no regulatory intervention as long as performance remained above this level. We have not accepted this proposal as there are big differences between individual TOC performance and the nature of their services, and Network Rail is unlikely to agree the same JPIP targets with every TOC.
- 23.24 Instead we are setting a floor 2 percentage points below the PPM (MAA) commitments made in each JPIP. We consider this is an appropriate floor given the uncertainty in the figures that make up PPM, the greater variability in PPM at individual TOC level and performance in CP4. Similarly where a CaSL commitment is made we are setting a cap at 0.2 percentage points worse than the JPIP target; below this level we will not normally intervene unless some other output is at risk.
- 23.25 In our draft determination, we proposed no England & Wales franchised TOC should exit the control period with a PPM (MAA) of less than 90%, reflecting a concern that no TOC should be “left behind”. Network Rail was concerned that setting this output for all such operators might unduly constrain the industry and not deliver value for money. East Coast and Virgin Trains supported a lower PPM requirement given the significance of other measures such as cancellations and long delays to their passengers. First Great Western supported a minimum requirement for the high speed part of its services.
- 23.26 We have decided that most franchised England & Wales TOCs should reach a punctuality of at least 90% PPM by the end of CP5 (with First Great Western’s high speed services reaching at least 88% PPM, in addition to the minimum 90% PPM for its services overall). The exceptions are Virgin Trains and East Coast which will need



to reach 88% PPM but with a correspondingly more challenging CaSL target. We will treat these requirements as outputs and require Network Rail to agree targets in the relevant JPIPs at least at this level for the last year of CP5. This should not significantly impact the CP5 national outputs as the poorest performing TOCs run relatively few services and therefore have a relatively small impact on national PPM.

23.27 In summary, we will intervene when:

- (a) Network Rail and a TOC cannot agree a JPIP; or
- (b) Network Rail's plans or actions to deliver at least 88% PPM for East Coast and Virgin Trains (and First Great Western's high speed services) and at least 90% PPM for every other England & Wales franchised TOC in the last year of CP5 are inadequate; or
- (c) Network Rail's plans or actions to deliver the national performance outputs are inadequate (including where Network Rail needs to bridge a gap between the sum of the JPIPs and the national outputs); or
- (d) performance for an individual TOC is, or is likely to be, worse than the relevant floor/cap levels.

23.28 Where we intervene, we will follow a staged approach of review, investigation and escalation which may ultimately lead to formal enforcement action. We may require new or updated recovery plans, the formation of a recovery board, or some other form of assurance from Network Rail.

23.29 As now, in deciding whether and how to intervene we will focus on systemic and/or serious issues. We will work with the established industry processes where possible, taking account of how the commitments made dealt with the greater uncertainty associated with forecasts at the TOC level.

23.30 We will also consider the impact of poor performance on passengers and what was or will be done for them. In particular, we will look at the numbers, causes and effect of so-called 'bad days' on passengers and assess Network Rail's response<sup>550</sup>. While some bad days are probably unavoidable, Network Rail can reduce their frequency and impact through its planning and service recovery. The CaSL measure captures the key elements of such days – trains cancelled or part cancelled and those delayed by 30 minutes or more.

23.31 Network Rail has raised the issue of how we handle the impact of traffic growth on performance. We acknowledge growth significantly above or below the levels assumed at the start of CP5 could impact the delivery of performance outputs. We will take actual traffic growth into account when assessing Network Rail's performance, where it varies by more than 2.5 percentage points from Network Rail's assumptions.

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<sup>550</sup> These are days when significant parts of the network are severely disrupted, for example by major infrastructure failure or extreme weather.

This reflects the extra traffic growth experienced in CP4 and our view that it is reasonable to expect Network Rail to accommodate that degree of variation.

## Financial monitoring

23.32 This section outlines our approach and measurement of financial performance and covers:

- (a) why we monitor financial performance;
- (b) the definition of financial performance;
- (c) our experience in CP4;
- (d) a summary of our draft determination;
- (e) responses to our draft determination;
- (f) our comments on those responses;
- (g) our determination; and
- (h) the joint ORR/Network Rail work programme.

### Why we monitor financial performance

23.33 It is important that Network Rail is incentivised to financially outperform our determination. It is also important for us to establish whether or not Network Rail has outperformed our determination because:

- (a) reducing costs, in a safe and sustainable way, is essential if the rail industry is to provide improved value for money for its customers and funders;
- (b) in the absence of shareholder pressure, reputational incentives such as our assessments of Network Rail's financial performance are important;
- (c) our assessment of Network Rail's financial performance underpins the route-level efficiency benefit sharing mechanism (REBS); and
- (d) it reveals important information to inform future periodic reviews.

23.34 We report on Network Rail's efficiency and financial performance in our annual efficiency and finance assessment<sup>551</sup> and our Network Rail Monitor publications<sup>552</sup>. We also require Network Rail to report on financial issues in its regulatory financial statements.

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<sup>551</sup> These may be accessed at <http://www.rail-reg.gov.uk/server/show/nav.2050>.

<sup>552</sup> These may be accessed at <http://www.rail-reg.gov.uk/server/show/nav.293>.

## Definition of financial performance

23.35 In our 2006 policy statement<sup>553</sup> we defined:

- (a) financial outperformance as “any underspend achieved while delivering the output targets specified in the access charges review and not compromising the long-term asset condition and serviceability of the network”. The burden of proof is on Network Rail to show that an underspend it claims as outperformance meets the tests below; and
- (b) financial underperformance as “any underspend while failing to achieve required output targets and/or compromising long-term asset condition”.

23.36 In order to assess whether any underspend or overspend is outperformance or underperformance we:

- (a) identify and quantify the causes of any underspend or overspend;
- (b) assess whether Network Rail has delivered its required outputs (‘robustness’ test); and
- (c) assess whether any changes in the scope of work (i.e. changes in volume) are likely to impact on the long-term asset condition and serviceability of the network (‘sustainability’ test).

## Our experience in CP4

23.37 Several measures of efficiency and financial performance were used in CP4:

- (a) a comparison of income and expenditure to the PR08 determination;
- (b) real economic efficiency measure (REEM);
- (c) efficiency benefit sharing mechanism calculation; and
- (d) financial value added (FVA).

23.38 The different ways these measures are calculated has resulted in complexity and confusion in communicating Network Rail’s financial performance in CP4. In particular, comparing Network Rail’s financial performance to both our PR08 determination and Network Rail’s delivery plan in CP4 has been overly complicated and has worsened transparency.

23.39 Our monitoring of financial performance in CP4 has mainly focused on Network Rail’s operating, maintenance and renewals (OM&R) expenditure. However, focusing on OM&R can lead to perverse incentives. For example, were Network Rail to invest in an information management scheme that increases its income and is efficient, this would be reported as an inefficiency as our assessment would only take into account the increase in cost and not the increase in income.

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<sup>553</sup> *Monitoring and treatment of Network Rail’s underspend and efficiency*, January 2006, available at: <http://www.rail-reg.gov.uk/upload/pdf/273.pdf>.

- 23.40 Our assessments of Network Rail's financial performance for renewals and maintenance expenditure have been difficult in CP4 because of issues with Network Rail's reporting. This has been for a number of reasons including:
- (a) significant levels of variability in projected renewals volumes and costs in delivery plans compared to actual volumes and costs, implying instability in the renewals delivery process;
  - (b) lack of auditable evidence to justify that underspend was efficient; and
  - (c) uncertainty about the sustainability of Network Rail's asset management policies, in particular for its civils assets.
- 23.41 We have adjusted our assessments of Network Rail's financial performance in CP4 to take account of Network Rail not delivering PPM regulatory outputs (robustness test above) and concerns about aspects of Network Rail's asset management (sustainability test above). This has been difficult because Network Rail has not established a clear link between expenditure and performance given the diverse activities it undertakes to operate and maintain the national rail infrastructure.

### **Summary of our draft determination**

- 23.42 Given the problems that we have had reporting on Network Rail's financial performance in CP4, we set out in our draft determination the key areas of the financial monitoring framework. These areas were:
- (a) the CP5 baseline;
  - (b) whether we should focus on Network Rail's total financial performance or a subset such as support, operations, maintenance and renewals costs;
  - (c) how we should treat financing costs and input price changes;
  - (d) how we should treat renewals performance;
  - (e) consistency with our RAB roll forward policy;
  - (f) how we should treat material one-offs (for example, if a machine had been assumed to be leased but Network Rail decided to buy it, or if there is a change in law such as to national insurance rates);
  - (g) how we should present our assessment of financial performance;
  - (h) the effect on financial performance of Network Rail not delivering outputs; and
  - (i) the effect on financial performance of Network Rail not having appropriate systems and processes to support claimed savings.

## Responses to our draft determination<sup>554</sup>

- 23.43 Network Rail emphasised that savings should be presumed to be efficient unless they have been achieved in a way which is demonstrably unsustainable or at the expense of other requirements. Network Rail considered that the variance analysis should be based on a high level 'top-down' approach rather than on a detailed bottom-up assessment of how savings have been achieved.
- 23.44 Network Rail agreed that additional measures are required to explain variances in financing costs. However, Network Rail was concerned about how reporting financing costs against market rates could work in practice. It wants to work with us to develop appropriate measures.
- 23.45 Network Rail considered that the volume incentive should be included in the measure of financial performance.
- 23.46 Network Rail also wanted us to base our efficiency in CP5 on an unadjusted 2013-14 to be more comparable.
- 23.47 Other respondents thought that it was important for us to hold Network Rail to account and that transparency is critical in the reporting of financial performance. Respondents thought that this is important to build confidence in Network Rail and the industry to move forward, as well as ensuring Network Rail is meeting its obligations and delivering what it has been funded to do.
- 23.48 TOCs wanted any adjustments to financial performance to be designed with good incentive properties. They also requested an improved approach to engagement with them by Network Rail and us prior to the start of CP5.

## Our comments on the responses to our draft determination

- 23.49 We do not agree with Network Rail that a high-level 'top-down' approach to assessing Network Rail's performance is appropriate in CP5, because we consider that the burden of proof should be on Network Rail to demonstrate that underspend represents outperformance rather than deferral of work.
- 23.50 This requires Network Rail to be able to demonstrate that it has delivered its required outputs and that its financial performance is sustainable. We will work with Network Rail to identify the most appropriate way of doing this, and in particular establishing the level of confidence that we require in its reporting whilst ensuring that the process is not overly burdensome. We expect to conclude on this in the RAGs before the start of CP5.
- 23.51 We do not agree that we should base our efficiency reporting in CP5 on an unadjusted 2013-14. At the moment, we adjust for the expected financial penalty and

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<sup>554</sup> This section excludes responses on the robustness of reporting systems and measurement of output adjustments which are discussed separately in the joint ORR / Network Rail work programme section below.

other issues in 2013-14 in our presentation of our CP5 efficiency assumptions. Presenting efficiency assumptions on an unadjusted basis would make our efficiency reporting less transparent as the comparison to our determination would be more difficult. However, expenditure that Network Rail has incurred in each year going back to 2001-02 will be reported on an unadjusted basis on our website, to allow comparisons over time.

## **Our determination**

23.52 This section covers the areas where we have made decisions for CP5 in this determination. This is followed by a section on the joint ORR/Network Rail programme which highlights the areas still to be finalised before the start of CP5.

### **CP5 baseline**

23.53 For CP5 we have decided that Network Rail should report on a measure of total financial performance that compares Network Rail's financial performance against our PR13 income and expenditure assumptions. This will:

- (a) be more transparent;
- (b) better reflect the regulatory settlement that Network Rail is incentivised to deliver;
- (c) better support efficiency sharing mechanisms, which are underpinned by the financial assumptions in our determination; and
- (d) restrict Network Rail's ability to potentially move the goal posts through frequent large-scale changes to its delivery plans.

23.54 Given the assumptions underpinning our determination will probably be less detailed than Network Rail's own delivery plan, we will be transparent to ensure that Network Rail understands the basis of our determination. We will provide the relevant data underpinning our determination to Network Rail to ensure it can understand our baseline to report its actual performance against.

23.55 Using Network Rail's delivery plan is unlikely to provide a clearer baseline as there needs to be an auditable reconciliation from the determination to the delivery plan, which for CP4 was not clear. Also, the lack of detailed unit cost and volume baseline data in Network Rail's plans has been a problem for us in CP4. In addition, the maintenance assumptions in Network Rail's PR13 SBP were not underpinned by volume and unit cost information<sup>555</sup>.

### **Total financial performance**

23.56 We will include all income and expenditure categories that we have assumed are controllable by Network Rail in the measurement of total financial performance in CP5, with the exception of expenditure on civils renewal volumes and spend to save schemes. We agree with Network Rail that the volume incentive should be included in

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<sup>555</sup> As important as Network Rail's delivery plan is, it is not a substitute for our determination.

this measure. Including all income and expenditure categories that we have assumed are controllable should better incentivise Network Rail to improve its efficiencies in areas other than OM&R and reduce confusion amongst stakeholders<sup>556</sup>.

23.57 As summarised in Figure 23.1 and Figure 23.2 below, our planned approach for Network Rail's reporting of total financial performance is structured as follows:

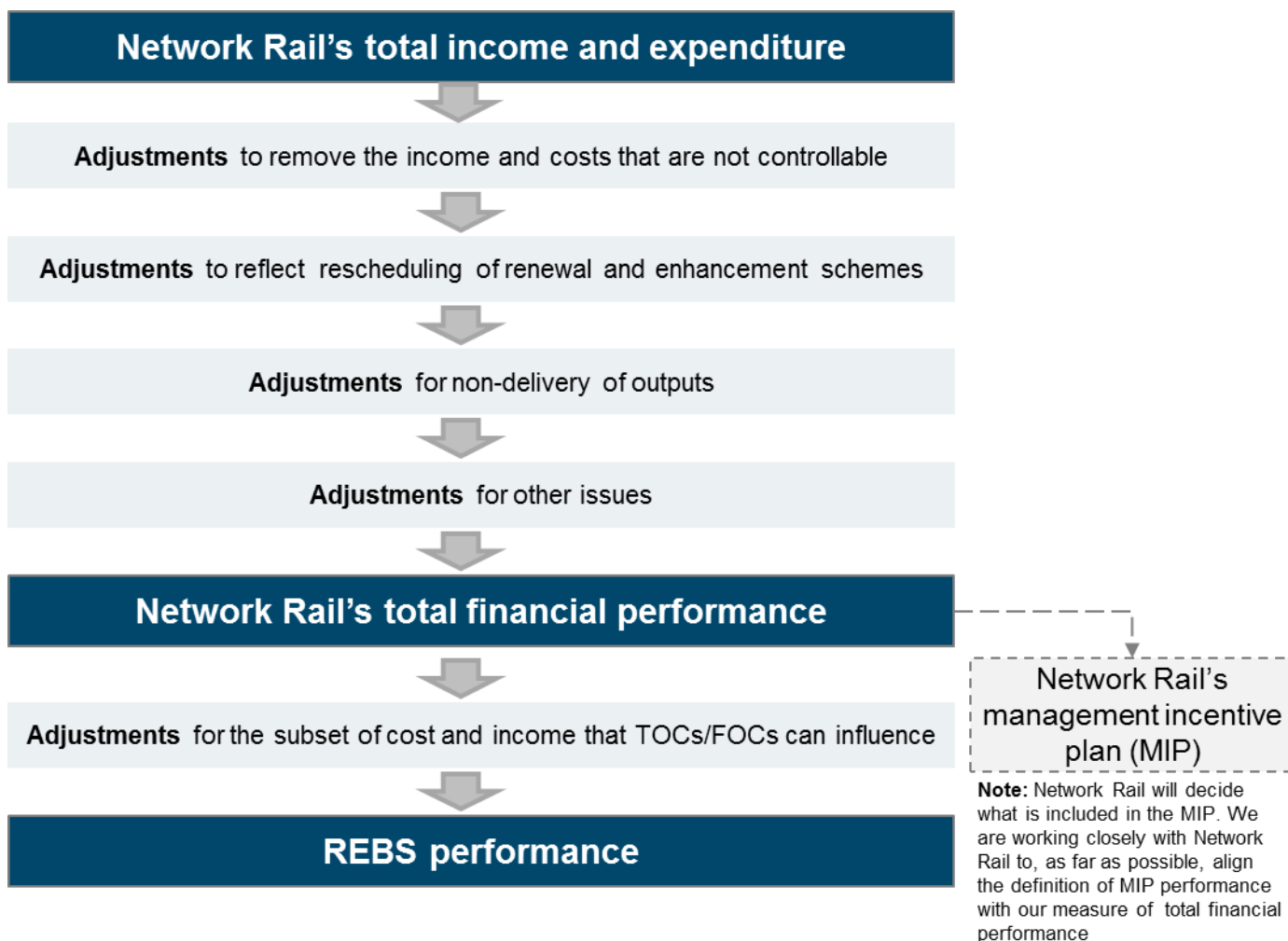
- (a) first, all income and expenditure that is not controllable by Network Rail is excluded;
- (b) second, the variances between Network Rail's actual income and expenditure compared to our determination (i.e. the baseline) will be calculated on a line-by-line basis. These variances may need to be adjusted for the mechanisms outlined in the financial framework chapter (chapter 12) on civils, early GRIP enhancements, projects with specific protocols/arrangements and spend to save schemes. Any adjustments will be transparent;
- (c) third, the reasons for the variances between actual income and expenditure and the determination will be identified. In particular, variances caused by deferring or accelerating capital expenditure compared to the profile assumed in our determination will be separately identified from any financial outperformance or underperformance;
- (d) fourth, financial performance will be adjusted for the non-delivery of outputs. This will also involve assessing the extent to which Network Rail has met its required outputs and maintain the long-term asset condition and serviceability of the network in accordance with its licence and our determination. Whilst it is not practicable to prescribe our approach for every possible circumstance, the basis of these adjustments will be set out, as far as possible, in our CP5 RAGs;
- (e) fifth, financial performance may be adjusted for other issues such as claimed financial outperformance that has not been supported by appropriate systems and processes; and
- (f) sixth, we will decide how Network Rail's financial performance should be reflected in the calculation of any payments under the REBS mechanism.

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<sup>556</sup> The concept of total financial performance is similar to Financial Value Added (FVA) which Network Rail developed in CP4 as a measure of financial performance against its 2009 delivery plan for CP4.



**Figure 23.1: Process for calculating financial performance**



### The treatment of financing costs and input price changes

23.58 Changes to Network Rail's financing costs and input prices can have a significant effect on Network Rail's total financial performance. As we consider these to be controllable by Network Rail, we have decided that they should be included in our measure of total financial performance.

23.59 Including financing costs and input prices in the measure incentivises Network Rail to manage these issues efficiently. It is also consistent with our approach to risk and uncertainty. However, this approach may appear to reward Network Rail for factors that may, to some extent, be outside of its control. For example, Network Rail's financing costs are sensitive to changes in market interest rates.

23.60 To better inform stakeholders about Network Rail's total financial performance, in addition to comparing Network Rail's financing costs to our PR13 determination, Network Rail's actual interest rates will be compared to market rates. An analysis will also be undertaken on the effect of market factors on input prices. We will work with Network Rail to identify the best way to undertake and present the analysis for financing costs and input prices.

## The treatment of renewals

- 23.61 We have considered what aspects of renewals could be included in the CP5 financial performance measure. The main options that we considered were:
- (a) include all renewals. This would provide Network Rail with the strongest incentive to deliver renewals efficiently;
  - (b) include only some aspects of renewals. This would allow us to exclude cost savings which are contentious and difficult to evaluate, for example volume savings which are more likely to impact on the long-term asset condition and serviceability of the network; and
  - (c) exclude all renewals. This would reflect our serious concerns about the quality of Network Rail's reporting of renewals savings in CP4, but would not incentivise Network Rail to deliver renewals efficiency.
- 23.62 Given the importance that we have placed on Network Rail becoming more efficient in CP5, we have decided to recognise all aspects of renewals in the scope of the financial performance measure. However, this decision is subject to us being confident that Network Rail has appropriate reporting systems and processes in place that will identify financial outperformance/underperformance. This is explained further below.

## Ensuring consistency with the RAB roll forward policy

- 23.63 Our approach for measuring financial performance for capital expenditure is inconsistent with our RAB roll forward policy in CP4. For example, if Network Rail outperforms its renewals expenditure target by £100, we recognise the full £100 saving when calculating financial performance. However, our RAB roll forward policy in CP4 allows Network Rail to keep only £25 of the saving as the risk of outperformance/underperformance is shared between Network Rail and its customers and funders.
- 23.64 We have retained the 25% incentive rate for renewals and enhancements in our approach to the RAB roll forward for CP5. This means that there will be a difference between the amount of money that Network Rail outperforms/underperforms by and how much of that money it retains/bears. When measuring financial performance we therefore need to consider whether we include the efficient underspend fully as outperformance, i.e. in the above example do we include the £100 or the £25?
- 23.65 The approach we used for CP4 reflected our objective of making the EBSM as straightforward as possible. However, this is not consistent with the reward Network Rail receives through the RAB roll forward policy. For example in the EBSM, for the £100 of outperformance, because of the RAB roll-forward policy, Network Rail would keep £25. However, Network Rail would have to pay TOCs/FOCs £25, which would mean that it would keep £0 for a renewals saving that it has delivered.

- 23.66 REBS is a more commercial approach than EBSM and we need to ensure that the incentive on Network Rail is appropriate in CP5. We have therefore decided that our definition of financial performance should be consistent with our policy for rolling forward the RAB, in particular the treatment of logging up or down underspend/overspend on renewals and enhancements expenditure. Therefore, using the above example, Network Rail would keep £18.75 (75% of the £25) for the outperformance.
- 23.67 The advantage of this approach is that it aligns Network Rail's financial reward/penalty for renewals and enhancements expenditure (through the RAB roll forward mechanism) with the basis for calculating REBS payments. This should improve the incentive on Network Rail to make REBS work. It also de-risks the renewals part of REBS for the TOCs.
- 23.68 The disadvantage of this approach is that as REBS payments will not be based on the cash saving it may make it more difficult to understand. One of the issues that we discussed at an industry workshop in July 2013 was whether in setting the REBS baselines this approach could overcomplicate REBS. Generally, our preferred approach was well received at the workshop and as long as the calculation is transparent, it was not thought that it would overcomplicate REBS.

### **Non-delivery of regulatory outputs**

- 23.69 We have adjusted Network Rail's financial performance in CP4 to take account of Network Rail's non-delivery of required regulatory outputs, e.g. for PPM. For CP5 we have identified two main options for how to handle Network Rail not delivering its regulatory outputs:
- (a) hurdle approach: Network Rail would be unable to report financial outperformance if it has not met all (or materially all) regulatory outputs; and
  - (b) adjustment approach: Network Rail's financial performance would be adjusted to reflect the impact of not delivering regulatory outputs.
- 23.70 The hurdle approach would send a clear message about the importance of Network Rail delivering its regulatory outputs. However, this approach could incentivise Network Rail to invest in uneconomical initiatives to achieve these outputs. Network Rail does not think that the hurdle approach is appropriate because it does not recognise the company's need to balance its various different requirements.
- 23.71 The adjustment approach would incentivise Network Rail to make better decisions about the trade-offs between delivering its required outputs and providing value for money to customers and funders. This is the approach that we used in CP4.
- 23.72 Given the perverse incentives that could exist with the hurdle approach we have decided to continue to use the adjustment approach in CP5. The way that we will determine the adjustments is discussed below.

## **Treatment of material one-off changes to Network Rail's income and costs**

23.73 Material one-off changes to Network Rail's income and costs can distort Network Rail's reported financial performance. Material one-offs could include:

- (a) one-off changes in costs, e.g. changes in tax law, such as an increase in national insurance contributions; and
- (b) a decision by Network Rail to buy an asset rather than to lease it.

23.74 To ensure consistency, we have decided that our assessment of Network Rail's financial performance should be consistent with our PR13 financial framework, in particular our approach to risk and uncertainty. That is, if we consider that a cost is controllable, all changes in that cost should be included in financial performance. This would include material one-off changes. However, for potential windfall gains on issues like VAT rebates, where Network Rail is saying that the issue is so uncertain that it cannot provide a reasonable estimate of the potential gain, we will assess these case by case at the time.

23.75 The issue of how to treat a buy/lease decision is similar to the issues involved with spend to save schemes, i.e. we do not want to incentivise Network Rail to take inefficient decisions. Therefore, both our RAB roll forward policy and our approach for financial performance reporting will hold Network Rail neutral to such changes to avoid creating perverse incentives.

## **Presentation of financial performance**

23.76 Our current view on how total financial performance could be presented in CP5 is shown in Figure 23.2.

23.77 We consider that reporting on a single total performance measure in monetary terms (i.e. £m) would be clearer than reporting efficiency savings in percentage terms as the materiality of a percentage saving is not clear. However, we recognise that it is useful to have a time series of efficiency data available, so we will continue to publish information in our supporting documentation showing the percentage improvement in the efficiency of support, operations, maintenance and renewals expenditure.

23.78 We are considering the most appropriate way of reporting the financial effect of the non-delivery of outputs and we will conclude on this in our RAGs.

23.79 Network Rail's financial performance will need to be reported separately for each operating route to support the calculation of REBS payments. Although this will increase the reporting requirement on Network Rail, it will also increase transparency about Network Rail's financial performance at a route level.

**Figure 23.2: Possible presentation of CP5 financial performance statement**

	Actual	PR13 determination	PR13 variance	Adjustments for phasing of capital expenditure	Adjustments for outputs not delivered	Other adjustments	Financial performance	Percentage performance
	(A)	(B)	(C)=(B-A)	(D)	(E)	(F)	(G)=(C-D-E-F)	(G)/(B)
<b>Income</b>								
Variable charges								
Other single till income								
<b>Expenditure</b>								
Operations								
Support costs								
Other								
Maintenance								
Renewals								
Enhancements								
Schedule 4&8								
Financing costs								
Corporation tax								
<b>Total</b>								

Notes to Figure 23.2: This excludes income and expenditure deemed not controllable. 'Other' includes: traction electricity costs less amounts that are not transmission losses and Network Rail's own electricity costs; British Transport Police; RSSB; and Reporter's fees.

23.81 Further details on how Network Rail reports total financial performance and how we plan to present our assessment of Network Rail's financial performance will be set out in our RAGs which we will publish before the start of CP5.

## **Joint ORR / Network Rail work programme**

23.82 We have agreed with Network Rail that further work is required to specify our requirements for the accuracy of Network Rail's reporting systems and how performance should be adjusted where outputs are not delivered. We expect to conclude on these matters by the end of January 2014 and we will document our conclusions in our RAGs and in a plain English user guide which, will be published prior to the start of CP5.

## **Reporting systems and processes**

### ***Background and summary of our draft determination***

23.83 As a result of our concerns about the robustness of Network Rail's reporting of efficiency improvements in CP4, in our draft determination we set out that before we would allow an aspect of Network Rail's activities to be included in our definition of total financial performance in CP5, Network Rail would be required to:

- (a) successfully implement a package of improvements on asset management. This would include capability, asset policies, asset register, data quality, condition reporting and unit cost information;
- (b) justify an efficiency by positive management actions and be able to explain how its new approach is consistent with the delivery of its required outputs and its health and safety obligations, is sustainable in the short, medium and long-term and is consistent with whole-life cost minimisation; and
- (c) achieve a minimum confidence grade on its reporting of those costs.

### ***Responses to our draft determination***

23.84 Network Rail was concerned that these requirements could cause a significant regulatory burden, particularly as Network Rail did not think this information or this level of robustness was necessary for its own internal purposes. Network Rail was also concerned that confidence gradings used by independent reporters are subjective and it often does not agree with the assessments of independent reporters.

23.85 Network Rail considers that there should be a presumption that savings represent efficiency improvements unless the savings have been achieved in a way which is demonstrably unsustainable or at the expense of other requirements. Network Rail also noted that using the approach we set out in our draft determination will incentivise it to pursue the schemes for which it can most easily demonstrate efficiencies rather than the schemes which may result in the largest savings.

### ***Our comments on the responses to our draft determination***

- 23.86 We do not agree that a high-level approach to assessing Network Rail's performance is appropriate in CP5 as we consider that the burden of proof should be on Network Rail to robustly explain its financial performance, including that this is sustainable.
- 23.87 We recognise that there are different ways in which Network Rail can demonstrate that its reporting systems and processes are robust and that the key issue is how Network Rail can provide confidence in its reporting. As part of the joint programme of work we have agreed to work with Network Rail to clarify this.

### **Adjustments for non-delivery of regulatory outputs**

#### ***Background and summary of our draft determination***

- 23.88 As part of the assessment of financial performance in CP5, financial performance will need to be adjusted if outputs are not delivered. Given the lack of a clear causal link between inputs and outputs, judgement needs to be applied to the effect of non-delivery of outputs on financial performance. We recognise that there are many different ways that the adjustments could be valued. In CP4 we have taken a simple cost-avoided approach to be consistent with Network Rail's calculation of financial outperformance. Network Rail is proposing a valuation approach in CP5.

#### ***Responses to our draft determination***

- 23.89 Network Rail proposed that before making any adjustment, there should be an assessment to consider whether the variance is within a reasonable threshold to recognise natural variations in planning and actual performance. It noted that this is particularly important where there is no upside as a result of outperformance.
- 23.90 Network Rail proposed an approach for calculating any adjustments based on an assessment of the impact on stakeholders of Network Rail having not delivered an output, i.e. an approach that reflects the value that has been lost to society. Network Rail's proposed approach for adjusting financial performance is summarised below:
- (a) train performance – societal value of delay based on Schedule 8 benchmarks. A methodology could be developed that takes into account the relationship between PPM and delay that is reflected in the CP5 Schedule 8 benchmarks. The original societal rates varied for regional, London and South East and long distance services and it should be straightforward to mirror this approach. It would also need to take into account the impact of both TOCS and Network Rail on PPM. The approach would be equivalent to the volume incentive based on a predetermined adjustment to the RAB (or opex memorandum account);
  - (b) network availability – societal value of delay based on Schedule 4 benchmarks;
  - (c) enhancements – based on impact of delay on specific stakeholders;
  - (d) enabling measures – as these are not outputs there is no obvious means of calculating the lost value or impact on cost. It is therefore likely that any



adjustment would reflect some form of penalty, which could potentially be predetermined (subject to adjustments to reflect reasonable changes in Network Rail's improvement plans); and

- (e) sustainable management – adjustment should reflect the impact of today's management of the infrastructure on future costs compared to current expectations.

23.91 Other respondents noted that a valuation approach seemed appropriate as long as this was transparent and resulted in positive and meaningful incentives for Network Rail. They also noted that it will be important to have clear guidelines about how we would adjust for non-delivery of outputs.

### ***Our comments on the responses to our draft determination***

23.92 We will consider Network Rail's comments on thresholds for variances in the round with our assessment on adjustments for non-delivery of outputs in the RAGs.

23.93 As noted above, we recognise there are numerous ways to value output adjustments and that this will necessarily require the use of judgement. For example, we and Network Rail recognise it is difficult to calculate the financial consequences of unsustainable asset management as the effect of today's decisions will not be known with certainty for a long time.

23.94 The key issue is to ensure that any adjustments to financial performance for non-delivery of outputs are made in a way that is consistent with how other variances between actual income and expenditure and our PR13 baselines are assessed.

### **Next steps**

23.95 We have recently set up a joint work programme with Network Rail to examine the 'reporting systems and processes' and 'adjustments for non-delivery of regulatory outputs' issues. We intend to conclude on these matters in our RAGs, which will be published before the start of CP5.

## **Reporting**

23.96 In CP5, we will continue to publish overall assessments of Network Rail's delivery of outputs and its financial performance at least annually. This will include our Network Rail Monitor and our advice to Network Rail's remuneration committee. We will also publish an annual report about health and safety across the industry, including Network Rail.

23.97 By providing objective, clear and reliable information we will help Network Rail's customers, members and other stakeholders to better understand its performance, help to drive improvements and hold it to account.

23.98 As in CP4 we will continue to publish summaries of any audit reports we commission on aspects of Network Rail's delivery (or the full document where possible). But we

will also publish more information about Network Rail's performance at the individual route level.

## **Whole industry scorecard**

- 23.99 In our outputs consultation we proposed to establish a whole industry scorecard for CP5. This would allow us to report Network Rail's progress in the context of progress against the outcomes we want to achieve and wider industry trends. This idea had widespread support.
- 23.100 In our draft determination we confirmed our intention and proposed a structure, saying that we intended to publish the scorecard annually. It would work best at a national or 'funder' level.
- 23.101 In response, one freight operator said that the scorecard should include commentary to explain the factors driving trends in different freight sectors. There was also a comment that the scorecard might be developed to add further value within the industry and help decision-making.
- 23.102 We recognise that the scorecard, as proposed, will be of most immediate value to us in our monitoring of Network Rail. We also recognise that the scorecard would need some explanatory text to help interpret trends. Our proposal covered the freight market overall – we did not propose to report on individual freight sectors. However, if others wish to help develop the scorecard further to be useful to a wider audience, we are happy to discuss this.

## **Our decision**

- 23.103 In view of the clear overall support for a whole industry scorecard we will, as proposed, establish a template for CP5 using either the same structure we suggested in Table 23.1 below or one similar to it.

**Table 23.1: Whole industry scorecard: Great Britain, England & Wales and Scotland**

Output framework					
Outcomes	Passenger satisfaction	Freight market share	Support for the economy	Connectivity	Direct greenhouse gas emissions - traction energy
Measure	% <sup>557</sup>	%	No single measure - but read-across from 'Industry finances' and 'Connectivity'	Number of services timetabled <sup>558</sup>	grams CO <sub>2</sub> : per passenger km and per net freight tonne
Current frequency of availability	6-monthly	annual	-	-	annual
Volumes	Passenger journeys	Passenger km	Freight tonnes lifted by market	Freight net tonne moved by market	
Measure	number <sup>559</sup>	km	tonnes	tonne km	
Current frequency of availability	quarterly	quarterly	quarterly	quarterly	
Supply	Passenger train km	Passenger vehicle km	Freight train km	Freight vehicle km	
Measure	km	km	km	km	
Current frequency of availability	4-weekly	annual	annual	annual <sup>560</sup>	
Industry finances	Ticket revenue	Freight revenue	Other revenue	Costs	Subsidy
Measure	£ million	£ million	£ million	£ million	£ million
Current frequency of availability	quarterly	quarterly	annual	Annual	annual

<sup>557</sup> Potential sub-measure for scores at major stations.

<sup>558</sup> Potential joint measure for journey time indicator.

<sup>559</sup> Potential sub-measures for 'Passenger Assist' bookings and/or Disabled Persons Railcard as accessibility indicators.

<sup>560</sup> Data available but not currently provided to ORR on a regular basis.

- 23.104 We already receive most of the data needed for a scorecard. We agree with views that the scorecard should not add any regulatory or administrative burden and where further data is needed beyond what we already collect, we will only use data that is already collected elsewhere. For 'passenger vehicle km' and 'freight vehicle km', this will require Network Rail to extract and report data it holds in its billing system.
- 23.105 ATOC has confirmed that it can provide us with data for Passenger Assist booking requests and/or sales of the Disabled Persons Railcard to help show how accessible the railway network is becoming.
- 23.106 We intend to publish the scorecard annually (reflecting the annual availability of much of the data), probably in our Network Rail Monitor given its purpose is to put Network Rail's performance in a wider industry context.

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## 24. Review of wider impacts

### Key messages in this chapter

- In reaching our decisions, we have had regard to the impact of our determination on those groups that will be affected by it.
- The impacts are caused by the effects of our decisions on outputs such as train service reliability and enhancement projects. But the impacts also come about through our decisions on financial incentive mechanisms, which often affect the whole industry.
- Overall, our determination will deliver significant benefits for passengers, freight customers, passenger and freight operators, taxpayers and funders. These benefits come mainly through the improvements to the network to be delivered by Network Rail and the reduction in its revenue requirement.
- In 2014, we will be commissioning an independent review of the process for PR13 to identify what worked well and what could be improved for the next periodic review.

### Introduction

- 24.1 Elsewhere in this document we have set out our assessment of the impact of our determination on Network Rail and on rail safety. We have also discussed the impact on the UK and Scottish governments in terms of the delivery of HLOS requirements for the money available.
- 24.2 This chapter sets out our assessment of the wider impact of our determination on:
- (a) passengers;
  - (b) passenger train operators;
  - (c) freight customers;
  - (d) freight train operators;
  - (e) geographic areas in Great Britain;
  - (f) the railway supply chain; and
  - (g) local, regional and devolved funders of the railway.
- 24.3 We have had regard to the relevant wider impacts in reaching our decisions on the overall package.
- 24.4 Under the Equality Act 2010, ORR is required, when exercising its functions, to have due regard to the need to:

- (a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under that Act;
- (b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it (relevant protected characteristics are – age; disability; gender reassignment; pregnancy and maternity; race; religion or belief; sex; sexual orientation); and
- (c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

24.5 We have concluded that the relevant impacts and potential impacts of this review relevant to this duty principally concern the effect on passengers. Our assessment of these is set out below.

## Overview of impacts

### Passengers

- 24.6 As part of the review we have undertaken a considerable amount of work to understand what matters to passengers. This has included in-depth discussions with Passenger Focus and London TravelWatch about Network Rail's SBP. We have also drawn on our wider work beyond the specific scope of the review, for example, our work looking at passengers' experience of buying tickets, working with train operating companies to understand how they handle complaints and deal with passengers more generally, and working with our consumer expert panel.
- 24.7 We have taken into account the work that Passenger Focus has done to understand passenger views, most notably in the National Passenger Survey but also through more focused research. We have had regard to the priorities that Passenger Focus's research has indicated that passengers value the most in those areas which we are able to influence through our periodic review. These are value for money, punctuality, reliability and there being sufficient train services at the time passengers want to use them<sup>561</sup>). Our determination takes account of these passenger priorities as follows:
- (a) providing extra capacity to accommodate growth and provide new and improved journey opportunities. Major projects such as the Great Western upgrade, Crossrail, Thameslink, the Edinburgh-Glasgow improvement programme and Northern Hub will be key to this, alongside a large number of smaller scale capacity enhancements;
  - (b) the criteria for governance of the ring-fenced investment funds which will explicitly include securing passenger benefits. This builds and improves on the

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<sup>561</sup> *Passengers' priorities for improvements in rail services*, Passenger Focus, available at [http://www.passengerfocus.org.uk/media/f0f44dda1a6af4f3c8940c7623b57102d9783155/rail\\_priorities\\_for\\_improvement.pdf](http://www.passengerfocus.org.uk/media/f0f44dda1a6af4f3c8940c7623b57102d9783155/rail_priorities_for_improvement.pdf).

arrangements in place for CP4 and should provide greater focus on the needs of passengers, with their representatives having a greater say in the selection of projects to be funded. We will also be monitoring the benefits delivered to passengers through the ring-fenced funds to ensure that these are used properly;

- (c) for those enhancement schemes that are at an early stage of development (see chapter 9), the process for confirming the detailed scope of each project will include specific provision for train operator input on behalf of passengers;
- (d) improving levels of train service reliability despite the major programme of renewal and enhancement, and requiring improvement on the current worst performing services. This will see all but two of the franchised train operators in England & Wales achieving a minimum of 90% of trains on time (as measured by PPM) by 2019. Two long distance operators, Virgin Trains and East Coast, will have a different arrangement, with a dual PPM and CaSL target<sup>562</sup> for 2019. This reflects that customers on these services typically value the assurance that their journey will not be significantly delayed or cancelled more highly than the assurance that there will not be minor delays. First Great Western's 90% PPM minimum includes both its long distance and commuter services, but we are also setting a separate 88% PPM minimum for its long distance services;
- (e) a reduction in levels of train service disruption due to engineering works despite the scale of the investment programme. We recognise that this is a particular concern of passengers through Passenger Focus's research;
- (f) ring-fenced funds providing for continued investment in station enhancements. This includes around £100m (2011-12 prices) specifically earmarked for further improvement in accessibility for disabled passengers and others with reduced mobility in England & Wales, and part of the £30m (2011-12 prices) Scottish Stations Fund for this purpose in Scotland. We have retained the Station Stewardship Measure relating to the overall condition of stations as an output requirement for Network Rail to deliver;
- (g) the passenger journey time fund, which will improve journey times on routes in England & Wales;
- (h) specifically for the East Coast Main Line there will be ring-fenced funding to reduce journey times and increase capacity;
- (i) the funding for Network Rail's operating strategy should facilitate improvements to passenger information during disruption;

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<sup>562</sup> CaSL (Cancellations and Significant Lateness) measures passenger trains which are either cancelled (including those cancelled en route), miss one or more scheduled stops, or arrive at their scheduled destination more than 30 minutes late. Virgin Trains will have an end CP5 minimum of 88% PPM and 2.9% CaSL, and East Coast 88% PPM and 4.2% CaSL.



- (j) improvements to the volume incentive, under which Network Rail benefits financially from increased rail usage, will give the company a stronger incentive to work with train operators to improve service levels for passengers; and
- (k) the overall package, including in particular the approach on asset management, will improve the reliability and quality of the railway over the longer term, including its resilience in the face of climate change.

- 24.8 In considering the implications of this review for our equality duty, we have taken the view that all passengers will benefit from many of the improvements. However there will be specific benefits in respect of the protected characteristics of age, disability and pregnancy and maternity. These will arise particularly from improved accessibility at stations from the specific ring-fenced funds required by the HLOS and also the schemes which will facilitate introduction of new more accessible rolling stock.
- 24.9 The increase in payment rates in the Schedule 4 and 8 possessions and performance regimes will strengthen the financial incentives on Network Rail to plan and deliver engineering work efficiently and more quickly and to improve performance. This will benefit passengers through a reduction in planned and unplanned service disruption. This is because Network Rail will have to pay more compensation for each possession it arranges, or minute of lateness it causes. There will also be a reduction in the compensation that train operators receive through Schedule 4 for the cost of operating replacement bus services. This will reduce the risk that train operators agree to possessions which involve the use of replacement buses without having fully explored whether alternative timetable solutions are available which cause less disruption to passengers.
- 24.10 We will be publishing more information of interest to passengers on the quality of their train services, through an extended range of published indicators, including for example, the impact of engineering works on passengers. This will better enable passengers and their representatives to understand what is being delivered and seek improvement.
- 24.11 Through including the National Passenger Survey measures of overall satisfaction as an indicator in our output framework, we will monitor the impact of our determination on passengers. More specifically we are reviewing how to measure the benefits to passengers (including those with protected characteristics) that are delivered through improvement projects.
- 24.12 In terms of what this means for passenger fares, we do not regulate these. Network Rail's revenue requirement is funded through access charges paid by train operators and network grant paid direct by the governments. It is for the franchising authorities to decide the balance between fares and taxpayer subsidy and to regulate fares for franchised train operators (open access passenger operators set their own fare structure).

24.13 However, Network Rail's revenue requirement is reducing compared to PR08 which means that access charges and network grant will be lower. In terms of the like-for-like costs of operating, maintaining and renewing the existing network (including support costs), there will be a reduction of around £2bn compared to PR08.

## Passenger train operators

24.14 Through our determination, franchised and open access passenger train operators will benefit from the improvements that their customers will receive, as outlined above. In addition, they will benefit from:

- (a) the improved approach to joint performance planning (where Network Rail works with train operators), which should better reflect the needs of train operators in terms of local opportunities and constraints;
- (b) the incentives to work together with Network Rail to improve the efficiency and delivery of the railway (such as through our REBS mechanism discussed in chapter 19) and where appropriate to develop alliances to drive out efficiencies that Network Rail, acting alone, may not achieve. For franchised operators, this is particularly important because their franchise agreements (regulated by their franchising authority) currently limit the extent to which they are exposed to changes in charges made at a periodic review. This blunts the incentive effect of the changes we make, limiting cost-reflectivity and the inducement on train operators to work with Network Rail to reduce its costs. However, the new REBS mechanism we are introducing will provide an incentive for those franchised train operators that participate in REBS to work with Network Rail to identify sustainable efficiencies that can be made in the running of the network. TOCs will then be able to share in the financial benefits arising from this;
- (c) the incentives to work together with Network Rail to improve specification and effectiveness of the enhancement programme through the enhancements efficiency benefit sharing mechanism set out in chapter 9; and
- (d) the improvements to the volume incentive that will encourage Network Rail to take a more commercial approach to managing network capacity. This should enable more services to be operated on the network and for train operators to increase their revenue.

## Access charges

24.15 Average total franchised passenger variable charges will increase by 36% from CP4 to CP5 in real terms, as a consequence of the substantial increase in the capacity charge. (In our draft determination, the equivalent figure was 1% as we were consulting on retaining the CP4 capacity charge rates.) However, franchised operators are currently protected from the changes we make to charges at periodic reviews. In most cases this is through schedule 9 of franchising agreements, which holds train operators neutral through ex-ante changes to subsidy or premia made at

the beginning of the control period. Hence, there will not be a significant impact on existing franchised operators arising from this increase.

24.16 For open access, due to the measures we are taking to mitigate the impacts of increases in the capacity charge, the average variable charges will stay approximately constant from CP4 to CP5 in real terms.

24.17 See chapter 16 for more detail on the changes to charges being made through PR13.

#### **Schedules 4 and 8 possessions and performance regimes**

24.18 The increase in traffic on the network and revenue, and updated evidence on the sensitivity of passenger demand to disruption, mean that the financial impact of possessions and lateness on passenger operators has increased. This is reflected in the CP5 Schedule 4 and 8 payment rates. This means that train operators will be better protected against the risks around Network Rail's performance and possession management.

24.19 Conversely, passenger operators will face greater Schedule 8 risk around the impact of their own performance on other train operators. This will have more of an impact on those passenger operators whose services have a greater interaction with those of other operators. Ultimately, this is a risk that train operators can control, and one in which they should be exposed to. Overall, we expect the benefit to train operators of the additional protection from the increase in Schedule 4 and 8 payment rates to outweigh this risk.

24.20 Our update of Schedule 8 benchmarks will affect passenger operators. For example, if, for a particular service group, the Network Rail benchmark decreases in terms of average minutes of lateness, the train operator will be better off as it will receive compensation in respect of a better level of Network Rail performance than it would have done previously.

24.21 Franchised passenger train operators will also be required to pay Network Rail a different amount of Schedule 4 access charge supplement (ACS) than in CP4. On average, the ACS will be higher, but it will vary across train operators. The increase is primarily as a result of the increase in Schedule 8 Network Rail payment rates.

24.22 Franchised train operators are typically held neutral by franchising authorities to the changes we make during a periodic review to the Schedule 4 payment rates and ACS, and the Schedule 8 benchmarks and payment rates. The payments that flow between the franchising authority and train operators at this stage depend in part on the bid assumptions made by train operators in relation to performance and possessions.

24.23 Train operators are in general exposed to the marginal incentives of Schedules 4 and 8 during each year. So if, under Schedule 8, Network Rail outperforms its benchmark, the bonus the train operator pays Network Rail will be based on the CP5 Schedule 8 Network Rail payment rate.

- 24.24 Changes to Schedule 8 for open access passenger operators are the same in structure as for franchised passenger operators but since they are not franchised they are not held neutral by franchising authorities to changes we make during a periodic review. Open access passenger operators will benefit from increased Schedule 4 payment rates when there are very long possessions or sustained disruption, without there being an equivalent change in the Schedule 4 access charge supplement.
- 24.25 For charter passenger train operators we estimate that, overall, the package we will be introducing in relation to Schedule 8 and the capacity charge will result in them being, on average, slightly better off than they are currently.

## Freight customers

- 24.26 Our latest survey of potential and existing freight customers, which we published in September 2013<sup>563</sup>, indicates that the priorities for freight customers in the domestic market are price, followed by service quality (e.g. punctuality) and then access to the mainline network. Under our determination freight customers will benefit from:
- (a) continued enhancement of the railway's capability to carry freight, particularly through continued investment in the Strategic Freight Network. Freight customer representatives will be actively involved in planning this;
  - (b) freight train performance tracked through a new measure which is more transparent and better meets customer needs;
  - (c) reduced service disruption due to engineering works; and
  - (d) as above, the improved incentives we are putting on Network Rail to take a more commercial approach to capacity. This should enable more services to be operated on the network.
- 24.27 Chapter 16 sets out more fully the impact of our determination on access charges paid by freight operators. Overall, in real terms, average freight charges are set to increase by around 21% on current levels by 2018-19, equivalent to 4% a year on average. For commodities not affected by the freight specific charge (i.e. everything other than ESI coal, spent nuclear fuel and iron ore), the corresponding increases are, on average, 6% on current levels by 2018-19 and 1% a year over CP5.

## Freight train operators

- 24.28 Freight train operators will benefit from the improvements that their customers receive as discussed above. They will also benefit from:
- (a) the incentives to work together with Network Rail to improve the efficiency and delivery of the railway, through our REBS mechanism. As for passenger operators, this will provide for FOCs to benefit financially where they work with

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<sup>563</sup> Available at <http://www.rail-reg.gov.uk/server/show/nav.3022>.

Network Rail and deliver efficiencies that outperform our expenditure assumptions;

- (b) the incentives to work together with Network Rail to improve specification and effectiveness of the enhancement programme through the enhancements efficiency benefit sharing mechanism set out in chapter 9; and
- (c) the development of better measures of Network Rail's performance in planning and timetabling the network (its 'system operator' role) will help address a particular area of concern to freight operators such as how it plans engineering work and effective management of interfaces between different devolved routes and with adjoining networks.

### **Access charges**

24.29 The access charges paid by freight operators are discussed under freight customers above.

### **Schedules 4 and 8 possessions and performance regimes**

24.30 We have updated Network Rail's Schedule 8 benchmark as part of PR13. Schedule 8 is expected to be financially neutral during CP5 (i.e. net payments of zero), if Network Rail and freight operators perform in-line with our expectations. However, both the Network Rail benchmark and freight operator benchmark are less favourable to freight operators than the current ones. If we were to have continued with these, freight operators would have been expected to make money from Schedule 8 during CP5.

24.31 The Schedule 8 freight operator payment rate, which reflects the average impact of a minute of delay caused by a freight operator to another train operator, will increase for CP5. This is as a result of the increase in the passenger Schedule 8 Network Rail payment rate. While we expect net payments to be zero across freight operators as a whole, this rise increases the financial risk that freight operators face in relation to delays they cause to other trains.

24.32 We expect freight operators to benefit from the bonus payment rate being changed so that it is 100% of the compensation payment rate (as opposed to 50%). This will give them more certainty over the impact of improvements they make in their performance in respect of the Schedule 8 payments they make during CP5. It will also help ensure that Schedule 8 remains financially neutral if performance is at the expected level over each year as a whole.

24.33 Unlike franchised passenger operators, freight operators do not pay an access charge supplement to cover the expected cost of Schedule 4 compensation. There is also no Schedule 8 benchmark for cancellations. Instead freight operators receive compensation for cancellations caused by Network Rail or other train operators. Network Rail receives funding to cover the expected cost of both these elements of Schedules 4 and 8.

24.34 Schedule 4 payment rates will remain the same as in CP4 in real terms, so freight operators will be no better or worse off.

## Geographic impacts

24.35 The geographic impacts of our determination relate principally to the large programme of enhancement projects being funded through this determination. This will boost capacity and the capability of the network and bring substantial benefits to train operators, passengers, freight customers and the national economy. The decisions on these projects reflect the requirements of the governments' HLOSs. Further detail on these schemes is set out in chapter 9. However, those areas that will particularly benefit are set out below.

- (a) In the south east of England, Thameslink, Crossrail and East West Rail will provide new journey opportunities and better travelling experiences for passengers.
- (b) The north of England will benefit from the North West electrification programme and the Northern Hub, a substantial set of capacity and journey time improvements between Manchester, Sheffield, Preston, Leeds and Bradford.
- (c) A major programme of electrification, representing around 30% of enhancements expenditure, covers a significant portion of Great Britain, including Edinburgh – Glasgow, Manchester – Leeds – York, London – Bristol – Cardiff – Swansea, Welsh Valleys and London to Sheffield. These electrified routes will allow new or cascaded electric rolling stock to replace the current diesel trains. These will be quieter, pollute less and offer better acceleration and braking, reducing journey times on many routes.
- (d) Scotland will also benefit from the Borders Railway project which will connect Edinburgh through Midlothian to Tweedbank for the first time since 1969. There are also journey time improvement schemes that cover Aberdeen to Inverness and the Highland Main Line. As well as being electrified, the Edinburgh-Glasgow route will benefit from capacity improvements to allow longer trains and faster journey times.

24.36 There will also be improvements to safety, particularly through a reduction in the risk of accidents at level crossings through a £99m ring-fenced fund. Whilst not specifically for safety improvements, Scotland will also benefit from a £10m fund to provide for closing crossings. These funds will benefit those using level crossings and those using the railway. The level crossings this will apply to will be decided through the governance arrangements to be established for these funds.

24.37 The whole investment package will support economic growth and facilitate improved business, commuter and leisure journeys. It will also provide a greener transport option than road and aviation, and help relieve congestion on the road network.



## Suppliers

24.38 The key benefits for the railway supply chain of our determination concerns its ability to plan:

- (a) within CP5, where we have confirmed funding for Network Rail's renewal programme and a large part of the enhancement programme. To the extent that we have not been able to confirm this funding (for the full programme of structures renewals and for those parts of the enhancement programme still at an early stage of development), we have set timescales within which we expect the projects to be developed. We asked Network Rail to begin planning for its CP5 delivery plan earlier than was the case in CP4, and it will consult on this in December 2013, before publishing this by end of March 2014. This should reduce the risk of a discontinuity in orders early in CP5, as happened in CP4;
- (b) beyond CP5, more effective whole-life asset management should enable greater long-term certainty of renewal requirements. The funding allowed for longer term planning and project development should enable early development of plans beyond 2019;
- (c) we have authorised Network Rail to develop CP5 projects now in CP4, to ensure there are no undue delays in CP5;
- (d) our decisions on R&D should facilitate more effective working between suppliers and Network Rail in this important area; and
- (e) through Network Rail's move towards greater supply chain collaboration, suppliers will be more involved in the planning of enhancements, helping to drive greater value for money, particularly in those projects that have not yet been developed to GRIP 3 level.

24.39 We consider the package as a whole gives Network Rail strong incentives to work with its supply chain to improve longer term value for money on the railway.

24.40 The new programme management capability enabler (P3M3) that is being introduced for CP5 should lead to closer and more effective working with the supply chain.

## Taxpayers

24.41 Our determination will deliver significant benefits for taxpayers. It will:

- (a) facilitate sustainable economic growth and improved competitiveness through better connectivity for commuters, businesses, communities and the carriage of freight; and
- (b) provide better environmental outcomes from reduced emissions and carbon savings, particularly through electrification and from the improvements to the network facilitating the transfer of road to rail.



24.42 As discussed previously Network Rail's revenue requirement is falling compared to PR08, which, other things being equal, reduces pressure on the public purse.

24.43 Taxpayers will also benefit from the changes to Schedules 4 and 8 possessions and performance regimes that protect train operators against the risk around Network Rail's performance and possession management, which they cannot control. This should help keep down the risk premia factored into franchise bids, or negotiations over extensions, reducing the consequential costs to taxpayers.

### **Local, regional and devolved funders**

24.44 The main focus of our review as far as funders are concerned has been on the primary funders – the UK and Scottish governments. The determination does, however, have significant benefits for other funders such as the Welsh Government, passenger transport executives in the English city regions, Transport for London and local authorities. In particular they will benefit from the range of improvements to the network such as electrification of the Valley Lines in Wales, the Northern Hub, Crossrail and Thameslink.

24.45 We will build on the decentralisation of Network Rail to improve transparency of costs and subsidy at local level. This should provide better information for decision making, and facilitate greater local involvement in the specification and funding of services and of enhancements to the railway.

### **Monitoring of impacts**

24.46 We will monitor the impact of the determination on the above groups, including:

- (a) for passengers, through our monitoring of the indicators we are putting in place, through continuing engagement with Passenger Focus and London TravelWatch, and bespoke research;
- (b) for freight customers, by continuing to carry out regular freight customer satisfaction surveys and engaging with the freight sector to monitor the impact of our determination on freight users;
- (c) for train operators, through our continued focus on Network Rail's customer satisfaction surveys and the new measure of customer service maturity, and through continuing dialogue with train operators and owner groups;
- (d) for suppliers, through further engagement with industry representatives including the Railway Industry Association (RIA) and the Civil Engineering Contractors' Association (CECA). We will use supplier perception surveys (both these carried out by Network Rail and those carried out by organisations such as RIA) to monitor the impact of our determination on the supply chain. If satisfaction levels dropped, we would want to understand the reasons for this; and
- (e) for local, regional and devolved funders, through our dialogue with key stakeholders, including the Scottish and Welsh governments, the Local

Government Association, Transport for London, PTEs and PTEG. This will be particularly important in helping us to understand how well the process of the management and allocation of the ring-fenced funds has worked.

## **Independent review of PR13**

24.47 A number of respondents to the draft determination suggested that we carry out an independent review of the PR13 process to identify both what worked well and what could be improved for future periodic reviews. We carried out such a review after PR08 and it has always been our intention that there should be a similar review for PR13. We can confirm that we will be commissioning an independent review of PR13 in 2014, which will seek the views of stakeholders. This will be important in informing the process for PR18.

# Annex A: Respondents to the draft determination consultation

## List of respondents to the draft determination

A.1. We received over 70 responses to our draft determination; these are available on our website<sup>564</sup>. Table A.1 lists those who responded.

**Table A.1: Respondents to the draft determination**

Respondents	
Abellio Group	Fen Line Users Association
Arriva plc	First Capital Connect (FCC)
Associated Society of Locomotive Engineers and Firemen (ASLEF)	First/Keolis Transpennine (Transpennine Express)
Association of Train Operating Companies (ATOC)	FirstGroup
Ben Gummer MP	Freight on Rail
British Transport Police Authority (BTPA)	Freight Transport Association (FTA)
Centro	Freightliner Group
Charles Hendry MP	GB Railfreight
Chiltern Railways	Go-Ahead Group (Go-Ahead)
Coventry City Council	Greater Anglia
DB Schenker	Greater Manchester Chamber of Commerce
Delta Rail	Hertfordshire County Council
Derbyshire County Council	John Oliver
Department for Transport (DfT)	Kent County Council
Direct Rail Services (DRS)	Kier Minerals Ltd
East Coast	LANRAC
East Midlands Trains (EMT)	Merseyrail
East Sussex County Council	Merseytravel
East Sussex Rail Alliance	Metro
Edenbridge & District Rail Travellers' Association	National Union of Rail, Maritime and Transport Workers (RMT)
Essex County Council	Network Rail

<sup>564</sup> <http://www.rail-reg.gov.uk/pr13/consultations/draft-determination.php>

Respondents	
North London Strategic Alliance (NLSA)	Virgin Rail Group / West Coast Trains
Northern Rail	Wealden District Council
Nottingham City Council	Welsh Government
Passenger Focus	West Anglia Routes Group
Passenger Transport Executives Group (PTEG)	West Coast Rail 250 Campaign
Paul Goodenough	
Peter Hooper	
Public Transport Consortium (PTC)	
Rail Freight Group (RFG)	
Rail Freight Operators' Association (RFOA)	
Rail Industry Association (RIA)	
Railfuture	
Sandra Osborne MP	
ScottishPower	
Sevenoaks District Council	
South West Trains (SWT)	
South Yorkshire Integrated Transport Authority (SYITA)	
Stagecoach Group	
Steve Webb MP	
Suffolk County Council	
Sussex Community Rail Partnership (SCRP)	
Thames Valley Berkshire Local Enterprise Partnership	
The Civil Engineering Contractors Association (CECA)	
The Rt Hon Sir John Stanley MP	
Transform Scotland	
Transport for Greater Manchester (TfGM).	
Transport for London (TfL)	
Transport Salaried Staffs' Association (TSSA)	
Transport Scotland	
TravelWatch NorthWest	
Uckfield Railway Line Parishes Committee	

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# Annex B: Decision on a freight specific charge for biomass

## Introduction

- B.1. In chapter 16, we discuss the introduction of a freight specific charge as a mark-up on variable usage charges for certain commodities – coal for the electricity supply industry (ESI coal), iron ore and spent nuclear fuel. This would:
- (a) make charges more cost-reflective so that freight bears a higher proportion of the costs it imposes on the rail network and so that the sector can provide more challenge on the efficiency and costs of its operation;
  - (b) allocate government subsidy more efficiently by moving it from areas where it has little impact on behaviour; and
  - (c) further our strategic objective of a more dynamic and commercially sustainable industry.
- B.2. On 15 February 2013, we consulted on whether the freight specific charge should be applied to biomass on the same basis as that which we had concluded should apply to other commodities. Consistent with the treatment of other market segments, we also consulted on whether biomass should pay a freight-only line charge. We had previously (May 2012) said we would not levy a charge on biomass but would revisit the policy to coincide with the Department of Energy and Climate Change's (DECC's) recalculation of subsidy from 2017. We changed this stance in our January 2013 freight decision document because respondents to the May 2012 consultation had explained that investments made now would be subject to the existing subsidy regime, not a 2017 revision, and they wanted certainty about the charging regime to inform imminent investment decisions.
- B.3. This annex considers the responses to the February 2013 consultation and explains our decision on biomass.

## Background to the biomass sector

- B.4. The biomass market is currently small and there is greater uncertainty than there is for other commodities about its prospects and about the impact of increases in track access charges on demand for it.
- B.5. The UK has a legally binding target under the EU Renewable Energy Directive to increase the share of renewables in final energy consumption. To meet this target, certain types of power generator that use biomass are eligible for support under the

Renewables Obligation legislation and other arrangements in Scotland. They are also eligible for support under 'contracts for difference' (CfDs).

- B.6. Biomass generation is assisted by qualifying for Renewables Obligation Certificates (ROCs) that generators can sell to electricity retailers, who are obliged to buy them to cover a proportion of their sales. In July 2012, DECC published its proposals for banded support under the Renewables Obligation<sup>565</sup> and, in October 2012, a fact sheet on "Grandfathering and cost control for biomass co-firing and conversions"<sup>566</sup>. These clarified the likely level of support for biomass in England & Wales under ROCs.
- B.7. Biomass generation can instead be assisted through Feed-in Tariffs and, in the case of larger schemes, CfDs with the government that guarantee the generator a fixed price rather than the variable market electricity price. DECC announced draft strike prices for biomass conversion CfDs on 27 June.
- B.8. Large biomass electricity generation is normally in power stations built to be coal-fired. Electricity generation from coal is likely to be reduced considerably from present levels as in 2016 it will be restricted to the few stations that have installed emission reduction systems.
- B.9. Most existing dedicated biomass power stations have been developed on a small scale, and so are likely to purchase biomass from their local areas and make little use of the rail network. Rail transport is used for biomass that is a feedstock for coal-fired power stations through 'co-firing', whereby a small quantity of wood pellets or other forms of biomass is blended with coal in the combustion process. Some power generators have announced plans for increasing its use considerably through converting power stations entirely to biomass use. Drax, the UK's largest power station, has explained that it is converting three of its six generating units to burn biomass; the first in the second quarter of 2013 and the second a year thereafter. Eggborough plans to convert entirely by 2016.
- B.10. The potential for expansion of biomass demand from the ESI is considerable. A report for the Committee on Climate Change by Mott MacDonald in October 2011<sup>567</sup> estimated that a full conversion programme running at high load would require more fuel (80mt/year) than is estimated to be available, which could be about 45mt/year. For comparison, in 2010-11 1.5mt was burnt in co-firing plants and 2.9mt in dedicated

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<sup>565</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/42852/5936-renewables-obligation-consultation-the-government.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42852/5936-renewables-obligation-consultation-the-government.pdf).

<sup>566</sup> <http://webarchive.nationalarchives.gov.uk/20121217150421/http://www.decc.gov.uk/media/viewfile.aspx?filetype=4&filepath=11/meeting-energy-demand/renewable-energy/6598-fact-sheet-grandfathering-and-cost-control-for-bi.pdf&minwidth=true>.

<sup>567</sup> <http://archive.theccc.org.uk/aws2/Bioenergy/Mott%20MacDonald%20biomass%20conversion%20final%20for%20publication.pdf>.

biomass plants. Present ESI plans may mean that more than 20mt of biomass will be burnt each year in converted stations by mid-CP5, most of it carried by rail.

## Responses to the consultation

- B.11. Our consultation ended on 28 March 2013 and we received 27 replies. We have also held meetings with DECC, the Rail Freight Group (RFG), the three power companies planning to convert Drax, Eggborough and Rugeley to biomass and GB Railfreight. As well as responding to our consultation, Eggborough also published an open letter opposing the application of the charge.
- B.12. Most responses opposed the imposition of a freight specific charge on biomass. DECC, Drax, Centrica, Eggborough Power Station, GDF Suez (International Power), Lynmouth Power Station, Eon, Energy UK, RFG, the Freight Transport Association (FTA), Freightliner, DB Schenker, GB Railfreight, Direct Rail Services, Bristol Port Company, The UK Major Ports Group, Railfuture, Caithness Transport Forum, WH Davis and, to a lesser extent, Network Rail, Centrica and Unite were against it. The representations made included the following points.
- (a) The increase in costs the charge would produce would materially affect the viability of investment in biomass electricity power station conversions that are necessary to further government objectives in decarbonising, diversifying and securing the supply of electricity.
  - (b) Biomass electricity generation relies on government subsidy (either through Renewables Obligation Certificates or under Electricity Market Reform Contracts for Differences) and so, almost by definition, cannot bear an additional charge.
  - (c) The Renewables Obligation banding is already set and cannot be revised to accommodate this additional cost.
  - (d) If the CfD strike price is changed to accommodate it, it will place a burden on energy customers.
  - (e) Biomass conversion for generation is an emerging market that requires substantial capital investment. It relies on long-term contracts. This additional charge may have the effect of halting a number of biomass projects.
  - (f) The charge runs counter to government policy.
  - (g) Biomass is not directly comparable to coal. It requires both a subsidy and substantial investment to convert a power station to burn biomass.
  - (h) Biomass for large scale generation is a fledgling industry that requires substantial investment. It cannot use the existing coal infrastructure so the two fuels are operating in different markets.
  - (i) Independent generators have long-term Power Purchase Agreements which limit their ability to absorb cost changes. Increasing costs risks jeopardising



deployment of renewable electricity. Biomass generators are establishing long-term feedstock supply contracts.

- (j) Large scale biomass generators are captive to rail because road transport would involve more greenhouse gas emissions and loss of subsidy. Biomass would be disadvantaged by a charge per tonne km.

B.13. CoalPro, EDF and RWE supported the imposition of a freight specific charge on biomass, given ORR's previous decision to introduce the charge for coal and spent nuclear fuel. They argued that:

- (a) biomass competes directly with coal and to put a charge on only one would distort the market;
- (b) it is fair and reasonable for power stations to face the full cost of conversion; and
- (c) it is not up to ORR to subsidise particular forms of generation: EDF said, "Any subsidies for biomass should come from a single source (e.g. the Renewables Obligation or the planned Feed-in tariffs with Contracts for Difference), where they can be effectively monitored and reviewed by the Government as required."

B.14. Our method of calculating the charge, by analogy with coal, was said by some respondents not to be transparent. It was claimed that it might also be inaccurate because biomass has a lower calorific value than coal, is less dense and converts heat to electricity less efficiently: higher volumes will need to be transported and trains are likely to be longer and more frequent and may have a lower net to gross ratio: there may also be a different supply pattern. Network Rail said that, as the biomass market is in its infancy, setting any freight-specific charge for biomass on this basis could risk being prone to undue levels of uncertainty.

B.15. One stakeholder told us that, while it understood the need for the access charges it paid to be cost reflective, it was concerned that it had not been much involved in the process by which the cost estimates had been arrived at. The same stakeholder was also concerned that CFD strike prices, which in principle could have reflected the freight specific charge, had now been fixed by DECC until 2019, so that the new charge could not be passed on, with the potential to affect future investment decisions. It noted that a charge introduced in PR18 would not be subject to the same difficulty (as it would not come until 2019), and that this would also allow time for further discussions about the appropriate level of cost for recovery through the charge.

## Legal considerations

- B.16. We set out in detail the legal framework for a mark-up in our January 2013 conclusions document<sup>568</sup>. In particular, in paragraphs 4.29 and 4.30, we set out the test for a mark-up which we have applied in accordance with the Access & Management Regulations and our statutory duties.
- B.17. The mark-up must be efficient. An important aspect of this is the extent to which biomass rail transport competes with road. We consider that the charge is unlikely to divert significant biomass traffic to roads because we have been told that small biomass plants whose fuel is locally sourced are likely to use road anyway and larger plants need to use rail transport to keep emissions to sufficiently low levels to qualify for subsidy.
- B.18. It must also not exclude the use of the infrastructure by biomass: it has been put to us that much of the likely biomass rail traffic depends on a small number of future investment decisions that may be prevented by the imposition of a charge. This is discussed below as is the question of whether a reduction of traffic would be efficient.
- B.19. We have little data on the costs likely to be imposed on the infrastructure by biomass and our consultation assumed the charge on biomass would be levied at the same rate as for coal. Network Rail's consultants, LEK, have since done further work and produced estimates for biomass avoidable cost per gross tonne mile that are lower than those for coal. We are therefore in a position to set a charge transparently on the same basis as for other commodities, albeit perhaps with a higher degree of uncertainty.
- B.20. The treatment of biomass must be non-discriminatory: a decision whether to impose a charge would apply by market segment not by operator and, both in taking that decision and in setting a level, we would be applying the same principles and methods as in other market segments.

## Economic considerations

- B.21. The main argument put forward by respondents to the consultation who opposed the charge was that there would be a danger that schemes to convert coal-fired power stations to biomass would not go ahead if the charge was imposed. Each conversion scheme is a large investment that would represent a large part of the market and so, if this happened:
- (a) the sector would be excluded from using the infrastructure;
  - (b) freight traffic could decline as coal-fired stations closed and coal traffic was not replaced by the larger volumes of biomass needed to produce the same energy;

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<sup>568</sup> *Conclusions on the Average Variable Usage Charge and a Freight Specific Charge*, ORR, January 2013, available at <http://www.rail-reg.gov.uk/pr13/PDF/freight-conclusions-jan-2013.pdf>.

- (c) the government's targets for renewable energy would be harder to achieve, arguably damaging sustainable development;
  - (d) there may be greater threat to the security of supply of electricity if significant amounts of coal-fired production being closed are not replaced by biomass; and
  - (e) economic activity, including investment and job creation, would not take place.
- B.22. Key considerations in the decision are therefore whether applying the freight specific charge to biomass would create a significant risk that planned conversions would not take place either:
- (a) to the extent of excluding biomass from the infrastructure; or
  - (b) to the extent of resulting in a significant fall in biomass freight traffic.
- B.23. The impact of the charge on the cost of biomass generation is small. Our consultants NERA estimated that, assuming that biomass is transported on average 100 km by rail, an increase in access charges of £10 a thousand net tonne km, equivalent for coal to £8/kgtm – twice the rate proposed in our February 2013 consultation, would increase the variable cost of biomass generation by around 60p/MWh. The proposed charge would increase it by around 30p/MWh. If the journey were longer it might raise it by 50p/MWh.
- B.24. This compares with total costs for biomass conversion calculated by Mott MacDonald in their October 2011 report ranging from £80 to £110/MWh, depending mainly on the intensity of use of the station. An October 2011 Arup report<sup>569</sup>, commissioned by DECC and used in its calculations, has total prices of £106 in the low case, £115.6 in the medium case and £126.9 in the high case. DECC's own estimate in its July 2012 paper is £105/MWh.
- B.25. A similar comparison can be made on the delivered price of biomass. Mott MacDonald's assumptions imply a central estimate of £115/tonne. DECC's July 2012 paper has a fuel cost of £79/MWh, which is consistent with a price of around £110-120/tonne. If biomass travels 150km, a charge of £4/kgtm (roughly £5/kntkm) would cost 75p/tonne. A freight-only line charge of 70p/kgtm would add a further 13p taking the total to 88p, less than 1% of the delivered price. Eggborough's open letter put the impact at between 50p and £1.50 a tonne and their response to the consultation said our proposal would add about £1 to the cost of moving biomass. This is also less than 1% of the delivered price.
- B.26. However, under the CfD programme, biomass conversions are being financed through long-term fixed price contracts (for both outputs and inputs) that imply low profit margins on which the charge could have a material impact. Moreover, there are other changes to rail freight access charges. It is probably open to DECC to adjust the

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<sup>569</sup> <https://www.gov.uk/government/publications/review-of-the-generation-costs-and-deployment-potential-of-renewable-electricity-technologies-in-the-uk-study-report-by-arup>.

CfD strike price to allow for the impact of the charge but not to compensate generators who have already taken the Renewables Obligation route.

## Decision

- B.27. Biomass is an emerging market where there is considerable uncertainty. Those expert in the area have told us that there is a risk of a freight specific charge causing large projects to be halted. DECC has told us that increasing generators' costs puts deployment of renewable electricity at risk. Generators involved have said that the charge could fundamentally alter long-term investment plans and arrangements and that the investment in biomass conversion is "not a foregone conclusion".
- B.28. While the charge is only a small part of biomass generation cost we must give weight to these warnings from the generators and the relevant government department. Margins are said to be small and DECC is likely to have calculated its support to be just sufficient to make the investment come about. So, even if the impact is small, it may act as a deterrent.
- B.29. For the reasons set out above, we therefore consider that if we imposed the freight specific charge on biomass there would be a significant risk that it could result in exclusion of the use of the infrastructure by biomass. Even if there were not a risk of exclusion there would be a danger of a significant fall in biomass freight traffic and of disruption to the renewables programme which might result in an outcome that was less efficient or less conducive to sustainable development. We consider that for these reasons biomass is distinct from, and can therefore be treated differently to, the other three market segments upon which we are going to levy a mark-up.
- B.30. We have therefore decided not to apply the freight specific charge to biomass in CP5 but expect to review the position in PR18 when the market is more established and better understood. We propose to work further with the industry, and with customers for biomass haulage, in CP5 in order to understand better the costs they generate on the network and how this should be reflected in charges in CP6.

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# Annex C: Summary of other single till income

## Summary

- C.1. This annex includes a summary of total other single till income (OSTI) included in Network Rail's revenue requirement chapter (chapter 14), which can be broken down into the categories described below.
- C.2. Total non-charge income, which includes: property rental, property sales, Crossrail finance charge, Welsh Valleys finance charge, facility charges and other non-charge income. This income is included in the other single till income chapter (chapter 18).
- C.3. Non-regulated income, which includes: managed stations qualifying expenditure, franchised stations lease income, depot income and open access fixed contractual contributions. This income is included in the other single till income chapter (chapter 18).
- C.4. Total regulated charge income, which includes: freight charges, open access charges, managed stations income (long term charge) and franchised stations income (long term charge). This income is included in the access charges chapter (chapter 16).
- C.5. Our assumption of Network Rail's expected Schedule 4 payments to freight operators and Schedule 8 cancellation payments to freight operators are included as Schedule 4 and 8 costs in the possessions and performance regimes chapter (chapter 20). In its SBP, Network Rail included these amounts in other single till income (i.e. as costs that reduce income) and we have restated Network Rail's SBP for this issue in the other single till income chapter (chapter 18) but not in Network Rail's revenue requirement chapter (chapter 14) or the executive summary.
- C.6. Tables C.1 to C.3 summarise OSTI for each year of CP5 for both Network Rail's SBP and our final determination for Great Britain, England & Wales and Scotland. Table C.4 shows our adjustments to Network Rail's SBP to make it more comparable with our final determination.
- C.7. Table C.5 is a comparison of total OSTI over CP5 between our final determination and Network Rail's SBP for Great Britain, England & Wales and Scotland. Table C.6 is a comparison between our final determination and our draft determination for Great Britain, England & Wales and Scotland. We have also included a summary of the reasons for the differences between our draft determination and our final determination for Great Britain, England & Wales and Scotland in Table C.7.

**Table C.1: Network Rail's SBP forecast and our assessment of other single till income in CP5 (Great Britain)**

£m (2012-13 prices)	2014-15		2015-16		2016-17		2017-18		2018-19		CP5 Total	
	SBP	FD	SBP	FD	SBP	FD	SBP	FD	SBP	FD	SBP	FD
Property rental	267.7	272.1	283.1	290.1	294.5	311.0	306.6	331.8	325.1	359.6	1,477.1	1,564.6
Property sales	19.7	34.7	20.5	35.5	20.5	35.5	21.0	36.0	19.9	34.9	101.6	176.6
Adjustment for commercial opex	(29.4)	(29.4)	(30.1)	(30.1)	(30.7)	(30.7)	(31.3)	(31.3)	(31.9)	(31.9)	(153.3)	(153.3)
Crossrail finance charge	32.1	29.2	51.9	47.2	70.6	64.2	83.4	75.9	89.7	81.6	327.7	297.7
Welsh Valley Lines finance charge	0.6	0.5	1.6	1.3	3.7	3.0	8.4	6.9	13.5	11.1	27.8	22.8
Facility charges – station, depot and track	50.8	47.4	54.1	53.0	53.8	55.7	53.6	58.3	53.3	61.0	265.6	275.4
Other non-charge income	13.6	13.6	9.7	13.5	9.7	13.3	9.7	13.2	9.7	13.1	52.6	66.7
<b>Total non-charge income</b>	<b>355.2</b>	<b>368.1</b>	<b>390.9</b>	<b>410.5</b>	<b>422.1</b>	<b>452.0</b>	<b>451.4</b>	<b>490.8</b>	<b>479.4</b>	<b>529.4</b>	<b>2,099.1</b>	<b>2,250.5</b>
<b>Total freight income</b>	<b>86.4</b>	<b>73.1</b>	<b>94.9</b>	<b>78.1</b>	<b>106.5</b>	<b>86.1</b>	<b>122.1</b>	<b>95.5</b>	<b>138.4</b>	<b>105.5</b>	<b>548.4</b>	<b>438.3</b>
Managed stations long term charge	30.5	31.8	30.5	31.8	30.5	31.8	30.5	31.8	30.5	31.8	152.7	159.0
Managed stations qualifying expenditure	43.0	42.6	43.0	42.4	43.0	42.3	43.0	42.3	43.0	42.3	215.0	211.9
<b>Total managed stations income</b>	<b>73.6</b>	<b>74.4</b>	<b>73.5</b>	<b>74.2</b>	<b>73.5</b>	<b>74.1</b>	<b>73.5</b>	<b>74.1</b>	<b>73.5</b>	<b>74.1</b>	<b>367.8</b>	<b>370.9</b>
Franchised stations long term charge	144.2	119.4	144.2	119.4	144.2	119.4	144.2	119.4	144.2	119.4	720.8	597.0
Franchised stations lease income	44.1	44.4	44.1	44.4	44.1	44.5	44.2	44.5	44.7	45.1	221.2	222.9
<b>Total franchised stations income</b>	<b>188.2</b>	<b>163.7</b>	<b>188.3</b>	<b>163.8</b>	<b>188.3</b>	<b>163.8</b>	<b>188.4</b>	<b>163.9</b>	<b>188.9</b>	<b>164.4</b>	<b>942.0</b>	<b>819.6</b>
Open access charge income	7.8	7.0	11.2	8.3	11.3	8.6	11.5	8.8	11.4	9.0	53.2	41.7
Open access fixed contractual contributions	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	89.3	89.5
<b>Total open access income</b>	<b>25.7</b>	<b>24.9</b>	<b>29.1</b>	<b>26.2</b>	<b>29.2</b>	<b>26.4</b>	<b>29.3</b>	<b>26.6</b>	<b>29.3</b>	<b>26.9</b>	<b>142.5</b>	<b>131.0</b>
<b>Total depots income</b>	<b>59.9</b>	<b>59.9</b>	<b>59.9</b>	<b>59.9</b>	<b>59.9</b>	<b>59.9</b>	<b>59.9</b>	<b>59.9</b>	<b>59.9</b>	<b>59.9</b>	<b>299.4</b>	<b>299.5</b>
<b>Total OSTI</b>	<b>789.0</b>	<b>764.1</b>	<b>836.6</b>	<b>812.6</b>	<b>879.6</b>	<b>862.4</b>	<b>924.6</b>	<b>910.8</b>	<b>969.4</b>	<b>960.1</b>	<b>4,399.2</b>	<b>4,309.8</b>

**Table C.2 Network Rail's SBP forecast and our assessment of other single till income in CP5 (England & Wales)**

£m (2012-13 prices)	2014-15		2015-16		2016-17		2017-18		2018-19		CP5 Total	
	SBP	FD	SBP	FD	SBP	FD	SBP	FD	SBP	FD	SBP	FD
Property rental	251.6	255.7	266.1	272.6	276.8	292.3	288.1	311.9	305.6	338.0	1,388.2	1,470.5
Property sales	18.5	32.6	19.2	33.4	19.2	33.4	19.8	33.8	18.7	32.8	95.5	166.0
Adjustment for commercial opex	(27.6)	(27.6)	(28.2)	(28.2)	(28.8)	(28.8)	(29.4)	(29.4)	(30.0)	(30.0)	(144.1)	(144.1)
Crossrail finance charge	32.1	29.2	51.9	47.2	70.6	64.2	83.4	75.9	89.7	81.6	327.7	297.7
Welsh Valley Lines finance charge	0.6	0.5	1.6	1.3	3.7	3.0	8.4	6.9	13.5	11.1	27.8	22.8
Facility charges – station, depot and track	50.1	46.5	53.4	51.9	53.1	54.4	52.8	57.0	52.5	59.5	261.7	269.3
Other non-charge income	13.3	13.3	9.4	13.2	9.4	13.1	9.4	13.0	9.4	12.9	51.0	65.5
<b>Total non-charge income</b>	<b>338.6</b>	<b>350.2</b>	<b>373.4</b>	<b>391.3</b>	<b>403.9</b>	<b>431.6</b>	<b>432.5</b>	<b>469.1</b>	<b>459.4</b>	<b>505.9</b>	<b>2,007.8</b>	<b>2,147.7</b>
<b>Total freight Income</b>	<b>77.2</b>	<b>65.4</b>	<b>84.9</b>	<b>70.0</b>	<b>94.9</b>	<b>77.2</b>	<b>107.8</b>	<b>85.3</b>	<b>121.0</b>	<b>94.0</b>	<b>485.8</b>	<b>391.8</b>
Managed stations long term charge	28.3	29.4	28.3	29.4	28.3	29.4	28.3	29.4	28.3	29.4	141.3	146.9
Managed stations qualifying expenditure	38.6	38.3	38.6	38.0	38.6	38.0	38.6	38.0	38.6	37.9	193.2	190.2
<b>Total managed stations income</b>	<b>66.9</b>	<b>67.6</b>	<b>66.9</b>	<b>67.4</b>	<b>66.9</b>	<b>67.4</b>	<b>66.9</b>	<b>67.3</b>	<b>66.9</b>	<b>67.3</b>	<b>334.5</b>	<b>337.1</b>
Franchised stations long term charge	130.9	108.4	130.9	108.4	130.9	108.4	130.9	108.4	130.9	108.4	654.7	541.9
Franchised stations lease income	42.0	42.3	42.0	42.3	42.1	42.4	42.1	42.4	42.7	43.0	210.8	212.4
<b>Total franchised stations income</b>	<b>172.9</b>	<b>150.7</b>	<b>172.9</b>	<b>150.7</b>	<b>173.0</b>	<b>150.7</b>	<b>173.0</b>	<b>150.8</b>	<b>173.6</b>	<b>151.3</b>	<b>865.5</b>	<b>754.2</b>
Open access charge income	7.8	7.0	11.2	8.3	11.3	8.6	11.5	8.8	11.4	9.0	53.2	41.7
Open access fixed contractual contributions	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	89.3	89.5
<b>Total open access income</b>	<b>25.7</b>	<b>24.9</b>	<b>29.1</b>	<b>26.2</b>	<b>29.2</b>	<b>26.4</b>	<b>29.3</b>	<b>26.6</b>	<b>29.3</b>	<b>26.9</b>	<b>142.5</b>	<b>131.0</b>
<b>Total depots income</b>	<b>53.3</b>	<b>53.3</b>	<b>53.3</b>	<b>53.3</b>	<b>53.3</b>	<b>53.3</b>	<b>53.3</b>	<b>53.3</b>	<b>53.3</b>	<b>53.3</b>	<b>266.4</b>	<b>266.5</b>
<b>Total OSTI</b>	<b>734.5</b>	<b>712.0</b>	<b>780.4</b>	<b>758.9</b>	<b>821.2</b>	<b>806.5</b>	<b>862.8</b>	<b>852.2</b>	<b>903.5</b>	<b>898.5</b>	<b>4,102.5</b>	<b>4,028.3</b>



**Table C.3 Network Rail's SBP forecast and our assessment of other single till income in CP5 (Scotland)**

£m (2012-13 prices)	2014-15		2015-16		2016-17		2017-18		2018-19		CP5 Total	
	SBP	FD	SBP	FD	SBP	FD	SBP	FD	SBP	FD	SBP	FD
Property rental	16.1	16.4	17.0	17.5	17.7	18.7	18.4	20.0	19.6	21.6	88.9	94.2
Property sales	1.2	2.1	1.2	2.1	1.2	2.1	1.3	2.2	1.2	2.1	6.1	10.6
Adjustment for commercial opex	(1.8)	(1.8)	(1.8)	(1.8)	(1.8)	(1.8)	(1.9)	(1.9)	(1.9)	(1.9)	(9.2)	(9.2)
Crossrail finance charge	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Welsh Valley Lines finance charge	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Facility charges – station, depot and track	0.8	0.9	0.8	1.1	0.8	1.2	0.8	1.4	0.8	1.5	3.9	6.1
Other non-charge income	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	1.6	1.5
<b>Total non-charge income</b>	<b>16.6</b>	<b>17.9</b>	<b>17.6</b>	<b>19.2</b>	<b>18.2</b>	<b>20.5</b>	<b>18.9</b>	<b>22.0</b>	<b>19.9</b>	<b>23.6</b>	<b>91.3</b>	<b>103.2</b>
<b>Total freight Income</b>	<b>9.3</b>	<b>7.7</b>	<b>10.0</b>	<b>8.1</b>	<b>11.6</b>	<b>8.9</b>	<b>14.4</b>	<b>10.2</b>	<b>17.3</b>	<b>11.5</b>	<b>62.6</b>	<b>46.4</b>
Managed stations long term charge	2.3	2.4	2.3	2.4	2.3	2.4	2.3	2.4	2.3	2.4	11.4	12.1
Managed stations qualifying expenditure	4.4	4.3	4.4	4.3	4.4	4.3	4.4	4.3	4.4	4.3	21.9	21.5
<b>Total managed stations income</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>33.3</b>	<b>33.5</b>
Franchised stations long term charge	13.2	11.0	13.2	11.0	13.2	11.0	13.2	11.0	13.2	11.0	66.1	55.0
Franchised stations lease income	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	10.4	10.5
<b>Total franchised stations income</b>	<b>15.3</b>	<b>13.1</b>	<b>15.3</b>	<b>13.1</b>	<b>15.3</b>	<b>13.1</b>	<b>15.3</b>	<b>13.1</b>	<b>15.3</b>	<b>13.1</b>	<b>76.6</b>	<b>65.5</b>
Open access charge income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Open access fixed contractual contributions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total open access income</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Total depots income</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>32.9</b>	<b>33.0</b>
<b>Total OSTI</b>	<b>54.5</b>	<b>52.0</b>	<b>56.1</b>	<b>53.7</b>	<b>58.4</b>	<b>55.8</b>	<b>61.9</b>	<b>58.6</b>	<b>65.8</b>	<b>61.5</b>	<b>296.7</b>	<b>281.6</b>

**Table C.4 Network Rail’s SBP forecast and our adjustments to make it more comparable with our final determination**

<b>£m (2012-13 prices)</b>	<b>Great Britain</b>	<b>England &amp; Wales</b>	<b>Scotland</b>
<b>SBP total OSTI per Tables 14.4, 14.8, 14.12 and Table 4 in the executive summary</b>	<b>4,136.8</b>	<b>3,856.9</b>	<b>279.9</b>
Stations property income adjustment	23.5	31.2	(7.7)
Freight Specific Charge adjustment	54.0	42.7	11.3
Non periodic review income in property income	119.7	112.5	7.2
Schedule 4 and Performance regime adjustment	65.2	59.2	6.0
<b>SBP Total OSTI per Table C.1, C.2, C.3</b>	<b>4,399.2</b>	<b>4,102.5</b>	<b>296.7</b>

- C.8. Shortly after publication of its SBP, Network Rail advised us that it had underestimated its stations property income by £23.5m over CP5 for Great Britain, £31.2m over CP5 for England & Wales and -£7.7m over CP5 for Scotland. We have adjusted for this issue in Tables C.1, C.2 and C.3. However, we have not made an adjustment in Tables 14.4, 14.8 and 14.12 for Great Britain, England & Wales and Scotland as this would make our comparison of the net revenue requirements less clear.
- C.9. At the time of Network Rail’s SBP we had not made a decision to introduce the freight specific charge and therefore Network Rail’s SBP did not include an estimate of this income. Following our decision to include a freight specific charge, we calculated freight specific charge income based on the capped charge rates as set out in our January 2013 conclusion. This would increase Network Rail’s SBP freight charges by £54.0m over CP5 for Great Britain, £42.7m over CP5 for England & Wales and £11.3m over CP5 for Scotland. In the above tables (C.1, C.2 and C.3), we have adjusted for this issue. In Tables 14.4, 14.8 and 14.12 we have not made an adjustment for Great Britain, England & Wales and Scotland, as this would make our comparison of the net revenue requirements less clear.
- C.10. To ensure that Network Rail’s OSTI SBP numbers are on a like for like basis with our assessment, in the SBP property income numbers in the above Tables (C.1, C.2 and C.3) we include investment framework income of £119.7m over CP5 for Great Britain, £112.5m over CP5 for England & Wales and £7.2m over CP5 for Scotland. In Tables 14.4, 14.8 and 14.12 we have not made an adjustment for Great Britain, England & Wales and Scotland, as this would make our comparison of the net revenue requirements less clear.

C.11. To ensure that Network Rail's OSTI SBP numbers are on a like for like basis with our assessment, within the freight income numbers we have removed the assumption for freight Schedule 4 and performance regime costs of £65.2m over CP5 for Great Britain, £59.2m over CP5 for England & Wales and £6.0m over CP5 for Scotland. In the above tables (C.1, C.2 and C.3), we have adjusted for this issue. In Tables 14.4, 14.8 and 14.12 we have not made an adjustment respectively for Great Britain, England & Wales and Scotland.

**Table C.5: Network Rail's SBP forecast and our assessment of other single till income in CP5 for Great Britain, England & Wales and Scotland**

£m (2012-13 prices)	Great Britain			England & Wales			Scotland			Chapter reference
	SBP	FD	FD - SBP	SBP	FD	FD - SBP	SBP	FD	FD - SBP	
Property rental	1,477.1	1,564.6	87.5	1,388.2	1,470.5	82.3	88.9	94.2	5.3	Chapter 18
Property sales	101.6	176.6	75.0	95.5	166.0	70.5	6.1	10.6	4.5	Chapter 18
Adjustment for commercial opex	(153.3)	(153.3)	-	(144.1)	(144.1)	-	(9.2)	(9.2)	-	Chapter 18
Crossrail finance charge	327.7	297.7	(30.0)	327.7	297.7	(30.0)	-	-	-	Chapter 18
Welsh Valley Lines finance charge	27.8	22.8	(5.0)	27.8	22.8	(5.0)	-	-	-	Chapter 18
Facility charges – station, depot and track	265.6	275.4	9.8	261.7	269.3	7.6	3.9	6.1	2.2	Chapter 18
Other non-charge income	52.6	66.7	14.1	51.0	65.5	14.5	1.6	1.5	(0.1)	Chapter 18
<b>Total non-charge income</b>	<b>2,099.1</b>	<b>2,250.5</b>	<b>151.4</b>	<b>2,007.8</b>	<b>2,147.7</b>	<b>139.9</b>	<b>91.3</b>	<b>103.2</b>	<b>11.9</b>	
<b>Total freight income</b>	<b>548.4</b>	<b>438.3</b>	<b>(110.1)</b>	<b>485.8</b>	<b>391.8</b>	<b>(94.0)</b>	<b>62.6</b>	<b>46.4</b>	<b>(16.2)</b>	Chapter 16
Managed stations long term charge	152.7	159.0	6.3	141.3	146.9	5.6	11.4	12.1	0.7	Chapter 16
Managed stations qualifying expenditure	215.0	211.9	(3.1)	193.2	190.2	(3.0)	21.9	21.5	(0.4)	Chapter 18
<b>Total managed stations income</b>	<b>367.8</b>	<b>370.9</b>	<b>3.1</b>	<b>334.5</b>	<b>337.1</b>	<b>2.6</b>	<b>33.3</b>	<b>33.5</b>	<b>0.2</b>	
Franchised stations long term charge	720.8	597.0	(123.8)	654.7	541.9	(112.8)	66.1	55.0	(11.1)	Chapter 16
Franchised stations lease income	221.2	222.9	1.7	210.8	212.4	1.6	10.4	10.5	0.1	Chapter 18
<b>Total franchised stations income</b>	<b>942.0</b>	<b>819.6</b>	<b>(122.4)</b>	<b>865.5</b>	<b>754.2</b>	<b>(111.3)</b>	<b>76.6</b>	<b>65.5</b>	<b>(11.1)</b>	
Open access charge income	53.2	41.7	(11.5)	53.2	41.7	(11.5)	-	-	-	Chapter 16
Open access fixed contractual contributions	89.3	89.5	0.2	89.3	89.5	0.2	-	-	-	Chapter 18
<b>Total open access income</b>	<b>142.5</b>	<b>131.0</b>	<b>(11.5)</b>	<b>142.5</b>	<b>131.0</b>	<b>(11.5)</b>	<b>-</b>	<b>-</b>	<b>-</b>	
<b>Total depots income</b>	<b>299.4</b>	<b>299.5</b>	<b>0.1</b>	<b>266.4</b>	<b>266.5</b>	<b>0.1</b>	<b>32.9</b>	<b>33.0</b>	<b>0.1</b>	Chapter 18
<b>Total OSTI</b>	<b>4,399.2</b>	<b>4,309.8</b>	<b>(89.4)</b>	<b>4,102.5</b>	<b>4,028.3</b>	<b>(74.2)</b>	<b>296.7</b>	<b>281.6</b>	<b>(15.1)</b>	

**Table C.6: Our assessment of other single till income in CP5, draft determination compared to final determination for Great Britain, England & Wales and Scotland**

£m (2012-13 prices)	Great Britain			England & Wales			Scotland		
	DD	FD	FD - DD	DD	FD	FD - DD	DD	FD	FD - DD
Property rental	1,656.4	1,564.6	(91.8)	1,557.0	1,470.5	(86.5)	99.4	94.2	(5.2)
Property sales	176.6	176.6	-	166.0	166.0	-	10.6	10.6	-
Adjustment for commercial opex	(153.8)	(153.4)	0.5	(144.8)	(144.0)	0.8	(9.4)	(9.2)	0.2
Crossrail finance charge	298.1	297.7	(0.4)	298.1	297.7	(0.4)	-	-	-
Welsh Valley Lines finance charge	22.8	22.8	-	22.8	22.8	-	-	-	-
Facility charges – station, depot and track	274.4	275.4	1.0	268.3	269.3	1.0	6.1	6.1	-
Other non-charge income	68.5	66.7	(1.8)	67.0	65.5	(1.5)	1.5	1.5	-
<b>Total non-charge income</b>	<b>2,343.0</b>	<b>2,250.5</b>	<b>(92.5)</b>	<b>2,234.4</b>	<b>2,147.7</b>	<b>(86.7)</b>	<b>108.2</b>	<b>103.1</b>	<b>(5.0)</b>
Freight charges	433.4	438.3	4.9	387.9	391.8	3.9	45.0	46.4	1.4
Freight connection agreements and other non-regulated income	22.5	-	(22.5)	20.5	-	(20.5)	2.5	-	(2.5)
<b>Total freight income</b>	<b>455.9</b>	<b>438.3</b>	<b>(17.6)</b>	<b>408.4</b>	<b>391.8</b>	<b>(16.6)</b>	<b>47.5</b>	<b>46.4</b>	<b>(1.1)</b>
Managed stations long term charge	146.0	159.0	13.0	135.0	146.9	11.9	11.0	12.1	1.1
Managed stations qualifying expenditure	215.0	211.9	(3.1)	193.0	190.2	(2.8)	22.0	21.5	(0.5)
<b>Total managed stations income</b>	<b>360.8</b>	<b>370.9</b>	<b>10.1</b>	<b>328.0</b>	<b>337.1</b>	<b>9.1</b>	<b>32.8</b>	<b>33.5</b>	<b>0.7</b>
Franchised stations long term charge	602.0	597.0	(5.0)	546.5	541.9	(4.6)	55.0	55.0	-
Franchised stations lease income	221.1	222.9	1.8	210.9	212.4	1.5	10.5	10.5	-
<b>Total franchised stations income</b>	<b>822.9</b>	<b>819.6</b>	<b>(3.3)</b>	<b>757.6</b>	<b>754.2</b>	<b>(3.4)</b>	<b>65.6</b>	<b>65.5</b>	<b>(0.1)</b>
Open access charge income	39.9	41.7	1.8	40.0	41.7	1.7	-	-	-
Open access fixed contractual contributions	-	89.5	89.5	-	89.5	89.5	-	-	-
<b>Total open access income</b>	<b>39.9</b>	<b>131.0</b>	<b>91.1</b>	<b>40.0</b>	<b>131.0</b>	<b>91.0</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total depots income</b>	<b>299.0</b>	<b>299.5</b>	<b>0.5</b>	<b>266.5</b>	<b>266.5</b>	<b>-</b>	<b>33.0</b>	<b>33.0</b>	<b>-</b>
<b>Total OSTI</b>	<b>4,321.9</b>	<b>4,309.8</b>	<b>(12.1)</b>	<b>4,034.9</b>	<b>4,028.3</b>	<b>(6.6)</b>	<b>287.1</b>	<b>281.6</b>	<b>(5.5)</b>

**Table C.7 Comparison of the OSTI assumptions in our draft determination to our final determination**

<b>£m (2012-13 prices)</b>	<b>Great Britain</b>	<b>England &amp; Wales</b>	<b>Scotland</b>
<b>Total OSTI per draft determination</b>	<b>4,321.9</b>	<b>4,034.9</b>	<b>287.1</b>
Property rental - adjustment for low probability, high income projects	(91.8)	(86.6)	(5.2)
Open access fixed contractual contribution - not included in draft determination	89.5	89.5	-
Freight connection agreements and other non-regulated income- Network Rail have included in operating expenditure and we have removed from OSTI to be consistent	(22.5)	(20.5)	(2.5)
Managed stations long term charge - change in efficiency assumptions	13.0	11.9	1.1
Other	(0.3)	(0.9)	1.2
<b>Total OSTI per final determination</b>	<b>4,309.8</b>	<b>4,028.3</b>	<b>281.6</b>

- C.12. Following our consultation on the draft determination, we have adjusted our assessment of low probability, high potential income projects by -£91.8m over CP5 for Great Britain, -£86.6m over CP5 for England & Wales and -£5.2m over CP5 for Scotland. The other single till income chapter (chapter 18) contains further details.
- C.13. Following our consultation on the draft determination, we realised that we had not included the open access fixed contractual contribution non-regulated income in our assessment of OSTI. We have now included this income in our final determination (£89.5m over CP5 for Great Britain and for England & Wales). The other single till income chapter (chapter 18) contains further details of this income.
- C.14. Following our consultation on the draft determination, we were also made aware that Network Rail included freight connection agreements and other non-regulated income in operating expenditure in its SBP. This meant that we double-counted this income in our draft determination. Therefore, to be consistent with Network Rail's SBP, we have decided to transfer this income from OSTI. The adjustment to OSTI is -£22.5m over CP5 for Great Britain, -£20.5m over CP5 for England & Wales and -£2.5m over CP5 for Scotland.
- C.15. Following our consultation on the draft determination and the review of our assumptions on managed stations long term charges, we have updated our assumptions. In particular, we have reduced the efficiency overlay for building expenditure from 19.2% to 17.7%. This has resulted in increased income of £13m over CP5 for Great Britain, £11.9m over CP5 for England & Wales and £1.1m over CP5 for Scotland. Chapter 16 contains further details of this income and our revised assumptions.

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# Annex D: Route-level data

## Structure of this annex

D.1. This annex is structured as follows:

- (a) introduction;
- (b) our approach to the assessment of Network Rail's route-level income and expenditure;
- (c) summary analysis of route-level information;
- (d) changes since our draft determination;
- (e) REBS baselines; and
- (f) route-level expenditure assumptions, indicative revenue requirements and indicative key financial information.

## Introduction

D.2. We present two separate types of route-level information for our determination. We need to do this to support route-level efficiency benefit sharing (REBS) and to facilitate our move to a more granular assessment of Network Rail's costs. This will provide greater focus on Network Rail's route-level costs and improve the information that we will have available to inform our PR18 periodic review. The two categories are:

- (a) **REBS baselines** – we need to produce route-level baselines to inform the development of the final REBS baselines. Network Rail will need to ensure that the REBS route baselines that are agreed (before the start of CP5) reconcile, line-by-line, back to our England & Wales and Scotland determinations. The REBS baselines are simply a subset of the wider route-level income and expenditure assumptions, e.g. REBS baselines exclude Network Rail's interest costs (as TOCs/FOCs have limited influence over these costs) but our route-level income and expenditure assumptions will include these costs; and
- (b) **route-level expenditure assumptions** – we also present our route-level assumptions for key areas of Network Rail's CP5 expenditure, indicative revenue requirements and indicative key financial information.

## Our approach

### Overview

D.3. Throughout this document, we have explained our approach to our assessment of Network Rail's income and expenditure. Below, we provide a summary of our



approach for calculating our assumptions for Network Rail's CP5 income and expenditure at the route level.

- D.4. To determine our route-level assumptions we have:
- (a) assessed Network Rail's SBP forecasts for route-level income and expenditure in CP5;
  - (b) where Network Rail has allocated income and expenditure to operating routes (rather than building its forecasts on a bottom-up basis), we have reviewed its allocation methodologies, e.g. most HR costs are allocated to routes using headcount, to determine whether these were reasonable; and
  - (c) we then applied our own assessment of efficiency to Network Rail's income and expenditure to determine our CP5 route-level assumptions.

## **Approach to income and expenditure**

- D.5. We explain below the approach we have taken to our assessment of each key element of Network Rail's income and expenditure.

### **Support costs**

- D.6. In its SBP, Network Rail allocated its central support functions to its operating routes using a relatively simple methodology. Since then, Network Rail has developed a more refined methodology for the allocations of these costs. We have reviewed this revised methodology and consider it to be reasonable. PwC reviewed Network Rail's allocation of these costs and did not find any issues with Network Rail's allocation.
- D.7. For our assessment, we have used Network Rail's latest allocation methodology to determine the appropriate level of support costs for each of Network Rail's ten operating routes. This methodology uses a mix of different cost driver based metrics to allocate Network Rail's central support costs to operating routes on a function-by-function basis. For example, information management costs are allocated to routes by the number of information management users and most HR costs are allocated to routes using headcount.

### **Operations**

- D.8. Network Rail's SBP included a bottom-up assessment of operations costs for each of its ten operating routes. This assessment is based on Network Rail's local plans to deliver the operating strategy. We consider Network Rail's plans for operations costs to be reasonable and so we have used Network Rail's breakdown of operations cost by route as the basis of our PR13 determination assumptions.

### **Maintenance**

- D.9. Network Rail presented its maintenance expenditure plans in its SBP on a route basis. Network Rail's plans are based on bottom-up route-based estimates of the resource required to safely maintain the railway in line with its asset policies. The route-based figures include consideration of the impact of increased traffic and new

infrastructure on that route. Our route-level assessment of these costs reflects Network Rail bottom-up plans.

## Renewals

- D.10. Network Rail presented its renewals expenditure plans in its SBP on a route basis. Network Rail's plans are based on the outputs of a challenge process between high-level modelled expenditure requirements, provided by the corporate centre, and local plans developed by the routes.
- D.11. The company's high-level models produce route renewals expenditure forecasts, which consider route-specific asset information, unit costs disaggregated by structural factors and efficiencies reflecting the different mix of asset types on each route. The operating routes produced their plans based on their local knowledge of the asset base, knowledge of delivery constraints, understanding of local costs and local efficiency initiatives. The challenge process between modelled expenditure and route-based plans has helped to improve the robustness of the route plans. Our route-level assessment of these costs reflects Network Rail's bottom-up plans.

## Enhancements

- D.12. We have allocated enhancements costs to Network Rail's operating routes on the basis of Network Rail's SBP assumptions on the percentage of each enhancement project allocated to specific routes. We have applied these assumptions to our own bottom-up assessment of Network Rail's enhancement project costs.
- D.13. For the ring-fenced funds we have allocated a proportion of the total cost to each of Network Rail's operating routes based on the percentage of train miles in that operating route. The exception to this is the East Coast Connectivity Fund which has been allocated entirely to the LNE route.

## Traction electricity, industry costs and rates

- D.14. Network Rail's industry costs and rates cover costs that, with the exception of traction electricity and cumulo rates, are incurred centrally with Network Rail allocating these costs to its operating routes. We have used the same approach as Network Rail for allocating our assessment of these central costs to the route-level.

## Schedule 4 costs

- D.15. Our route-level CP5 Schedule 4 cost assumptions are based on Network Rail's SBP methodology. For its SBP, Network Rail produced a bottom-up assessment of route-level Schedule 4 costs based on its CP5 route-level possession activity volume forecasts (by asset type) and its network-wide unit cost assumptions (for each asset type) reflecting its 2011-12 possession costs and volumes.

## Schedule 8 costs

- D.16. Our route-level CP5 Schedule 8 cost assumptions are based on Network Rail's SBP methodology. In its SBP, Network Rail allocated these costs to its operating routes using freight train miles. Given the materiality of these figures, together with likely

'lumpiness' in cancellations at the route-level, we consider that this is a suitable approach.

### Other single till income (OSTI)

D.17. The majority of other single till income relates to Network Rail's property business and income from some enhancements undertaken by Network Rail such as in relation to Crossrail. The other elements of other single till income are mainly charging income from open access operators (passengers and freight) and stations and depots income. For property income, we have used Network Rail's approach of using a simple metric of total other single till income per route to allocate property income by route. For the elements of Network Rail's charging income within OSTI, we have used Network Rail's allocations, which are based on values of route-level income in CP4.

### Variable usage charge and capacity charge income

D.18. Network Rail's variable usage charge and capacity charge income are not disaggregated by operating route and so we have had to make assumptions about how to allocate this income to operating routes. In our assessment we have allocated Network Rail's variable usage charge and capacity charge income from passenger operators to operating routes by multiplying service group-specific charge rates by vehicle kilometres, disaggregated by service group and operating route. For freight, commodity-specific charge rates were multiplied by tonne kilometres, disaggregated by commodity and route.

### Electrification asset usage charge (EAUC) income

D.19. EAUC is not disaggregated by Network Rail operating route and so we have had to make assumptions about how to allocate Network Rail's EAUC income to its operating routes. Our assessment of Network Rail's EAUC income from passenger operators is allocated to operating routes by multiplying EAUC rates for DC (third rail) and AC (OLE) traffic by Network Rail's forecast of electrified vehicle miles for each operating route. For freight, EAUC rates for DC and AC are multiplied by Network Rail's forecast of electric KGTM for each operating route.

### Financing assumptions

D.20. Network Rail raises debt at a GB-level and so we have had to make assumptions to allocate financing costs to each of Network Rail's operating routes.

- (a) **Scotland:** Since 1 April 2006, the RAB for Network Rail's Scotland operating route has been separately identified from England & Wales. As part of PR08, we also disaggregated the Scotland route's debt. Therefore, our PR13 financing cost assumptions for Scotland are based on our latest forecasts of closing CP4 RAB and debt for Scotland; and
- (b) **England & Wales routes:** For PR13, we have provided an indicative disaggregation of Network Rail's RAB and debt for the nine England & Wales operating routes. We considered two main options for disaggregation: (1) use the

same approach as for disaggregating the Scotland route, or (2) use Network Rail's methodology for disaggregating the fixed charge. The two approaches produce similar results. In December 2012, we decided to use Network Rail's fixed charge disaggregation approach. This approach uses route-level assessments of long-run renewals costs. After we had established the opening CP5 RAB and debt assumptions for the nine routes, we then calculated Network Rail's financing costs for each route by applying our CP5 financing cost assumptions to the route-level CP5 RAB and debt in each year of the control period.

### Changes to our route-level assumptions

D.21. In the financial incentives chapter (chapter 19) and the monitoring, enforcement and reporting chapter (chapter 23), we explain the scope that Network Rail has to adjust our assessments of route-level income and expenditure.

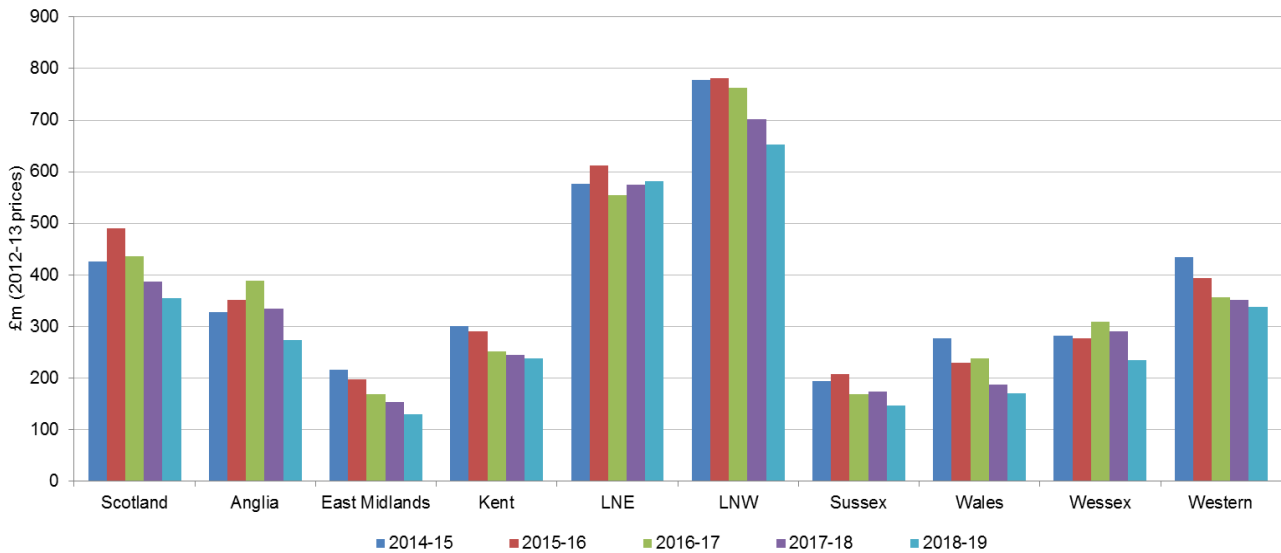
D.22. In summary:

- (a) **REBS baselines.** The PR13 final determination income and expenditure assumptions for England & Wales and Scotland will be used as the baselines for REBS in CP5. Network Rail will be able to adjust the REBS baselines for the nine England & Wales operating routes as long as the baselines reconcile, line-by-line to our national England & Wales determination assumptions; and
- (b) **CP5 financial monitoring.** For CP5, our financial monitoring will compare Network Rail's financial performance against our PR13 determination income and expenditure assumptions. Network Rail cannot change these baselines.

# Summary analysis

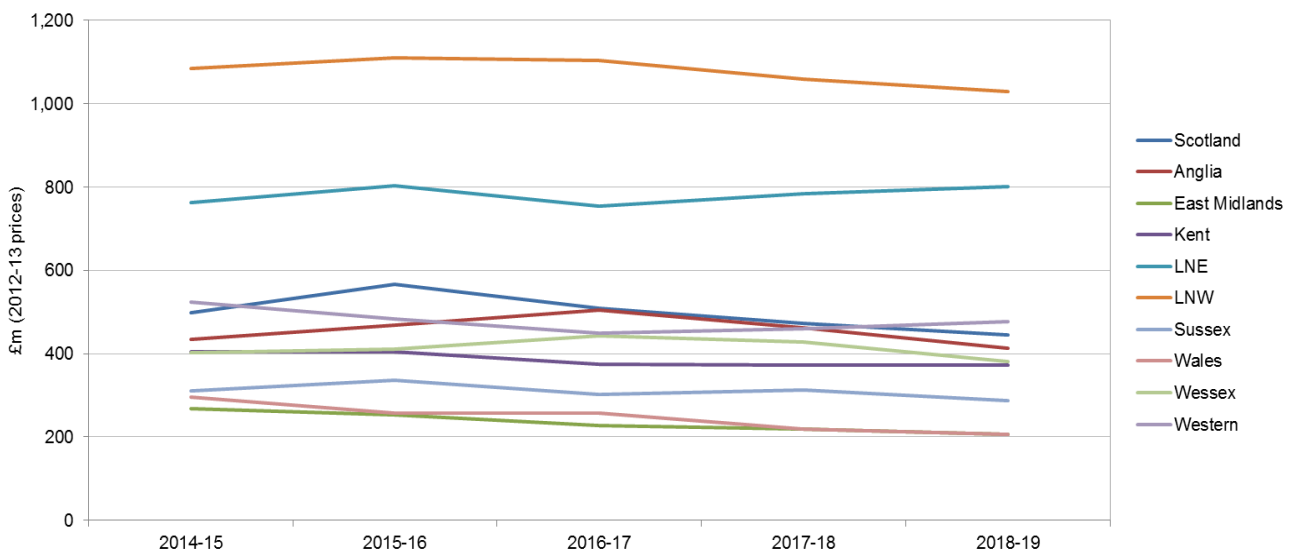
D.23. The REBS baselines for each route in each year of CP5 are summarised in Figure D.1. See below for further details.

**Figure D.1: Our assessment of CP5 indicative REBS baselines**



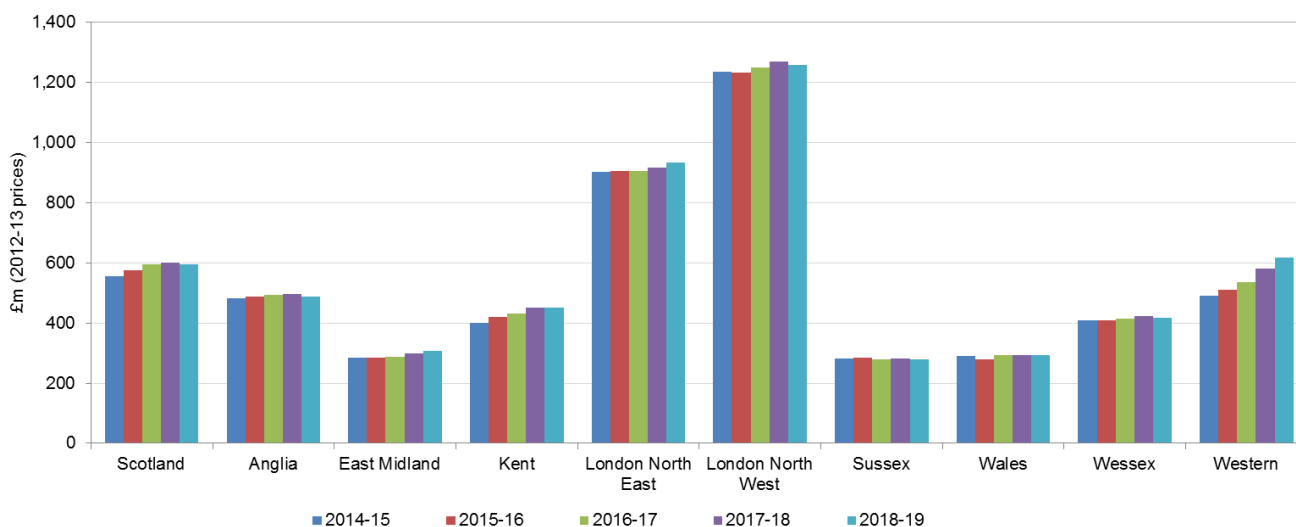
D.24. Our assessment of the indicative annual expenditure by route for support, operations, maintenance, traction electricity, industry costs and rates and renewals is shown in Figure D.2. See below for further details.

**Figure D.2: Our indicative assessment of CP5 expenditure by operating route**



D.25. Our assessment of the indicative annual CP5 net revenue requirement for each operating route is shown in Figure D.3. See below for further details.

**Figure D.3: Our assessment of the indicative CP5 net revenue requirements**



## Changes since our draft determination

D.26. We have made three key changes to the REBS baselines since our draft determination. We explain the reasons for these changes in more detail in our financial incentives chapter (chapter 19). However, we summarise these changes below:

- (a) we have included income from the capacity charge and electrification asset usage charge in REBS baselines to reflect traffic growth;
- (b) we have excluded information management renewals expenditure from REBS baselines because this category of expenditure is included in the spend-to-save mechanism; and
- (c) caps on upside and downside exposure of 10% are consistent with the RAB roll forward approach to renewals expenditure. This maintains the consistency between the calculation of REBS payments and of the caps on financial exposure<sup>570</sup>.

## REBS baselines

### Overview

D.27. In the next section, we set out the REBS baselines for England & Wales (total) and for each of Network Rail's ten operating routes. REBS includes those elements of

<sup>570</sup> For example, in calculating the 10% downside cap, we will reflect that train operators are exposed to 25% of any underperformance on renewals expenditure, i.e. the part of the downside cap which relates to renewals will be calculated as: baseline renewals expenditure x 10% (downside cap) x 10% (share of underperformance) x 25% (share of renewals underperformance based on RAB roll forward). Please note that the cap on REBS payments applies at the total baseline level and not on a line-by-line basis for each element of income and expenditure.

Network Rail's income and expenditure that we consider train operators are able to influence. On this basis REBS will include:

- (a) support costs;
- (b) operations costs;
- (c) maintenance costs;
- (d) renewals costs<sup>571</sup>;
- (e) Network Rail's share of BTP and RSSB costs;
- (f) Schedule 4 & 8 costs; and
- (g) property income<sup>572</sup>.

D.28. We have also included elements of Network Rail's income that are impacted by traffic growth so that an increase in Network Rail's costs, resulting from traffic growth above our determination assumptions, will be in part offset by an increases in income from the following charges:

- (a) variable usage charge;
- (b) capacity charge; and
- (c) electrification asset usage charge.

D.29. We explain this further in the financial incentives chapter (chapter 19).

## **REBS baselines – England & Wales total and Scotland**

D.30. In the financial incentives chapter (chapter 19), we confirm Network Rail should ensure that the nine final England & Wales REBS route baselines reconcile back to our final determination assumptions for England & Wales, on a line-by-line basis. In Table D.1 we present the total REBS baseline for England & Wales in CP5.

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<sup>571</sup> We have excluded information management renewals expenditure from REBS baselines because this category of expenditure is included in the spend-to-save mechanism.

<sup>572</sup> We include the following categories of Network Rail income: retail income, advertising income, concessions income, property sales, property rental income. We have netted off Network Rail's commercial property operating costs from this total. However, we have excluded Network Rail's property income in relation to telecoms because we do not consider that train operators can sufficiently influence this income. We have also excluded Network Rail's non-periodic review income because this category of income is dealt with through the spend-to-save mechanism in CP5. This is consistent with the breakdown we used for our draft determination.



**Table D.1: Our assessment of the England & Wales total REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	421	401	376	363	348	1,908
Industry costs (BTP and RSSB only)	72	69	66	64	62	332
Network operations	385	374	358	344	325	1,787
Network maintenance	986	965	930	899	872	4,651
Renewals	2,165	2,174	2,129	2,046	1,901	10,415
Schedule 4 & 8 costs	187	194	195	182	182	939
<b>Total expenditure</b>	<b>4,215</b>	<b>4,178</b>	<b>4,053</b>	<b>3,898</b>	<b>3,688</b>	<b>20,033</b>
<b>Income</b>						
Property income	242	250	262	274	285	1,314
VUC income	198	201	206	213	222	1,041
Capacity charge income	373	376	378	384	399	1,911
EAUC income	13	13	13	14	17	71
<b>Total income</b>	<b>827</b>	<b>840</b>	<b>860</b>	<b>886</b>	<b>923</b>	<b>4,336</b>
<b>REBS baseline</b>	<b>3,388</b>	<b>3,338</b>	<b>3,193</b>	<b>3,012</b>	<b>2,765</b>	<b>15,697</b>

D.32. As we have a separate PR13 determination for Scotland, our REBS baseline assumptions for Scotland, shown in Table D.2, will act as the final REBS route baseline for CP5. In Table D.2, we also show the caps on train operators upside and downside exposure from REBS in each year of CP5.

**Table D.2: Our assessment of the Scotland REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	47	44	42	40	38	211
Industry costs (BTP and RSSB only)	8	8	7	7	7	37
Network operations	39	38	37	34	33	181
Network maintenance	106	108	104	102	95	515
Renewals	257	319	271	237	218	1,303
Schedule 4 & 8 costs	20	25	30	22	22	119
<b>Total expenditure</b>	<b>478</b>	<b>542</b>	<b>490</b>	<b>443</b>	<b>413</b>	<b>2,365</b>
<b>Income</b>						
Property income	15	16	17	18	18	84
VUC income	18	18	19	19	20	94
Capacity charge income	17	17	18	18	18	88
EAUC income	1	1	1	1	1	6
<b>Total income</b>	<b>52</b>	<b>53</b>	<b>54</b>	<b>56</b>	<b>58</b>	<b>273</b>
<b>REBS baseline</b>	<b>426</b>	<b>489</b>	<b>436</b>	<b>387</b>	<b>355</b>	<b>2,093</b>
<b>Upside cap</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>28</b>
<b>Downside cap</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>11</b>

## England & Wales indicative REBS baselines

D.33. Tables D.3 to D.11 set out our indicative REBS baselines for the nine operating routes in England & Wales. We also show the caps on train operators upside and downside exposure from REBS for each year of CP5, on the basis of our indicative baselines.

**Table D.3: Our assessment of the Anglia REBS baseline for CP5**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
<b>Expenditure</b>						
Support costs	43	40	38	37	35	193
Industry costs (BTP and RSSB only)	7	7	7	7	6	34
Network operations	42	41	38	36	34	192
Network maintenance	102	100	98	95	90	484
Renewals	181	207	250	210	166	1,015
Schedule 4 & 8 costs	17	21	24	19	16	98
<b>Total expenditure</b>	<b>393</b>	<b>417</b>	<b>455</b>	<b>404</b>	<b>347</b>	<b>2,015</b>
<b>Income</b>						
Property income	21	22	23	24	25	115
VUC income	16	17	17	18	19	87
Capacity charge income	24	24	24	25	27	126
EAUC income	3	3	3	3	3	14
<b>Total income</b>	<b>65</b>	<b>66</b>	<b>67</b>	<b>70</b>	<b>74</b>	<b>341</b>
<b>REBS baseline</b>	<b>328</b>	<b>351</b>	<b>388</b>	<b>334</b>	<b>273</b>	<b>1,674</b>
<b>Upside cap</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>23</b>
<b>Downside cap</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>9</b>

**Table D.4: Our assessment of the East Midlands REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	24	23	22	21	20	111
Industry costs (BTP and RSSB only)	4	4	4	4	4	20
Network operations	20	19	17	15	15	86
Network maintenance	55	55	53	52	50	264
Renewals	144	129	108	101	85	568
Schedule 4 & 8 costs	15	13	11	10	8	58
<b>Total expenditure</b>	<b>262</b>	<b>244</b>	<b>216</b>	<b>203</b>	<b>182</b>	<b>1,107</b>
<b>Income</b>						
Property income	9	9	9	10	10	46
VUC income	13	13	13	14	15	69
Capacity charge income	24	24	24	25	26	124
EAUC income	0	0	0	1	1	3
<b>Total income</b>	<b>46</b>	<b>47</b>	<b>47</b>	<b>49</b>	<b>52</b>	<b>242</b>
<b>REBS baseline</b>	<b>216</b>	<b>197</b>	<b>168</b>	<b>153</b>	<b>130</b>	<b>865</b>
<b>Upside cap</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>11</b>
<b>Downside cap</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>

**Table D.5: Our assessment of the Kent REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	38	36	34	33	31	172
Industry costs (BTP and RSSB only)	5	5	5	5	5	25
Network operations	30	29	28	28	24	139
Network maintenance	73	71	68	66	63	341
Renewals	204	196	172	168	175	915
Schedule 4 & 8 costs	16	19	15	15	15	81
<b>Total expenditure</b>	<b>366</b>	<b>357</b>	<b>321</b>	<b>315</b>	<b>313</b>	<b>1,672</b>
<b>Income</b>						
Property income	35	36	38	39	41	189
VUC income	10	10	10	11	11	53
Capacity charge income	20	20	20	20	21	100
EAUC income	1	1	1	1	1	6
<b>Total income</b>	<b>66</b>	<b>67</b>	<b>69</b>	<b>71</b>	<b>75</b>	<b>347</b>
<b>REBS baseline</b>	<b>301</b>	<b>290</b>	<b>252</b>	<b>244</b>	<b>238</b>	<b>1,325</b>
<b>Upside cap</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>16</b>
<b>Downside cap</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>6</b>

**Table D.6: Our assessment of the LNE REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	79	76	71	69	66	360
Industry costs (BTP and RSSB only)	12	12	11	11	10	56
Network operations	71	70	65	62	59	328
Network maintenance	163	160	153	147	143	766
Renewals	370	407	374	412	426	1,988
Schedule 4 & 8 costs	31	39	37	36	47	191
<b>Total expenditure</b>	<b>726</b>	<b>764</b>	<b>711</b>	<b>737</b>	<b>752</b>	<b>3,690</b>
<b>Income</b>						
Property income	35	36	38	39	41	188
VUC income	46	46	49	51	53	244
Capacity charge income	68	68	69	70	73	348
EAUC income	2	2	2	2	3	13
<b>Total income</b>	<b>150</b>	<b>152</b>	<b>157</b>	<b>162</b>	<b>170</b>	<b>793</b>
<b>REBS baseline</b>	<b>576</b>	<b>611</b>	<b>554</b>	<b>574</b>	<b>581</b>	<b>2,897</b>
<b>Upside cap</b>	<b>7</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>35</b>
<b>Downside cap</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>14</b>

**Table D.7: Our assessment of the LNW REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	111	105	99	95	91	502
Industry costs (BTP and RSSB only)	19	18	17	17	16	86
Network operations	104	100	98	93	90	484
Network maintenance	277	266	259	250	244	1,296
Renewals	458	484	487	451	426	2,307
Schedule 4 & 8 costs	39	42	42	43	36	203
<b>Total expenditure</b>	<b>1,008</b>	<b>1,015</b>	<b>1,002</b>	<b>948</b>	<b>904</b>	<b>4,878</b>
<b>Income</b>						
Property income	53	54	57	60	62	285
VUC income	58	59	61	63	64	305
Capacity charge income	115	116	117	119	120	586
EAUC income	4	4	5	5	5	23
<b>Total income</b>	<b>230</b>	<b>234</b>	<b>239</b>	<b>246</b>	<b>251</b>	<b>1,200</b>
<b>REBS baseline</b>	<b>778</b>	<b>781</b>	<b>763</b>	<b>702</b>	<b>653</b>	<b>3,678</b>
<b>Upside cap</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>49</b>
<b>Downside cap</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>19</b>



**Table D.8: Our assessment of the Sussex REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	25	24	23	22	21	115
Industry costs (BTP and RSSB only)	5	5	5	5	4	24
Network operations	30	28	28	27	26	138
Network maintenance	57	59	52	51	47	267
Renewals	149	165	136	148	126	724
Schedule 4 & 8 costs	10	11	9	9	12	50
<b>Total expenditure</b>	<b>276</b>	<b>291</b>	<b>253</b>	<b>261</b>	<b>236</b>	<b>1,317</b>
<b>Income</b>						
Property income	33	34	35	37	38	177
VUC income	8	8	8	9	9	43
Capacity charge income	40	40	40	41	41	203
EAUC income	1	1	1	1	1	5
<b>Total income</b>	<b>82</b>	<b>83</b>	<b>85</b>	<b>87</b>	<b>90</b>	<b>427</b>
<b>REBS baseline</b>	<b>194</b>	<b>208</b>	<b>168</b>	<b>174</b>	<b>146</b>	<b>890</b>
<b>Upside cap</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>9</b>
<b>Downside cap</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>

**Table D.9: Our assessment of the Wales REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	23	22	21	20	19	105
Industry costs (BTP and RSSB only)	4	4	4	4	4	19
Network operations	25	24	23	24	21	117
Network maintenance	61	60	59	58	57	294
Renewals	171	136	140	101	91	640
Schedule 4 & 8 costs	18	10	17	8	7	60
<b>Total expenditure</b>	<b>302</b>	<b>255</b>	<b>263</b>	<b>215</b>	<b>199</b>	<b>1,235</b>
<b>Income</b>						
Property income	10	10	10	11	11	52
VUC income	8	8	8	8	9	41
Capacity charge income	8	8	8	8	8	39
EAUC income	-	-	-	0	0	0
<b>Total income</b>	<b>25</b>	<b>26</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>132</b>
<b>REBS baseline</b>	<b>277</b>	<b>230</b>	<b>237</b>	<b>188</b>	<b>171</b>	<b>1,102</b>
<b>Upside cap</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>16</b>
<b>Downside cap</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>6</b>

**Table D.10: Our assessment of the Wessex REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	34	32	30	29	28	154
Industry costs (BTP and RSSB only)	7	7	7	6	6	33
Network operations	31	30	30	27	26	143
Network maintenance	88	87	83	78	74	409
Renewals	185	185	223	213	170	975
Schedule 4 & 8 costs	15	14	16	19	14	78
<b>Total expenditure</b>	<b>359</b>	<b>355</b>	<b>388</b>	<b>372</b>	<b>317</b>	<b>1,792</b>
<b>Income</b>						
Property income	31	32	34	36	37	170
VUC income	16	16	16	16	16	80
Capacity charge income	28	29	29	29	29	143
EAUC income	1	1	1	1	1	5
<b>Total income</b>	<b>76</b>	<b>78</b>	<b>79</b>	<b>81</b>	<b>83</b>	<b>398</b>
<b>REBS baseline</b>	<b>283</b>	<b>277</b>	<b>309</b>	<b>291</b>	<b>234</b>	<b>1,394</b>
<b>Upside cap</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>17</b>
<b>Downside cap</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>7</b>

**Table D.11: Our assessment of the Western REBS baseline for CP5**

<b>£m (2012-13 prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
<b>Expenditure</b>						
Support costs	43	41	39	38	36	197
Industry costs (BTP and RSSB only)	8	7	7	7	7	35
Network operations	33	33	31	31	31	159
Network maintenance	109	109	106	104	103	531
Renewals	303	265	239	241	236	1,284
Schedule 4 & 8 costs	25	25	23	23	25	121
<b>Total expenditure</b>	<b>522</b>	<b>481</b>	<b>445</b>	<b>443</b>	<b>438</b>	<b>2,328</b>
<b>Income</b>						
Property income	17	17	18	19	20	91
VUC income	23	23	24	24	26	120
Capacity charge income	47	47	47	48	53	241
EAUC income	0	0	0	1	1	2
<b>Total income</b>	<b>86</b>	<b>87</b>	<b>89</b>	<b>92</b>	<b>100</b>	<b>454</b>
<b>REBS baseline</b>	<b>435</b>	<b>394</b>	<b>356</b>	<b>351</b>	<b>338</b>	<b>1,874</b>
<b>Upside cap</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>23</b>
<b>Downside cap</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>9</b>

## Route-level income and cost assumptions

### Overview

D.34. For each operating route, we set out below the following indicative information:

- (a) annual operating and capital expenditure assumptions;
- (b) revenue requirement calculations; and
- (c) key financial information.

## Individual route-level income and expenditure assumptions

**Table D.12: Our assessment of CP5 expenditure for Scotland**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	47	44	42	40	38	211
Network operations	39	38	37	34	33	181
Traction electricity, industry costs and rates	40	48	49	52	55	245
Network maintenance	106	108	104	102	95	515
Schedule 4 & 8 costs	20	25	30	22	22	119
<b>Total operating expenditure</b>	<b>253</b>	<b>264</b>	<b>261</b>	<b>251</b>	<b>242</b>	<b>1,271</b>
Renewals	266	327	278	244	225	1,341
Enhancements	468	388	265	156	79	1,356
<b>Total capital expenditure</b>	<b>734</b>	<b>716</b>	<b>543</b>	<b>400</b>	<b>304</b>	<b>2,697</b>
<b>Total expenditure</b>	<b>987</b>	<b>979</b>	<b>804</b>	<b>651</b>	<b>547</b>	<b>3,968</b>

**Table D.13: Our assessment of CP5 revenue requirement for Scotland**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	253	264	261	251	242	1,271
Add: Long-run steady state amortisation	216	216	216	216	216	1,078
Add: Regulatory tax allowance	0	-	-	-	0	0
Add: Opex memorandum account	2	2	2	2	2	11
<b>Gross rev. req. before cost of capital</b>	<b>471</b>	<b>481</b>	<b>479</b>	<b>468</b>	<b>460</b>	<b>2,360</b>
Add: Allowed return (real cost of capital)	214	234	250	259	263	1,220
Less: Real equity surplus	(107)	(116)	(118)	(118)	(118)	(576)
Adjusted allowed return	107	118	132	141	145	644
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>578</b>	<b>600</b>	<b>611</b>	<b>610</b>	<b>605</b>	<b>3,004</b>
Add: Amortisation financial sustainability adjustment	30	30	40	50	50	200
<b>Gross revenue requirement</b>	<b>608</b>	<b>630</b>	<b>651</b>	<b>660</b>	<b>655</b>	<b>3,204</b>
Less: other single till income	(52)	(54)	(56)	(59)	(62)	(282)
<b>Net revenue requirement</b>	<b>556</b>	<b>576</b>	<b>595</b>	<b>601</b>	<b>594</b>	<b>2,922</b>

**Table D.14: Our assessment of key CP5 financial information for Scotland**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	3,591	4,156	4,537	4,764	4,871	4,871
Closing RAB	5,639	6,316	6,828	7,216	7,461	7,461
Financing costs (exc. FIM fee)	76	86	100	112	120	494
FIM fee	37	43	49	52	54	235
Total financing costs	114	129	148	164	173	729
Debt / RAB ratio	63.7%	65.8%	66.5%	66.0%	65.3%	65.3%

**Table D.15: Our assessment of the indicative CP5 expenditure for Anglia**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	43	40	38	37	35	193
Network operations	42	41	38	36	34	192
Traction electricity, industry costs and rates	59	72	74	78	83	366
Network maintenance	102	100	98	95	90	484
Schedule 4 & 8 costs	17	21	24	19	16	98
<b>Total operating expenditure</b>	<b>264</b>	<b>274</b>	<b>272</b>	<b>265</b>	<b>257</b>	<b>1,332</b>
Renewals	189	215	257	217	172	1,051
Enhancements	54	60	63	137	64	378
<b>Total capital expenditure</b>	<b>243</b>	<b>275</b>	<b>320</b>	<b>354</b>	<b>237</b>	<b>1,429</b>
<b>Total expenditure</b>	<b>507</b>	<b>549</b>	<b>592</b>	<b>619</b>	<b>494</b>	<b>2,761</b>

**Table D.16: Our assessment of the indicative CP5 revenue requirement for Anglia**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	264	274	272	265	257	1,332
Add: Long-run steady state amortisation	161	161	161	161	161	807
Add: Regulatory tax allowance	0	0	0	0	0	1
Add: Opex memorandum account	3	3	3	3	3	15
<b>Gross rev. req. before cost of capital</b>	<b>428</b>	<b>438</b>	<b>437</b>	<b>429</b>	<b>422</b>	<b>2,155</b>
Add: Allowed return (real cost of capital)	160	163	167	173	177	839
Less: Real equity surplus	(74)	(78)	(80)	(80)	(80)	(392)
Adjusted allowed return	86	84	87	93	97	448
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>514</b>	<b>523</b>	<b>524</b>	<b>522</b>	<b>519</b>	<b>2,602</b>
Add: Amortisation financial sustainability adjustment	24	24	32	41	41	162
<b>Gross revenue requirement</b>	<b>538</b>	<b>547</b>	<b>557</b>	<b>563</b>	<b>559</b>	<b>2,764</b>
Less: Other single till income	(56)	(60)	(64)	(68)	(71)	(318)
<b>Net revenue requirement</b>	<b>483</b>	<b>487</b>	<b>493</b>	<b>495</b>	<b>488</b>	<b>2,446</b>

**Table D.17: Our assessment of the indicative of the key CP5 financial information for Anglia**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	2,728	2,867	3,054	3,286	3,374	3,374
Closing RAB	4,042	4,258	4,527	4,858	5,033	5,033
Financing costs (exc. FIM fee)	61	61	65	73	78	338
FIM fee	30	31	33	36	37	168
Total financing costs	91	92	98	108	116	505
Debt / RAB ratio	67.5%	67.3%	67.5%	67.6%	67.0%	67.0%



**Table D.18: Our assessment of the indicative CP5 expenditure for East Midlands**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	24	23	22	21	20	111
Network operations	20	19	17	15	15	86
Traction electricity, industry costs and rates	20	23	23	25	31	123
Network maintenance	55	55	53	52	50	264
Schedule 4 & 8 costs	15	13	11	10	8	58
<b>Total operating expenditure</b>	<b>135</b>	<b>133</b>	<b>127</b>	<b>123</b>	<b>125</b>	<b>642</b>
Renewals	149	133	113	105	89	589
Enhancements	114	156	262	270	231	1,033
<b>Total capital expenditure</b>	<b>263</b>	<b>289</b>	<b>375</b>	<b>376</b>	<b>320</b>	<b>1,622</b>
<b>Total expenditure</b>	<b>397</b>	<b>422</b>	<b>501</b>	<b>499</b>	<b>444</b>	<b>2,264</b>

**Table D.19: Our assessment of the indicative CP5 revenue requirement for East Midlands**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	135	133	127	123	125	642
Add: Long-run steady state amortisation	103	103	103	103	103	515
Add: Regulatory tax allowance	0	0	-	-	-	0
Add: Opex memorandum account	2	2	2	2	2	9
<b>Gross rev. req. before cost of capital</b>	<b>240</b>	<b>238</b>	<b>231</b>	<b>228</b>	<b>229</b>	<b>1,166</b>
Add: Allowed return (real cost of capital)	105	112	120	131	140	608
Less: Real equity surplus	(48)	(52)	(53)	(53)	(53)	(259)
Adjusted allowed return	57	60	67	78	87	349
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>297</b>	<b>298</b>	<b>299</b>	<b>305</b>	<b>316</b>	<b>1,515</b>
Add: Amortisation financial sustainability adjustment	16	16	21	26	26	104
<b>Gross revenue requirement</b>	<b>312</b>	<b>314</b>	<b>320</b>	<b>332</b>	<b>342</b>	<b>1,620</b>
Less: Other single till income	(28)	(30)	(31)	(33)	(35)	(157)
<b>Net revenue requirement</b>	<b>284</b>	<b>284</b>	<b>288</b>	<b>298</b>	<b>307</b>	<b>1,463</b>

**Table D.20: Our assessment of the indicative key CP5 financial information for East Midlands**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	1,870	2,083	2,396	2,721	2,982	2,982
Closing RAB	2,715	2,981	3,352	3,753	4,083	4,083
Financing costs (exc. FIM fee)	41	43	51	62	72	269
FIM fee	20	22	25	29	32	127
Total financing costs	61	66	76	90	104	396
Debt / RAB ratio	68.9%	69.9%	71.5%	72.5%	73.0%	73.0%

**Table D.21: Our assessment of the indicative CP5 expenditure for Kent**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	38	36	34	33	31	172
Network operations	30	29	28	28	24	139
Traction electricity, industry costs and rates	53	66	68	71	75	335
Network maintenance	73	71	68	66	63	341
Schedule 4 & 8 costs	16	19	15	15	15	81
<b>Total operating expenditure</b>	<b>210</b>	<b>221</b>	<b>213</b>	<b>214</b>	<b>209</b>	<b>1,067</b>
Renewals	210	202	177	173	179	941
Enhancements	505	512	461	372	139	1,988
<b>Total capital expenditure</b>	<b>715</b>	<b>714</b>	<b>637</b>	<b>544</b>	<b>319</b>	<b>2,929</b>
<b>Total expenditure</b>	<b>925</b>	<b>935</b>	<b>850</b>	<b>758</b>	<b>528</b>	<b>3,997</b>

**Table D.22: Our assessment of the indicative CP5 revenue requirement for Kent**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	210	221	213	214	209	1,067
Add: Long-run steady state amortisation	156	156	156	156	156	782
Add: Regulatory tax allowance	-	-	-	-	-	-
Add: Opex memorandum account	3	3	3	3	3	14
<b>Gross rev. req. before cost of capital</b>	<b>369</b>	<b>381</b>	<b>372</b>	<b>373</b>	<b>369</b>	<b>1,864</b>
Add: Allowed return (real cost of capital)	166	189	210	226	236	1,028
Less: Real equity surplus	(74)	(82)	(84)	(84)	(84)	(408)
Adjusted allowed return	92	107	125	142	152	620
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>462</b>	<b>488</b>	<b>497</b>	<b>516</b>	<b>521</b>	<b>2,484</b>
Add: Amortisation financial sustainability adjustment	24	24	32	40	40	159
<b>Gross revenue requirement</b>	<b>486</b>	<b>512</b>	<b>529</b>	<b>555</b>	<b>561</b>	<b>2,642</b>
Less: Other single till income	(85)	(91)	(97)	(103)	(109)	(485)
<b>Net revenue requirement</b>	<b>401</b>	<b>420</b>	<b>432</b>	<b>452</b>	<b>452</b>	<b>2,157</b>

**Table D.23: Our assessment of the indicative key CP5 financial information for Kent**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	3,181	3,807	4,362	4,828	5,028	5,028
Closing RAB	4,467	5,179	5,839	6,443	6,766	6,766
Financing costs (exc. FIM fee)	66	78	95	114	127	481
FIM fee	32	39	46	51	55	223
Total financing costs	98	117	141	166	182	704
Debt / RAB ratio	71.2%	73.5%	74.7%	74.9%	74.3%	74.3%

**Table D.24: Our assessment of the indicative CP5 expenditure for LNE**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	79	76	71	69	66	360
Network operations	71	70	65	62	59	328
Traction electricity, industry costs and rates	67	77	79	84	97	404
Network maintenance	163	160	153	147	143	766
Schedule 4 & 8 costs	31	39	37	36	47	191
<b>Total operating expenditure</b>	<b>412</b>	<b>422</b>	<b>405</b>	<b>398</b>	<b>412</b>	<b>2,049</b>
Renewals	383	420	386	423	436	2,048
Enhancements	274	293	230	328	166	1,291
<b>Total capital expenditure</b>	<b>657</b>	<b>712</b>	<b>615</b>	<b>751</b>	<b>602</b>	<b>3,339</b>
<b>Total expenditure</b>	<b>1,069</b>	<b>1,134</b>	<b>1,020</b>	<b>1,150</b>	<b>1,015</b>	<b>5,388</b>

**Table D.25: Our assessment of the indicative CP5 revenue requirement for LNE**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	412	422	405	398	412	2,049
Add: Long-run steady state amortisation	352	352	352	352	352	1,762
Add: Regulatory tax allowance	0	0	0	0	0	2
Add: Opex memorandum account	6	6	6	6	6	32
<b>Gross rev. req. before cost of capital</b>	<b>771</b>	<b>781</b>	<b>764</b>	<b>758</b>	<b>772</b>	<b>3,846</b>
Add: Allowed return (real cost of capital)	358	369	380	390	400	1,898
Less: Real equity surplus	(164)	(176)	(179)	(179)	(179)	(877)
Adjusted allowed return	193	194	201	212	221	1,021
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>965</b>	<b>975</b>	<b>965</b>	<b>969</b>	<b>993</b>	<b>4,867</b>
Add: Amortisation financial sustainability adjustment	54	54	72	90	90	361
<b>Gross revenue requirement</b>	<b>1,019</b>	<b>1,029</b>	<b>1,038</b>	<b>1,060</b>	<b>1,083</b>	<b>5,228</b>
Less: Other single till income	(117)	(124)	(133)	(141)	(150)	(665)
<b>Net revenue requirement</b>	<b>902</b>	<b>905</b>	<b>905</b>	<b>918</b>	<b>933</b>	<b>4,563</b>

**Table D.26: Our assessment of the indicative key CP5 financial information for LNE**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	6,203	6,629	6,946	7,427	7,723	7,723
Closing RAB	9,128	9,726	10,233	10,939	11,431	11,431
Financing costs (exc. FIM fee)	138	139	150	166	179	772
FIM fee	67	72	76	81	85	381
Total financing costs	205	212	226	246	264	1,153
Debt / RAB ratio	68.0%	68.2%	67.9%	67.9%	67.6%	67.6%

**Table D.27: Our assessment of the indicative CP5 expenditure for LNW**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	111	105	99	95	91	502
Network operations	104	100	98	93	90	484
Traction electricity, industry costs and rates	115	136	142	153	160	707
Network maintenance	277	266	259	250	244	1,296
Schedule 4 & 8 costs	39	42	42	43	36	203
<b>Total operating expenditure</b>	<b>646</b>	<b>650</b>	<b>640</b>	<b>634</b>	<b>622</b>	<b>3,192</b>
Renewals	478	503	506	468	443	2,397
Enhancements	460	514	414	437	303	2,129
<b>Total capital expenditure</b>	<b>938</b>	<b>1,017</b>	<b>920</b>	<b>905</b>	<b>746</b>	<b>4,526</b>
<b>Total expenditure</b>	<b>1,584</b>	<b>1,666</b>	<b>1,560</b>	<b>1,539</b>	<b>1,368</b>	<b>7,718</b>

**Table D.28: Our assessment of the indicative CP5 revenue requirement for LNW**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	646	650	640	634	622	3,192
Add: Long-run steady state amortisation	440	440	440	440	440	2,200
Add: Regulatory tax allowance	1	1	1	1	1	4
Add: Opex memorandum account	8	8	8	8	8	40
<b>Gross rev. req. before cost of capital</b>	<b>1,095</b>	<b>1,098</b>	<b>1,089</b>	<b>1,083</b>	<b>1,071</b>	<b>5,435</b>
Add: Allowed return (real cost of capital)	444	464	483	499	511	2,402
Less: Real equity surplus	(203)	(218)	(223)	(223)	(223)	(1,090)
Adjusted allowed return	241	246	261	276	288	1,312
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>1,335</b>	<b>1,344</b>	<b>1,349</b>	<b>1,359</b>	<b>1,359</b>	<b>6,747</b>
Add: Amortisation financial sustainability adjustment	67	67	89	112	112	446
<b>Gross revenue requirement</b>	<b>1,402</b>	<b>1,411</b>	<b>1,438</b>	<b>1,471</b>	<b>1,470</b>	<b>7,193</b>
Less: Other single till income	(166)	(178)	(189)	(200)	(211)	(944)
<b>Net revenue requirement</b>	<b>1,236</b>	<b>1,233</b>	<b>1,250</b>	<b>1,271</b>	<b>1,260</b>	<b>6,249</b>

**Table D.29: Our assessment of the indicative key CP5 financial information for LNW**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	7,792	8,463	9,030	9,595	9,958	9,958
Closing RAB	11,404	12,291	13,099	13,956	14,572	14,572
Financing costs (exc. FIM fee)	172	177	195	217	234	995
FIM fee	84	91	98	104	109	487
Total financing costs	256	269	293	321	344	1,482
Debt / RAB ratio	68.3%	68.9%	68.9%	68.8%	68.3%	68.3%

**Table D.30: Our assessment of the indicative CP5 expenditure for Sussex**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	25	24	23	22	21	115
Network operations	30	28	28	27	26	138
Traction electricity, industry costs and rates	45	56	57	60	62	280
Network maintenance	57	59	52	51	47	267
Schedule 4 & 8 costs	10	11	9	9	12	50
<b>Total operating expenditure</b>	<b>168</b>	<b>177</b>	<b>169</b>	<b>168</b>	<b>168</b>	<b>850</b>
Renewals	154	170	141	153	130	748
Enhancements	62	52	83	61	34	292
<b>Total capital expenditure</b>	<b>216</b>	<b>222</b>	<b>224</b>	<b>214</b>	<b>165</b>	<b>1,040</b>
<b>Total expenditure</b>	<b>384</b>	<b>399</b>	<b>393</b>	<b>382</b>	<b>333</b>	<b>1,891</b>

**Table D.31: Our assessment of the indicative CP5 revenue requirement for Sussex**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	168	177	169	168	168	850
Add: Long-run steady state amortisation	112	112	112	112	112	562
Add: Regulatory tax allowance	0	0	0	0	0	2
Add: Opex memorandum account	2	2	2	2	2	10
<b>Gross rev. req. before cost of capital</b>	<b>283</b>	<b>292</b>	<b>284</b>	<b>283</b>	<b>283</b>	<b>1,425</b>
Add: Allowed return (real cost of capital)	112	116	120	123	125	597
Less: Real equity surplus	(52)	(55)	(56)	(56)	(56)	(275)
Adjusted allowed return	61	61	64	67	69	322
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>343</b>	<b>353</b>	<b>348</b>	<b>350</b>	<b>352</b>	<b>1,747</b>
Add: Amortisation financial sustainability adjustment	17	17	23	28	28	113
<b>Gross revenue requirement</b>	<b>360</b>	<b>370</b>	<b>371</b>	<b>379</b>	<b>380</b>	<b>1,860</b>
Less: Other single till income	(80)	(85)	(91)	(96)	(101)	(453)
<b>Net revenue requirement</b>	<b>281</b>	<b>285</b>	<b>280</b>	<b>283</b>	<b>279</b>	<b>1,408</b>



**Table D.32: Our assessment of the indicative key CP5 financial information for Sussex**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	1,954	2,083	2,215	2,339	2,400	2,400
Closing RAB	2,870	3,054	3,246	3,441	3,564	3,564
Financing costs (exc. FIM fee)	43	44	48	53	56	243
FIM fee	21	23	24	26	27	120
Total financing costs	64	67	72	78	83	363
Debt / RAB ratio	68.1%	68.2%	68.2%	68.0%	67.3%	67.3%

**Table D.33: Our assessment of the indicative CP5 expenditure for Wales**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	23	22	21	20	19	105
Network operations	25	24	23	24	21	117
Traction electricity, industry costs and rates	11	11	11	13	15	62
Network maintenance	61	60	59	58	57	294
Schedule 4 & 8 costs	18	10	17	8	7	60
<b>Total operating expenditure</b>	<b>139</b>	<b>127</b>	<b>131</b>	<b>123</b>	<b>119</b>	<b>638</b>
Renewals	176	140	144	105	95	660
Enhancements	94	114	132	187	97	624
<b>Total capital expenditure</b>	<b>270</b>	<b>254</b>	<b>276</b>	<b>292</b>	<b>192</b>	<b>1,284</b>
<b>Total expenditure</b>	<b>408</b>	<b>381</b>	<b>407</b>	<b>415</b>	<b>311</b>	<b>1,922</b>

**Table D.34: Our assessment of the indicative CP5 revenue requirement for Wales**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	139	127	131	123	119	638
Add: Long-run steady state amortisation	104	104	104	104	104	521
Add: Regulatory tax allowance	0	-	-	-	0	0
Add: Opex memorandum account	2	2	2	2	2	10
<b>Gross rev. req. before cost of capital</b>	<b>245</b>	<b>233</b>	<b>237</b>	<b>229</b>	<b>225</b>	<b>1,169</b>
Add: Allowed return (real cost of capital)	109	115	121	128	132	606
Less: Real equity surplus	(50)	(54)	(55)	(55)	(55)	(268)
Adjusted allowed return	60	62	67	73	78	338
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>304</b>	<b>295</b>	<b>303</b>	<b>302</b>	<b>303</b>	<b>1,507</b>
Add: Amortisation financial sustainability adjustment	16	16	22	27	27	109
<b>Gross revenue requirement</b>	<b>321</b>	<b>311</b>	<b>325</b>	<b>329</b>	<b>330</b>	<b>1,616</b>
Less: Other single till income	(30)	(31)	(33)	(35)	(37)	(166)
<b>Net revenue requirement</b>	<b>291</b>	<b>280</b>	<b>292</b>	<b>294</b>	<b>293</b>	<b>1,450</b>

**Table D.35: Our assessment of the indicative key CP5 financial information for Wales**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	1,947	2,121	2,322	2,547	2,652	2,652
Closing RAB	2,828	3,056	3,317	3,616	3,788	3,788
Financing costs (exc. FIM fee)	42	45	50	58	64	258
FIM fee	21	23	25	27	29	125
Total financing costs	63	67	75	85	93	383
Debt / RAB ratio	68.9%	69.4%	70.0%	70.4%	70.0%	70.0%

**Table D.36: Our assessment of the indicative CP5 expenditure for Wessex**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	34	32	30	29	28	154
Network operations	31	30	30	27	26	143
Traction electricity, industry costs and rates	58	70	72	75	77	351
Network maintenance	88	87	83	78	74	409
Schedule 4 & 8 costs	15	14	16	19	14	78
<b>Total operating expenditure</b>	<b>225</b>	<b>233</b>	<b>230</b>	<b>227</b>	<b>219</b>	<b>1,134</b>
Renewals	192	192	230	220	176	1,010
Enhancements	48	58	113	226	285	731
<b>Total capital expenditure</b>	<b>241</b>	<b>250</b>	<b>343</b>	<b>446</b>	<b>461</b>	<b>1,741</b>
<b>Total expenditure</b>	<b>466</b>	<b>483</b>	<b>573</b>	<b>674</b>	<b>680</b>	<b>2,875</b>

**Table D.37: Our assessment of the indicative CP5 revenue requirement for Wessex**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	225	233	230	227	219	1,134
Add: Long-run steady state amortisation	156	156	156	156	156	778
Add: Regulatory tax allowance	0	0	0	0	0	2
Add: Opex memorandum account	3	3	3	3	3	14
<b>Gross rev. req. before cost of capital</b>	<b>384</b>	<b>392</b>	<b>389</b>	<b>386</b>	<b>377</b>	<b>1,929</b>
Add: Allowed return (real cost of capital)	156	159	164	173	183	835
Less: Real equity surplus	(72)	(77)	(78)	(78)	(79)	(384)
Adjusted allowed return	84	82	86	94	105	451
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>468</b>	<b>474</b>	<b>475</b>	<b>480</b>	<b>482</b>	<b>2,380</b>
Add: Amortisation financial sustainability adjustment	24	24	32	40	40	159
<b>Gross revenue requirement</b>	<b>492</b>	<b>498</b>	<b>507</b>	<b>520</b>	<b>522</b>	<b>2,539</b>
Less: Other single till income	(82)	(88)	(93)	(98)	(103)	(464)
<b>Net revenue requirement</b>	<b>410</b>	<b>410</b>	<b>414</b>	<b>422</b>	<b>419</b>	<b>2,074</b>

**Table D.38: Our assessment of the indicative key CP5 financial information for Wessex**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	2,678	2,795	3,014	3,360	3,725	3,725
Closing RAB	3,965	4,157	4,456	4,900	5,352	5,352
Financing costs (exc. FIM fee)	60	59	64	74	85	342
FIM fee	29	31	33	36	40	168
Total financing costs	89	90	96	109	125	510
Debt / RAB ratio	67.5%	67.2%	67.6%	68.6%	69.6%	69.6%

**Table D.39: Our assessment of the indicative CP5 expenditure for Western**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Support costs	43	41	39	38	36	197
Network operations	33	33	31	31	31	159
Traction electricity, industry costs and rates	26	27	27	41	63	183
Network maintenance	109	109	106	104	103	531
Schedule 4 & 8 costs	25	25	23	23	25	121
<b>Total operating expenditure</b>	<b>237</b>	<b>235</b>	<b>226</b>	<b>236</b>	<b>259</b>	<b>1,192</b>
Renewals	311	273	247	248	243	1,322
Enhancements	716	774	708	499	299	2,997
<b>Total capital expenditure</b>	<b>1,028</b>	<b>1,047</b>	<b>955</b>	<b>746</b>	<b>543</b>	<b>4,318</b>
<b>Total expenditure</b>	<b>1,265</b>	<b>1,282</b>	<b>1,180</b>	<b>982</b>	<b>801</b>	<b>5,510</b>

**Table D.40: Our assessment of the indicative CP5 revenue requirement for Western**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	237	235	226	236	259	1,192
Add: Long-run steady state amortisation	181	181	181	181	181	905
Add: Regulatory tax allowance	-	-	-	-	-	-
Add: Opex memorandum account	3	3	3	3	3	17
<b>Gross rev. req. before cost of capital</b>	<b>421</b>	<b>420</b>	<b>410</b>	<b>420</b>	<b>443</b>	<b>2,114</b>
Add: Allowed return (real cost of capital)	199	234	267	293	311	1,303
Less: Real equity surplus	(87)	(98)	(101)	(101)	(101)	(488)
Adjusted allowed return	111	136	165	192	210	815
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>533</b>	<b>556</b>	<b>575</b>	<b>612</b>	<b>653</b>	<b>2,929</b>
Add: Amortisation financial sustainability adjustment	28	28	37	46	46	186
<b>Gross revenue requirement</b>	<b>561</b>	<b>584</b>	<b>613</b>	<b>659</b>	<b>700</b>	<b>3,115</b>
Less: Other single till income	(69)	(72)	(75)	(78)	(81)	(376)
<b>Net revenue requirement</b>	<b>492</b>	<b>511</b>	<b>537</b>	<b>580</b>	<b>618</b>	<b>2,739</b>

**Table D.41: Our assessment of the indicative key CP5 financial information for Western**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 closing/ total
Closing debt	3,926	4,894	5,783	6,462	6,904	6,904
Closing RAB	5,430	6,503	7,526	8,385	8,992	8,992
Financing costs (exc. FIM fee)	79	99	127	156	177	638
FIM fee	39	49	59	68	74	290
Total financing costs	118	149	186	224	251	927
Debt / RAB ratio	72.3%	75.3%	76.8%	77.1%	76.8%	76.8%

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# Annex E: Funding of enhancement projects

## Summary

- E.1. This annex summarises our determination on the funding of enhancement projects. In some cases specific schemes are being funded while in others Network Rail is funded to meet a specification.
- E.2. The proposed list of projects in Network Rail's SBP, except for Carstairs and Edinburgh South Suburban electrification, meet the requirements of the HLOSs. These two projects, along with others that are not required by the HLOSs, could be funded through other sources and taken forward through our investment framework.
- E.3. Although we have assumed costs for delivering individual projects it is the total cost for England & Wales and for Scotland that we have used to determine how much revenue Network Rail needs. Because there are so many projects at an early stage of development we will revisit these assumptions by the end of 2014-15 through a new **enhancements cost adjustment mechanism**. As part of this process we expect Network Rail to demonstrate engagement with train operators. One way of doing this could be through a commercial gain share agreement (**the enhancements efficiency benefit sharing mechanism**<sup>573</sup>), although we are not mandating this.
- E.4. Once ORR has determined the overall portfolio efficient cost, Network Rail is free to budget for individual schemes as it sees fit and the underspend/overspend framework (RAB roll forward policy) will apply to the aggregate costs. Where appropriate, we will undertake an ex-post efficiency review of projects. The exceptions are:
- (a) schemes subject to bespoke target price arrangements. In England & Wales, these are Thameslink and Crossrail. In Scotland, these are EGIP and Borders;
  - (b) the ring-fenced funds, where Network Rail is funded for spending up to the caps shown in Table E.1 and Table E.2; and
  - (c) the funding allowances we have assumed for R&D (including innovation), depots and ETCS cab fitment.

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<sup>573</sup> The enhancements cost adjustment mechanism is the process by which ORR will determine efficient costs; the enhancements efficiency benefit sharing mechanism is the process by which Network Rail and train operators can enter into commercial arrangements to reduce costs.

## List of projects

Table E.1: Projects in England & Wales

£m (2012-13 prices)	Determination
<b>Schemes outwith the cost adjustment mechanism and overspend/underspend (o/u) framework</b>	
Thameslink & Crossrail	
Strategic Rail Freight Network fund (including the CP4 rollover of the SFN)	Capped at 246
East Coast Connectivity fund	Capped at 247
Passenger Journey Improvement fund	Capped at 309
Station Improvement fund (including the CP4 rollover for NSIP and Access for All)	Capped at 242
Development fund	Capped at 144
Level Crossing Safety fund (including £29m of extra expenditure identified since the draft determination <sup>574</sup> )	Capped at 96
Funding allowance for research & development	Capped at 45
Funding allowance for depots and stabling	
Funding allowance for ETCS cab fitment	
<b>Sub total</b>	<b>4,897</b>
<b>Schemes outwith the cost adjustment mechanism but included in the o/u framework</b>	
Birmingham New Street gateway <sup>575</sup>	
Bromsgrove electrification	
Redditch branch enhancement	
Kent power supply upgrade (CP4)	
Barry - Cardiff Queen Street corridor	
Northern Urban Centres (including Liverpool to Leeds journey time improvements)	
Completion of seven day railway initiatives (mobile maintenance units and bi-directional signalling on the Brighton Main Line) <sup>576</sup>	
<b>Sub total</b>	<b>207</b>
<b>Schemes subject to the cost adjustment mechanism and included in o/u framework</b>	
<b>Electrification schemes</b>	

<sup>574</sup> Explained in chapter 11

<sup>575</sup> We will treat this project separately as it has a significant third party funding contribution

<sup>576</sup> Explained in the network availability section of chapter 3



£m (2012-13 prices)	Determination
Great Western electrification	
Bridgend to Swansea electrification	
North Trans-Pennine electrification	
Micklefield to Selby electrification	
North West electrification	
MML electrification	
Derby station area remodelling	
The electric spine	
Acton to Willesden electrification (WCML)	
Thames Valley branches	
Walsall to Rugeley electrification	
Welsh Valley Lines electrification	
<b>Other committed projects</b>	
East West rail	
Northern Hub	
IEP programme	
Reading station area redevelopment	
Stafford area improvement scheme	
West Coast power supply upgrade	
<b>Other named schemes</b>	
Oxford station area capacity and enlargement	
Huddersfield station capacity improvement	
Western access to London Heathrow Airport	
Service improvements in the Ely area	
Redhill additional platform	
Waterloo	
Dr Days to Filton Abbey Wood capacity	
Bristol Temple Meads passenger capacity	
<b>HLOS capacity metric schemes</b>	
Micklefield turnback	
South London HV traction power upgrade	
West Anglia Main Line capacity increase	
Bow Junction upgrade with turnbacks	
West of England DMU capability works	



**Table E.2: Projects in Scotland**

<b>£m (2012-13 prices)</b>	<b>Determination</b>
<b>Schemes outside of the cost adjustment mechanism and o/u framework</b>	
Scottish Stations fund	Capped at 31
Scottish Strategic Rail Freight Investment fund	Capped at 31
Scottish Network Improvement fund	Capped at 62
Future Network Development fund	Capped at 11
Level Crossings fund (including £3m of extra expenditure identified since the draft determination <sup>578</sup> )	Capped at 13
EGIP: Springburn to Cumbernauld	
Borders	
Funding allowance for ETCS cab fitment	
Funding allowance for research & development	
<b>Sub total</b>	<b>344</b>
<b>Schemes subject to the cost adjustment mechanism but outside the o/u framework</b>	
EGIP: Edinburgh to Glasgow electrification	
EGIP: Edinburgh gateway	
EGIP: Infrastructure	
<b>Sub total</b>	<b>474</b>
<b>Schemes outwith the cost adjustment mechanism but included in the o/u framework</b>	
Completion of seven day railway initiatives (mobile maintenance units and clearance on the ECML) <sup>579</sup>	
<b>Sub total</b>	<b>8</b>
<b>Schemes subject to the cost adjustment mechanism and included in o/u framework</b>	
Aberdeen to Inverness journey time improvements and other enhancements	
Highland Main Line journey time improvements	
Rolling programme of electrification	
Motherwell re-signalling enhancements	
Motherwell area stabling	
Other projects to meet the outputs	
<b>Sub total</b>	<b>477</b>

<sup>578</sup> Explained in chapter 11.

<sup>579</sup> Explained in the network availability section of chapter 3.

<b>£m (2012-13 prices)</b>	<b>Determination</b>
<b>Other adjustments<sup>580</sup></b>	<b>53</b>
<b>GRAND TOTAL IN SCOTLAND</b>	<b>1,356</b>

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<sup>580</sup> Explained in Table 9.8, R&D allowance deducted to avoid double count.

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# Annex F: Further detail on the effect of the financial framework on the level of access charges

## Introduction

F.1. This annex sets out:

- (a) the total value of the fixed track access charge assuming that there were no network grant payments in CP5. If Network Rail did not receive the amount of network grants assumed in our determination, then access charges would increase by the same amount as the reduction in network grants; and
- (b) what Network Rail's revenue requirement and access charges would be if we had used a cost of capital approach, i.e. without making the adjusted WACC adjustments or using the PR08 ring-fenced approach. To calculate the revenue requirement under this funding scenario, we would make the following changes to the calculation of Network Rail's net revenue requirement:
  - (i) there would be no equity surplus adjustment;
  - (ii) we would revise the financial sustainability adjustments. To keep this analysis as straightforward as possible, we have assumed that there are no financial sustainability adjustments in this scenario; and
  - (iii) there would be some small consequential changes to corporation tax.

F.2. Table F.1 sets out the fixed track access charges if Network Rail did not receive the amount of network grants assumed in our determination. Tables F.2 to F.7 set out the calculation of Network Rail's revenue requirement if we had funded its cost of capital without making the adjusted WACC adjustments or using the PR08 ring-fenced approach.

F.3. The effect of network grant and the adjusted WACC approach on Network Rail's charges are also set out in the access charges chapter (chapter 16).

**Table F.1: Comparison of fixed track access charges in CP5 including and excluding network grant**

£m (2012-13 prices)	Fixed track access charges for CP5	Network grant	Total	Fixed access charges without grant
Great Britain	2,379	19,586	21,966	21,966
England & Wales	1,760	17,661	19,421	19,421
Scotland	620	1,925	2,545	2,545

**Table F.2: Our assessment of the CP5 revenue requirement for Great Britain using a cost of capital approach**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	2,687	2,735	2,672	2,640	2,633	13,367
Add: Long-run steady state amortisation (including non-capex amortisation)	1,982	1,982	1,982	1,982	1,982	9,909
Add: Regulatory tax allowance	4	4	4	4	138	153
Add: Opex memorandum account	34	34	34	34	34	172
<b>Gross rev. req. before cost of capital</b>	<b>4,707</b>	<b>4,755</b>	<b>4,692</b>	<b>4,660</b>	<b>4,788</b>	<b>23,602</b>
Add: Allowed return (real cost of capital)	2,030	2,174	2,316	2,449	2,553	11,523
Less: Real equity surplus	-	-	-	-	-	-
Adjusted allowed return	2,030	2,174	2,316	2,449	2,553	11,523
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>6,737</b>	<b>6,929</b>	<b>7,009</b>	<b>7,108</b>	<b>7,341</b>	<b>35,124</b>
Add: Amortisation financial sustainability adjustment	-	-	-	-	-	-
<b>Gross revenue requirement</b>	<b>6,737</b>	<b>6,929</b>	<b>7,009</b>	<b>7,108</b>	<b>7,341</b>	<b>35,124</b>
Less: Other single till income	(764)	(813)	(862)	(911)	(960)	(4,310)
<b>Net revenue requirement</b>	<b>5,973</b>	<b>6,117</b>	<b>6,146</b>	<b>6,198</b>	<b>6,381</b>	<b>30,815</b>

**Table F.3: Key financial information for Great Britain in CP5 using a cost of capital approach**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Closing debt	35,180	38,376	41,310	44,183	45,585	45,585
Closing RAB	52,808	58,176	63,548	69,251	73,433	73,433
Financing costs (exc. FIM fee)	771	803	892	1,003	1,084	4,553
FIM fee	377	413	447	479	502	2,217
Total financing costs	1,147	1,217	1,338	1,482	1,586	6,770
Debt / RAB ratio	66.6%	66.0%	65.0%	63.8%	62.1%	62.1%

**Table F.4: CP5 revenue requirement for England & Wales using a cost of capital approach**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	2,434	2,472	2,411	2,389	2,391	12,097
Add: Long-run steady state amortisation (including non-capex amortisation)	1,766	1,766	1,766	1,766	1,766	8,831
Add: Regulatory tax allowance	3	3	3	3	98	112
Add: Opex memorandum account	32	32	32	32	32	162
<b>Gross rev. req. before cost of capital</b>	<b>4,236</b>	<b>4,273</b>	<b>4,213</b>	<b>4,191</b>	<b>4,288</b>	<b>21,201</b>
Add: Allowed return (real cost of capital)	1,815	1,938	2,063	2,184	2,283	10,284
Less: Real equity surplus	-	-	-	-	-	-
Adjusted allowed return	1,815	1,938	2,063	2,184	2,283	10,284
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>6,051</b>	<b>6,212</b>	<b>6,276</b>	<b>6,375</b>	<b>6,571</b>	<b>31,485</b>
Add: Amortisation financial sustainability adjustment	-	-	-	-	-	-
<b>Gross revenue requirement</b>	<b>6,051</b>	<b>6,212</b>	<b>6,276</b>	<b>6,375</b>	<b>6,571</b>	<b>31,485</b>
Less: Other single till income	(712)	(759)	(806)	(852)	(899)	(4,028)
<b>Net revenue requirement</b>	<b>5,339</b>	<b>5,453</b>	<b>5,469</b>	<b>5,523</b>	<b>5,672</b>	<b>27,457</b>



**Table F.5: Key financial information for England & Wales in CP5 using a cost of capital approach**

£m (nominal prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Closing debt	31,673	34,406	37,060	39,806	41,211	41,211
Closing RAB	47,137	51,795	56,607	61,860	65,733	65,733
Financing costs (exc. FIM fee)	696	721	798	901	977	4,093
FIM fee	340	371	401	430	453	1,995
Total financing costs	1,035	1,092	1,199	1,331	1,431	6,088
Debt / RAB ratio	67.2%	66.4%	65.5%	64.3%	62.7%	62.7%

**Table F.6: CP5 revenue requirement in Scotland using a cost of capital approach**

£m (2012-13 prices)	2014-15	2015-16	2016-17	2017-18	2018-19	CP5 total
Total operating expenditure	253	264	261	251	242	1,271
Add: Long-run steady state amortisation (including non-capex amortisation)	216	216	216	216	216	1,078
Add: Regulatory tax allowance	0	0	0	14	26	41
Add: Opex memorandum account	2	2	2	2	2	11
<b>Gross rev. req. before cost of capital</b>	<b>471</b>	<b>482</b>	<b>479</b>	<b>483</b>	<b>487</b>	<b>2,401</b>
Add: Allowed return (real cost of capital)	215	236	254	264	270	1,239
Less: Real equity surplus	-	-	-	-	-	-
Adjusted allowed return	215	236	254	264	270	1,239
<b>Gross rev. req. pre-sustainability adjustments</b>	<b>685</b>	<b>718</b>	<b>733</b>	<b>747</b>	<b>757</b>	<b>3,640</b>
Add: Amortisation financial sustainability adjustment	-	-	-	-	-	-
<b>Gross revenue requirement</b>	<b>685</b>	<b>718</b>	<b>733</b>	<b>747</b>	<b>757</b>	<b>3,640</b>
Less: Other single till income	(52)	(54)	(56)	(59)	(62)	(282)
<b>Net revenue requirement</b>	<b>633</b>	<b>664</b>	<b>677</b>	<b>689</b>	<b>695</b>	<b>3,358</b>

**Table F.7: Key financial information for Scotland in CP5 using a cost of capital approach**

<b>£m (nominal prices)</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>CP5 total</b>
Closing debt	3,507	3,971	4,251	4,377	4,374	4,374
Closing RAB	5,671	6,381	6,941	7,391	7,700	7,700
Financing costs (exc. FIM fee)	75	82	93	103	106	460
FIM fee	37	42	46	48	49	222
Total financing costs	112	124	139	151	155	682
Debt / RAB ratio	61.8%	62.2%	61.2%	59.2%	56.8%	56.8%

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# Annex G: Comparison of PR13 to the Rail Value for Money (RVfM) study

## Structure of this annex

- G.1. This annex has the following structure:
- (a) introduction and background;
  - (b) key findings of the RVfM study;
  - (c) sources of efficiencies; and
  - (d) comparison of RVfM efficiencies to our determination.

## Introduction and background

- G.2. This annex summarises the purpose and key findings of the Rail Value for Money (RVfM) study led by Sir Roy McNulty and compares the study's recommendations on industry cost savings and efficiencies to our determination.
- G.3. The RVfM study was commissioned jointly by DfT and ORR and its findings were published in May 2011. We welcomed and strongly endorsed the findings of the study.
- G.4. The aim of the RVfM study was to examine the overall cost structure of all elements of the railway sector and to identify options for improving value for money to passengers and the taxpayer while continuing to expand capacity as necessary and drive up passenger satisfaction. The report specifically did not examine possible cuts to the rail network<sup>581</sup>.

## Key findings of the RVfM study

- G.5. The RVfM study identified a widespread recognition that the industry had problems in terms of efficiency and costs. It also highlighted that unit costs per passenger kilometre have not improved since the mid-1990s and that, based on 2008-09 costs, the industry's costs are 30% higher than European comparators.
- G.6. The RVfM study identified a number of key barriers within the industry to improving value for money. These included: the fragmentation of structures and interfaces; the ways in which the roles of Government and industry have evolved; ineffective and misaligned incentives; a franchising system that does not sufficiently encourage cost reduction; management approaches that fall short of best-practice in a number of

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<sup>581</sup> The terms of reference of the RVfM study are set out in Annex A of the RVfM Summary report, available at: <http://www.rail-reg.gov.uk/upload/pdf/rail-vfm-summary-report-may11.pdf>.

areas that are key cost drivers; and a railway culture which is not conducive to the partnership and continuous improvement approaches required for effective cost reduction.

- G.7. The RVfM study recommended that the industry should aim to achieve a 30% reduction in unit costs (i.e. costs per passenger-km) by 2018-19, compared to 2008-09 costs. The study suggested a three part solution to improving efficiency:
- (a) **changes to create an enabling environment:** this included greater clarity on rail policy, objectives and strategies, stronger and more cohesive industry leadership, changes to structures and interfaces to improve the ways in which rail organisations and people work together, incentives that are more effective and better aligned, a review of fares policy and structures, and greater clarity as to what Government subsidy is buying;
  - (b) **changes which deliver the major savings:** these focus principally on reaching best-practice in asset management, programme and project management, supply chain management, standards and technology, HR management, and pursuing initiatives in the areas of capacity utilisation, information systems, and new approaches to enable lower-cost regional railways; and
  - (c) **effective approaches to drive implementation:** developing an implementation plan with the involvement and commitment of all concerned to deliver the recommendations of the study, with a small independent 'change team' working closely with DfT and ORR, and a new industry leadership group – the Rail Delivery Group.
- G.8. In support of its recommendations, the RVfM study identified a number of key areas where savings could be realised to deliver improved value for money. The majority of these savings were assumed to result from efficiencies in train operations, rolling stock companies and infrastructure management.

## Sources of efficiencies

- G.9. The RVfM study drew mainly on two types of analysis to support its recommendations for improving value for money by 2018-19:
- (a) a desktop (or 'should cost') analysis, based on evidence that we gathered as part of PR08 and other Great Britain and international railway benchmarking evidence; and
  - (b) a bottom-up analysis, based on an assessment of the individual savings that could be made if the recommendations of the study were to be implemented in full.
- G.10. Table G.1 sets out the areas of the industry that the RVfM study expected to generate savings between 2008-09 and 2018-19. The RVfM study assumed that Network Rail would provide between 67% and 81% of the total savings identified in the report.

**Table G.1: Source of total RVfM efficiencies**

Total RVfM efficiencies	Should cost assessment		Bottom-up assessment <sup>582</sup>	
	Low	High	Low	High
£bn (2008-09 prices)				
Network Rail	1.8 (71%)	2.3 (67%)	2.2 (80%)	2.8 (81%)
Other (including TOC/ROSCOs)	0.7 (29%)	1.2 (33%)	0.6 (20%)	0.7 (19%)
<b>Total projected savings required</b>	<b>2.5</b>	<b>3.5</b>	<b>2.8</b>	<b>3.4</b>

G.11. Our analysis of the RVfM study has focused on the savings that the report attributed to Network Rail, and more specifically those that the RVfM study assumed would be deliverable in CP5. Table G.2 sets out the savings attributable to Network Rail and the rest of the industry in CP5, i.e. excluding efficiencies assumed to be achieved in CP4. For ease of comparison we have presented these savings in 2012-13 prices, as this is the price base for our determination.

G.12. As shown in Table G.2, the proportion of CP5 savings attributable to Network Rail in the RVfM study is between 49% and 73%. Although Network Rail's expected contribution to the RVfM savings is significant (between half and three quarters of the total savings), the study still expected that the rest of the industry should contribute substantial savings, e.g. from passenger operations, rolling stock arrangements and freight operations. In many cases, the savings attributable to Network Rail are also dependent on changes or reforms from other parts of the industry. For example, costs savings from improved alignment of incentives between different industry participants, spreading of peak demand and more track-friendly trains cannot be achieved by Network Rail alone.

**Table G.2: Source of RVfM efficiencies in CP5**

CP5 RVfM efficiencies	Should cost assessment		Bottom-up assessment <sup>582</sup>	
	Low	High	Low	High
£bn (2012-13 prices)				
Network Rail	0.7 (49%)	1.2 (52%)	1.1 (68%)	1.8 (73%)
Other (including TOC/ROSCOs)	0.7 (51%)	1.2 (48%)	0.5 (32%)	0.7 (27%)
<b>Total projected savings required</b>	<b>1.4</b>	<b>2.4</b>	<b>1.6</b>	<b>2.5</b>

## Comparison of efficiencies identified by RVfM study

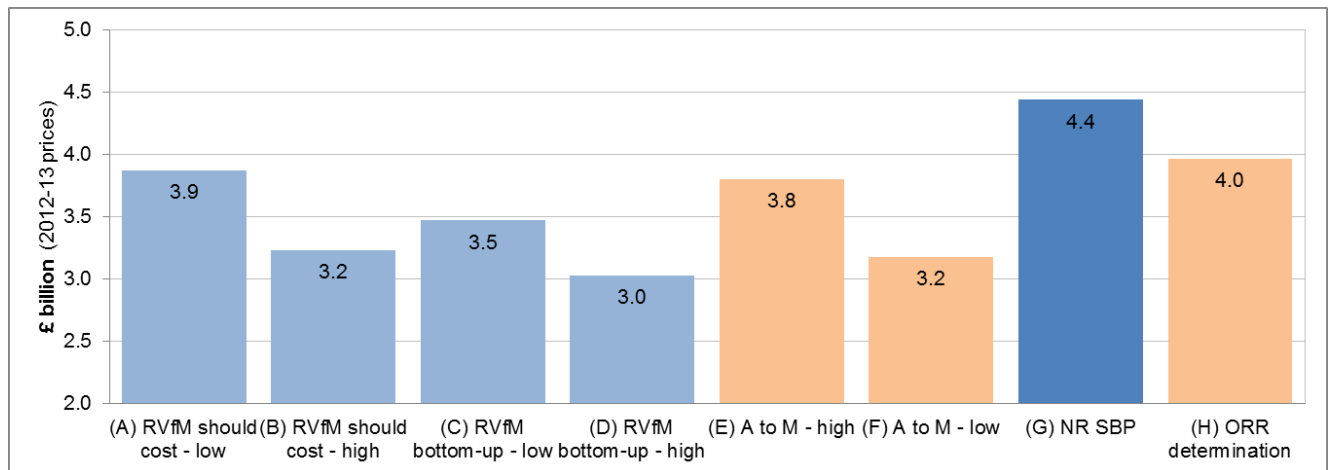
G.13. In chapter 4, we summarise the efficiencies that we expect Network Rail to achieve in its support, operations, maintenance and renewals expenditure by the end of CP5.

<sup>582</sup> In the RVfM study, the bottom-up savings are presented on a funding basis in 2009-10 prices, i.e. including the implications of Network Rail's funding via the RAB. In Tables G.1 and G.2, we have set out the RVfM bottom-up assessment of efficiencies on an expenditure basis to be comparable with the 'should cost analysis'.

Below we compare our PR13 assumptions on Network Rail's post-efficient costs in CP5 to those in the RVfM study<sup>583</sup>.

- G.14. The RVfM study was based on the industry structure (and costs and revenues) in 2008-09. In Figure G.1 we present the assumed total value of Network Rail's support, operations, maintenance and renewals costs in 2018-19 as per the RVfM study, Network Rail's SBP and our determination.

**Figure G.1: Comparison of Network Rail's 2018-19 costs\***



\*Note to Figure G.1: 'A to M – low' and 'A to M – high' refer to the ranges in our advice to ministers, published in March 2012.

- G.15. In financial terms our determination is below Network Rail's SBP but above the RVfM study and our advice to ministers ranges. It is difficult to compare our findings directly with those of the RVfM study, because that study did not take account of increasing outputs or longer term sustainability issues (such as the extra volumes of civils work we now consider need to be delivered). The RVfM study also said that achieving its high estimates for the industry as a whole depended on wide ranging changes across the industry. We are slightly above our advice to ministers range, reflecting the better information we now have.
- G.16. In PR13 we have established and drawn on a much deeper and robust base of studies, with newer evidence and analysis, than was available to the RVfM study or at the time of our advice to ministers. Our review sets a strong efficiency challenge and our plans for enhancements efficiency develop this challenge further. Taking all this into account we believe that the efficiency challenge identified in the RVfM study for Network Rail itself will have been fully addressed for CP5.

<sup>583</sup> The RVfM study also set out recommendations for achieving savings of between around £160m and £325m (in 2013-13 prices) in Network Rail's enhancements costs. These savings were only reflected in its bottom-up analysis and for comparability with the RVfM should cost assessment we have excluded enhancements costs from the analysis in this annex.

G.17. It should also be noted that the RVfM study identified savings of £0.5bn to £1.2bn that it considered other parts of the industry, mainly train operators, could make by the end of CP5. These are not addressed in our determination of Network Rail's CP5 revenue requirements.



# Annex H: Process for re-opening the price control

## Introduction

- H.1. The financial framework chapter (chapter 12) explains the circumstances in which the regulatory settlement for Network Rail in CP5 may be re-opened during a control period.
- H.2. This annex sets out the procedure that we expect to follow in the circumstances that one or more of the criteria for initiating an access charges review prior to 1 April 2019 (an interim review) is triggered. We have developed this procedure on the assumption that any such interim review would need to be conducted as quickly as possible.

## Background

- H.3. Our determination provides Network Rail with a revenue stream that, in our view, is sufficient for it to deliver all its regulatory outputs provided that it operates efficiently. In addition, the regulatory framework provides a number of protections to Network Rail in the event of unforeseen circumstances. These protections are described in our determination. It is not the intention, however, that the allowed revenues are sufficient to absorb all significant external cost shocks. In such circumstances, the determination may need to be re-opened during a control period, by means of an interim review.
- H.4. As described in our determination and as set out in Schedule 7 of franchise operators' track access contracts, the circumstances in which an interim review may be triggered are:
  - (a) **material change in circumstances re-opener:** Where there has been or is likely to be a material change in the circumstances:
    - (i) of Network Rail; and/or
    - (ii) in relevant financial markets or any part of such markets.
  - (b) **Scotland re-opener:** Where Network Rail projects its forward three-year average total net expenditure in Scotland to be more than 15% greater than that assumed in the regulatory determination. This would trigger the interim review process for Scotland only. When there is less than three years remaining in CP5, the calculation will be solely for the remaining part of CP5.
- H.5. We would need to determine whether the terms of the relevant re-opener provision have been met and, if so, we would then consider whether there is a compelling case for an interim review in the light of our section 4 duties (Railways Act 1993).

H.6. The process under Schedule 4A of the Railways Act 1993 would require the Secretary of State and/or Scottish Ministers (as applicable) to provide a new high-level output statement (HLOS) and statement of funds available (SoFA). The outcome of an interim review may be a change in Network Rail's regulatory requirements and/or allowed revenues. However, it may also be a reaffirmation of the existing regulatory requirements and allowed revenues.

## Triggering an interim review

### Stage 1: Process commencement

- H.7. Should Network Rail think that it has satisfied the conditions of one or more of the re-opener provisions, it will be able to apply to us to request a triggering of the interim review process. It will need to apply to us in writing to do this, setting out:
- (a) the re-opener provision(s) under which it is requesting the interim review;
  - (b) a detailed explanation of the reasons why it thinks it has satisfied the terms of the re-opener, including evidence on the extent to which its efficient costs have been or are expected to be impacted. Network Rail should set out the cost and revenue requirement implications for delivering the HLOSs and also options for reducing outputs to continue to operate within the latest determination. We would expect Network Rail's submission to include relevant financial projections that have been externally verified; and
  - (c) the actions (if any) it has taken to mitigate any change in efficient costs.
- H.8. At this stage we would also consider whether we should, having regard to Network Rail's financial circumstances, be conducting the interim review on an expedited basis. We could do this, in accordance with paragraph 1C of Schedule 4A of the Railways Act 1993, by giving notice of an access charges review on a conditional basis, which would enable DfT and/or Transport Scotland to prepare their HLOSs and SoFAs at the same time as we conduct our assessment to determine whether the terms of the re-openers have been met (see below). We are able to include conditions in any such notice, which would need to be satisfied if we are to proceed with an access charges review. We would propose to make the notice conditional on us concluding at the end of our stage 2 assessment process that the trigger for an interim review had been satisfied.
- H.9. If we decide to assess whether an interim review should be carried out, we will notify Network Rail, setting out:
- (a) the re-opener provision(s) that we consider may have been satisfied; and
  - (b) a detailed explanation of our reasons.

## Stage 2: Assessment

- H.10. Stage 2 will involve an assessment by us of whether the terms of the re-opener(s) concerned have been met and hence whether we should conduct an interim review. We will complete this assessment within two calendar months of notifying Network Rail that we are triggering the process to assess whether an interim review should be carried out.
- H.11. We expect that this will involve considerable engagement with Network Rail and may require Network Rail to provide us with specified information to tight timescales to enable us to complete our assessment within the timescale. We would therefore expect Network Rail to make the necessary people and information available.
- H.12. The precise details of what the assessment will involve depends on the re-opener(s) concerned.
- (a) **Material change in circumstance re-opener:** The regulatory framework, including the re-opener process, is intended to provide a number of protections to Network Rail in the event of unforeseen circumstances. Before initiating a re-opener as a result of a material change of circumstances, we would have regard to Network Rail's view as to whether it felt it needed an interim review of charges and outputs. We would then examine the evidence for whether there has been a material change in circumstances. There are clearly a number of events that might constitute a material change in circumstances, which for example could include a substantial, sustained and unanticipated rise in input prices or interest costs that an efficient Network Rail would face.
  - (b) **Scotland re-opener:** We would also assess the robustness of Network Rail's net expenditure projections for Scotland. Network Rail will need to ensure, in any case, that the projections it provides to us are externally verified. We would want to understand from Network Rail the assumptions underlying the projections.
- H.13. Where our assessment is that either in England & Wales or Scotland, or both, there has been or is likely to be a material change in circumstances, or in Scotland the three year projected average total net expenditure is more than 15% greater than we assumed in our regulatory determination, we will consider whether there is a compelling case for an interim review. We will consider this against our section 4 duties. We would expect to have particular regard to the following duties:
- (a) to act in a manner which we consider will not render it unduly difficult for Network Rail to finance its activities;
  - (b) to promote efficiency and economy on the part of persons providing railway services; and
  - (c) to protect the interests of users of railway services.
- H.14. It will be necessary for us to take into account the views of interested persons, such as the affected funders, during stage 2. In view of the need to conclude stage 2 within

two calendar months, consultees would only have relatively short timescales in which to set out their views. Where appropriate, we would therefore consider whether the best way to understand the views of interested persons might be a hearing.

- H.15. Where we are satisfied that the terms of both limbs of the re-opener have been met, i.e. there has been a material change in circumstances, and that there are compelling reasons to undertake a review, we will initiate an interim review. If the issue is confined to a single geographic area (i.e. to England & Wales only or to Scotland only), then we will ensure that the outcome of the review impacts only on the appropriate train operators and funders.
- H.16. Where we are not satisfied that the terms of both limbs of the re-opener have been met, there will be no interim review and Network Rail will need to deliver the required regulatory outputs for CP5 in accordance with our PR13 determination.
- H.17. Importantly, should there be further changes in Network Rail's financial position, it would be able to ask us to re-open the price control. We would also keep the situation under review as part of our on-going monitoring of Network Rail's financial position.
- H.18. It is important to note that our regular monitoring of Network Rail should provide early warning of impending difficulties. For instance, we assess Network Rail's performance against the regulatory assumptions on an annual basis. The expenditure analysis included in our annual assessment of Network Rail's efficiency and finance currently provides our assessment of Network Rail's performance for support, operations, maintenance, renewals, enhancement expenditure and financing costs.

### **Stage 3: Undertaking an interim review**

- H.19. If the terms of both limbs of a re-opener are satisfied, we will undertake an interim review of Network Rail's allowed revenues and regulatory outputs.
- H.20. Immediately following the conclusion of stage 2 of the initiation process, we will issue a review initiation notice, commencing the formal phase of the review. Alternatively we will, if we have already served a conditional review initiation notice, confirm that the relevant condition has been satisfied. This will require DfT and/or Transport Scotland, as necessary, to restate their HLOS(s) and SoFA(s). The notice would also state the period to be covered by the new regulatory settlement.
- H.21. Generally, we would expect that the new settlement would run until the end of the current control period (i.e. end March 2019). However, we may specify an alternative period, for example a new five-year period, where we consider that this would be more appropriate. DfT and Transport Scotland can also set out their opinion on this issue when they provide their restated HLOS(s) and SoFA(s).
- H.22. Governments may choose to leave their HLOSs and SoFAs unchanged or to update one or both of them.
- H.23. Even if we are not conducting the interim review on an expedited basis (see paragraph H.8) we would consider whether we should rely on paragraph 1C (5)(a) of

Schedule 4A to the Railways Act 1993, in which case the governments would need to provide us with their updated HLOS(s) and SoFA(s) within four weeks of the date of the review initiation notice.

- H.24. Immediately following the receipt of the HLOS(s) and SoFA(s), we would begin a thorough review of the efficient cost of delivering the HLOS(s). If one or both of the HLOS(s) have been restated, we would ask Network Rail to provide a further submission with its forecast of the cost of delivering the restated HLOS(s). If the HLOS(s) cannot be delivered within the SoFA(s), we would inform DfT and/or Transport Scotland that this is the case following the process set out in Schedule 4A of the Railways Act 1993.
- H.25. We would not generally expect to reassess the regulatory framework unless the particular circumstances of the reason for the re-opener had suggested that this was appropriate.
- H.26. We would aim to publish the new draft settlement for consultation within six calendar months of receiving the updated HLOS(s) and SoFA(s). The consultation period would be limited to six weeks to ensure that we provide Network Rail with a revised settlement as quickly as possible but also enabling proper consultation. During the period when we consider the revised HLOS(s) and SoFA(s) we would consider the most appropriate way to take into account the views of interested persons which might include:
- (a) focused consultations on issues for which we would expect response times to be not more than one month;
  - (b) workshops;
  - (c) bilateral meetings; and
  - (d) industry hearings.
- H.27. We would then aim to publish our new final settlement within one month of the end of the consultation period. Following this, we would then aim to publish the review notice, in accordance with Schedule 4A of the Railways Act 1993, within one calendar month of the publication of the new final settlement.
- H.28. The review notice commences the formal implementation phase of the review and includes a number of mandatory timescales. Network Rail would have a period of at least six weeks to object to the review notice. If we did not receive such an objection or any objection that was made was subsequently withdrawn, we would then publish a notice of agreement. Access beneficiaries then have a 28 day period during which they can serve a termination notice. After the expiry of this period the review can be formally implemented by service of a review implementation notice.
- H.29. Provided that there is no mismatch between the updated HLOS(s) and SoFA(s) and the timescales set out above are achieved, we should be able to determine the new regulatory settlement within ten months of concluding stage 2 of the initiation process

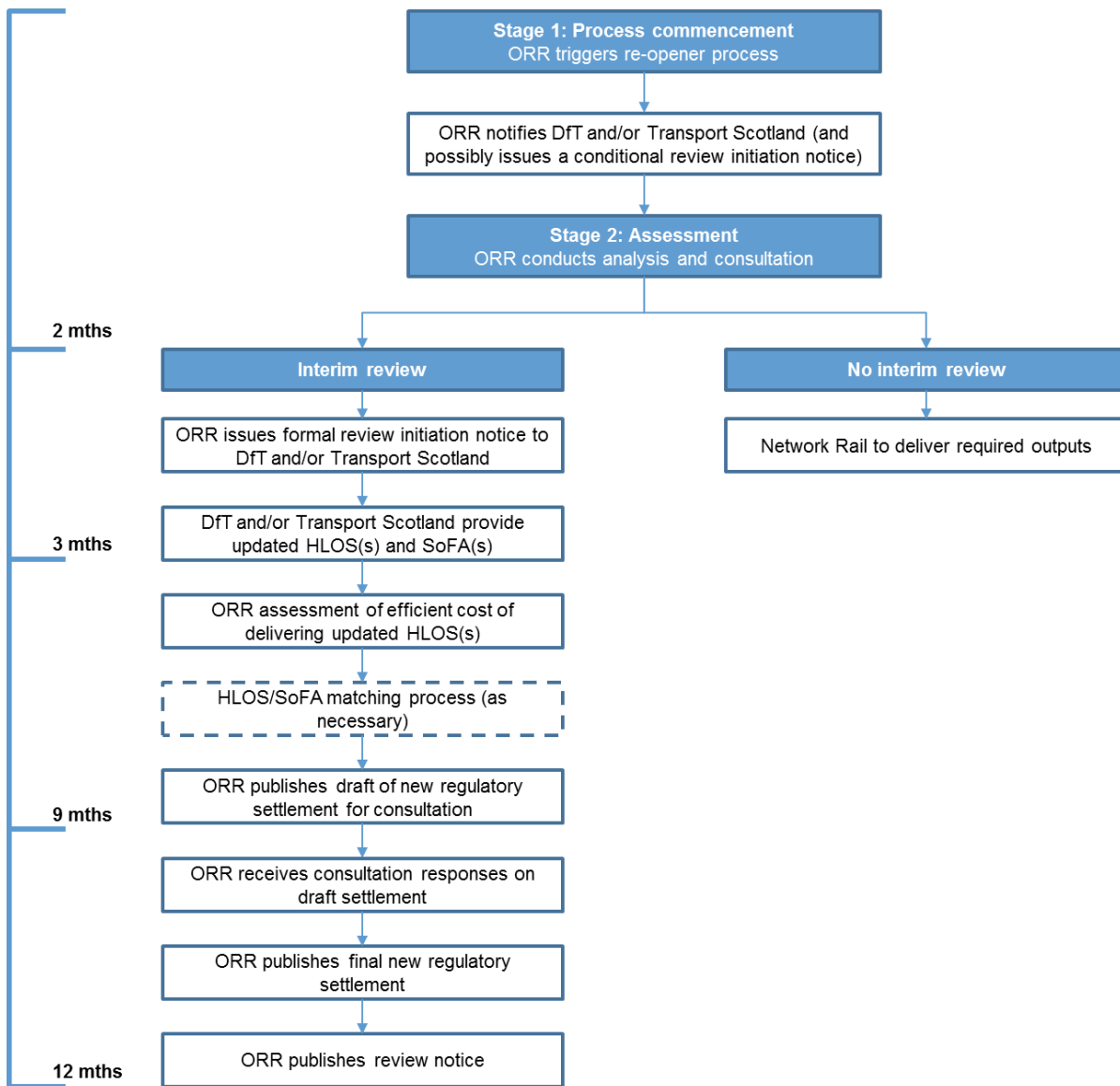
and issuing the review initiation notice. Should the iterative process be required because of a mismatch between the HLOS and SoFA for England & Wales and Scotland, this would affect these timescales. We do not think that we can set out an overall timescale for the iterative process but would expect to set tight timescales for responses by DfT and/or Transport Scotland of not more than one month.

- H.30. We have to work within the statutory process and allow for the possibility that there could be a significant amount of analysis and consultation to undertake as part of an interim review. However, wherever possible, we will strive to conduct an interim review in the shortest time practicable in order to minimise the period of uncertainty.

### **Sequence of events**

- H.31. The sequence of events for the interim review process is set out in the Figure H.1 below. It assumes that there is no iterative process required as a result of a mismatch between the HLOS(s) and SoFA(s).

**Figure H.1: Interim review process – sequence of events with target timescales**





# Annex I: List of consultancy and independent reporter studies

## Introduction

I.1. This annex sets out the studies carried out by our consultants and the independent reporters that have informed our work on this determination. These studies, or executive summaries of them, are either already available on our website<sup>584</sup>, or will be available shortly after this determination is published.

**Table I.1: List of studies by our consultants and the independent reporters that have informed our determination**

Consultancy / reporter study	Consultancy/ reporter firm	Report & publication date
High level review of track access charges and options for CP5	CEPA	June 2010
Review of Network Rail's process to capture enhancement costs - Phase 1	Nichols	December 2010
Rail industry cost and revenue sharing	L.E.K	February 2011
Relative infrastructure managers' efficiency - Evaluation of Gap Analysis Factors	RailKonsult	July 2011
Initial Industry Plan 2011 Review	AMCL	December 2011
Network Rail Materials Costs Benchmarking study	Arup	August 2011
Initial Industry Plan (IIP) 2011 Review	Arup	December 2011
Early cost of capital assessment (Network Rail's allowed return)	First Economics	December 2011 published in March 2012
Using Incentives to Improve Capacity Utilisation	NERA	December 2011 published in January 2012
Network Rail bottom-up benchmarking programme audit	Arup	January 2012

<sup>584</sup> <http://www.rail-reg.gov.uk/pr13/publications/consultants-reports.php>.

Consultancy / reporter study	Consultancy/ reporter firm	Report & publication date
Assessment of robustness of property income forecasts of Network Rail in the Initial Industry Plan (IIP)	DTZ	January 2012 published in March 2012
Review of Network Rail's process to capture enhancement costs – Phase 2 (Early cost of capital assessment)	Nichols	January 2012
Efficient Expenditure Benchmarking of Network Rail against North American Railroads	RailKonsult	January 2012
Impact of changes in track access charges on rail freight traffic - Stage 1 Report	MDS Transmodal	February 2012
Network Rail bottom-up benchmarking review: benchmarking of operations costs	Arup	March 2012
Scope for improvement in the efficiency of Network Rail's expenditure on support and operations: supplementary analysis of productivity and unit cost change	CEPA	March 2012 Revised final report published in June 2013
Corporate Finance advice on proposals for Network Rail to raise risk capital. Paper 4: Approach to Cost of Capital and Financing	RBC Capital Markets	March 2012
Network Rail's Efficient Enhancement Expenditure	Steer Davies Gleave	March 2012
Review of Analysis in Network Rail's 'Freight Cap' Consultation	Arup	May 2012
Review of Network Rail's Supply Chain Management	Civity	May 2012
The Impact of Changes in Access Charges on the Demand for Coal	NERA	May 2012
Network Rail Project and Programme Management Capability	Halcrow	May 2012
IIP Tier 0 & 1 Model Audits	Arup	June 2012
Response to Network Rail Consultation: Variable Usage Charge Estimates and Freight Caps	Morgan Tucker consulting engineers	June 2012

Consultancy / reporter study	Consultancy/ reporter firm	Report & publication date
Assessment of Network Rail's CP4 and CP5 savings – Asset Management Segment	Civity	July 2012
Possession Management Review for PR13	Lloyd's Register Rail	July 2012
Impact of changes in track access charges on freight traffic. Stage 2 Report: Impact of increases of above 100% on specific commodities.	MDS Transmodal	July 2012
North West Electrification Programme Management Review	Nichols	July 2012
Review of CP4 Regulated Outputs	Arup	August 2012
Assessment of capacity allocation and utilisation on capacity constrained parts of the GB rail network	Sinclair Knight Merz	August 2012
RM3 Evaluation of the capability of Network Rail to deliver its Operating Strategy Programme	ORR	September 2012
Update to 'The Impact of Changes in Access Charges on the Demand for Coal' May 2012 NERA assessment	NERA	October 2012
Review of Network Rail VTISM modelling and allocation to market segments for Freight Avoidable Costs	Arup	November 2012
Reduction in Schedule 4 and 8 payment rates	Steer Davies Gleave (SDG)	November 2012
EC4T Transmission losses (AC and DC): Estimate review, final report	AMCL	December 2012 published in April 2013
Econometric Benchmarking and its uses by ORR: a review	Jon Stern	January 2013
Analysis of road and rail costs between coal mines and power stations	MDS Transmodal	January 2013
Review of Network Availability Forecasts in SBP	Arup	February 2013
Review of Network Availability Alternative Metrics	Arup	March 2013

Consultancy / reporter study	Consultancy/ reporter firm	Report & publication date
Assessment of robustness of property income forecasts of NR Strategic Business Plan (SBP)	DTZ	March 2013 published in September 2013
ERTMS Programme Review	Halcrow	March 2013
Innovation efficiency study	RailKonsult	March 2013
Review of asset management best practice - Inspections and Maintenance	RailKonsult	March 2013
Check of Network Rail's HLOS capacity metrics for CP4 and CP5	Arup	April 2013
Review of Coal Spillage Charge	Arup	April 2013
Review of Network Rail's Access Charge Supplement Calculation	Arup	April 2013
International benchmarking of Network Rail's operations and support functions expenditure	Civity	April 2013
HLOS performance and reliability analysis and targets	Nichols	April 2013
2013 SBP AMEM Assessment	AMCL	May 2013
PR13 Maintenance and Renewals Review	AMCL	May 2013
Audit of Asset Data Quality	Arup	May 2013
PR13 Maintenance and Renewals Review: <ul style="list-style-type: none"> <li>• Summary report</li> <li>• Policy and WLCC Model Review</li> </ul>	Arup	May 2013 June 2013
Review of Network Rail's carbon reduction calculations and CP5 trajectory	Arup	May 2013
Independent Review and Assurance of Network Rail Buildings & Civil's Transformation Programme	Arup	May 2013
Advice on estimating Network Rail's cost of capital	CEPA	June 2013
Benchmarking employment costs at Network Rail: A research report for the Office of Rail Regulation (ORR)	Incomes Data Services (IDS)	May 2013

Consultancy / reporter study	Consultancy/ reporter firm	Report & publication date
Insurance	Willis	October 2013
Assessment of EAU charge proposals: PR13 review	AMCL	June 2013
PR13 review of Network Rail CP5 efficiency proposals	Arup	June 2013
PR13 review of Network Rail's Maintenance & renewal unit costs used in planning	Arup	June 2013
Bottom-up benchmarking review - 2012 update	Arup	June 2013
Audit of CP5 Regulatory Review Model	BDO LLP	June 2013
Scope for improvement in the efficiency of Network Rail's expenditure on support and operations: supplementary analysis of productivity and unit cost change.	CEPA	June 2013
Update report on the scope for improvement in the efficiency of Network Rail's expenditure over CP5.	CEPA	June 2013
Assessment of Network Rail's Management of Inflation	Credo	June 2013
Review of Network Rail's SBP infrastructure enhancement proposals for CP5	Nichols	June 2013
Impact of Business Change on a Firm's Support, Operations, Maintenance and Renewal Costs.	BDO LLP	July 2013
Standards Efficiency Study	Nichols	July 2013
Shaping Station Stewardship Measure	SSM Working Group, Faithful Gould	July 2013
Review of Network Rail's Corporation Tax and VAT Forecasts	A&M	August 2013
Railway Specific Plant - Review of Case for Investment	Halcrow	August 2013
Audit of CP5 Regulatory Review Model	BDO LLP	October 2013
Updated advice on estimating Network Rail's cost of capital and financing costs	CEPA	October 2013

Consultancy / reporter study	Consultancy/ reporter firm	Report & publication date
Schedule 8 Payment Rates Recalibration Phase A	Halcrow	October 2013
Schedule 8 Payment Rates Recalibration Phase B	Halcrow	November 2013
Review of selected calculations in the freight and charter operator Schedule 8 performance regimes for CP5	Arup	November 2013

# Annex J: PR13 stakeholder engagement

## Introduction

J.1. This annex gives an overview on the engagement we have carried out with stakeholders throughout PR13.

## Our consultations and supporting workshops

J.2. Table J.1 below sets out all of our consultations during the course of PR13 and the main workshop events held by us.

**Table J.1: PR13 stakeholder engagement**

Published document	Purpose / workshops / seminars
<p>Periodic review 2013: First consultation document, May 2011</p>	<p>The purpose of this document was to:</p> <ul style="list-style-type: none"> <li>• explain the context, process and timetable for the review to allow stakeholders to plan their engagement;</li> <li>• set out our objective for PR13; and</li> <li>• consult on a range of key issues relating to the approach we will take to determining Network Rail's outputs and access charges for CP5.</li> </ul> <p><b>Supporting workshops</b></p> <p>As part of the consultation process, we held workshops in Edinburgh (5 July 2011); Cardiff (11 July 2011), London (12 July 2011) and Manchester (21 July 2011).</p> <p>During and after this consultation we also held sessions focused on particular areas to help us develop our thinking:</p> <ul style="list-style-type: none"> <li>• a workshop on the Schedule 8 performance regime on 25 July 2011;</li> <li>• workshops on efficiency benefit sharing and capacity utilisation on 23 September 2011; and</li> <li>• a workshop on the Schedule 4 possessions regime on 11 November 2011.</li> </ul>
<p>Establishing Network Rail's efficient expenditure PR13 consultation, July 2011</p>	<p>The purpose of this document was to explain our approach to establishing the level of efficient expenditure for Network Rail in CP5, including the methods we intended to use, the range of studies we intended to undertake and the work Network Rail would do in this area.</p> <p>We held a workshop on this consultation on 21 September 2011.</p> <p>We also held a follow-up workshop on 26 October 2012 to update industry stakeholders on the progress of our work on assessing the efficient levels of expenditure for Network Rail, including how we planned to assess efficient expenditure elements of Network Rail's SBP once it was published in January 2013</p>



Published document	Purpose / workshops / seminars
<p>Invitation to comment on the Initial industry plans, September 2011</p>	<p>This was not a formal consultation, but an opportunity for stakeholders to support and inform ORR's analysis of the Initial industry plans (IIPs) produced by Network Rail and the industry. Our analysis of the IIPs was a key input into our advice to ministers documents, published in March 2012. We also provided all the responses to Network Rail, DfT and Transport Scotland to help feed into their planning work for the HLOSs and SBP.</p>
<p>Consultation on the potential for increased on-rail competition, October 2011</p>	<p>This consultation asked for stakeholder views on the potential for increased on-rail competition.</p>
<p>Consultation on incentives, December 2011</p>	<p>This document followed up our May 2011 consultation document and set out more detailed issues and proposals relating to incentives as part of our work on PR13.</p> <p>We held a workshop on 9 January 2012 to discuss the issues raised in our incentives consultation.</p>
<p>Advice to ministers &amp; ORR's requirements for Network Rail's strategic business plan, March 2012</p>	<p>These documents set out our advice to Scottish Ministers and the Secretary of State on Network Rail's costs and outputs for control period 5 ('CP5'). This was to inform the decisions that the two governments would make on what they wanted the railways to achieve in CP5 and the public funds required to deliver this when they published their 'high-level output specification' (HLOS) and 'statement of funds available' (SoFA).</p> <p>We also issued our requirements to Network Rail for its strategic business plan.</p>
<p>Setting the financial and incentive framework for Network Rail in CP5, May 2012</p>	<p>This document concluded on a number of issues raised in three previous consultations:</p> <ul style="list-style-type: none"> <li>• our first consultation on PR13;</li> <li>• consultation on the potential for increased on-rail competition; and</li> <li>• our consultation on incentives.</li> </ul>
<p>Aligning incentives to improve efficiency: update and further consultation, May 2012</p>	<p>This provided an update, following the first consultation on PR13 and the consultation on incentives, on our position on the introduction of route-level efficiency benefit sharing (REBS) in CP5. It sought views on the options for how REBS would interact with alliancing. We also sought views on proposals to introduce a regulatory mechanism to expose train operators to changes in Network Rail's costs at future periodic reviews, and an alternative proposal for exposing franchised train operators to changes in the variable usage charge.</p>

Published document	Purpose / workshops / seminars
<p>Consultation on the variable usage charge and a freight specific charge, May 2012</p>	<p>This consultation sought views on the likely scale of the variable usage charge for CP5, in order for us to establish a cap on the average level of the variable usage charge. We also consulted on the introduction of a new track access charge for certain rail freight commodities to recover infrastructure costs caused by freight operating on the network that are not currently recovered from other freight charges.</p> <p>We held a workshop on 18 May 2012 and a follow-up workshop on 5 July 2012 to give stakeholders the opportunity to ask questions and discuss our proposals. We also held a number of meetings with stakeholders on issues relating to this workstream.</p>
<p>Network Rail's output framework for 2014-19, August 2012</p>	<p>Following the two HLOSs, this consultation sought views on: the outputs that we should Network Rail for CP5; the main indicators we would use to monitor Network Rail; and the enablers (measures of Network Rail's capability to deliver).</p> <p>We held a workshop on this consultation on 7 September 2012.</p>
<p>Consultation on financial issues for Network Rail in CP5, August 2012</p>	<p>This document consulted on detailed issues relating to the financial framework that would apply to Network Rail in CP5, such as our approach to inflation risk.</p> <p>We held a workshop to discuss the consultation on 5 September 2012.</p>
<p>Consultation on Schedules 4 and 8 possessions and performance regimes, November 2012</p>	<p>Following up on high-level decisions taken through previous consultations, this document sought views on a range of detailed issues relating Schedules 4 and 8 of track access contracts (the compensation train operators receive for the financial impact of planned and unplanned rail service disruption attributable to Network Rail or other train operators).</p> <p>We held a workshop on this consultation on 16 January 2013</p>
<p>Consultation on financial issues for Network Rail in CP5: decisions, December 2012</p>	<p>This concluded on our consultation issued on 1 August 2012.</p>
<p>Volume incentive consultation, December 2012</p>	<p>This consultation set out our package of proposals to improve the effectiveness of the volume incentive.</p> <p>We held a focused industry seminar on this on 28 January 2013</p>
<p>Aligning incentives to improve efficiency: decisions, December 2012</p>	<p>This concluded on our consultation issued on 3 May 2012.</p>
<p>Invitation to comment on Network Rail's strategic business plan, January 2013</p>	<p>Whilst not a formal consultation, we sought stakeholders views on Network Rail's SBP documentation to help inform our analysis.</p> <p>We also held a stakeholder workshop on 13 February 2013 at which Network Rail presented its SBP and we chaired a discussion.</p>

Published document	Purpose / workshops / seminars
Conclusions on the average variable usage charge and a freight specific charge, January 2013	This document concluded on our May 2012 consultation on the variable usage charge and a freight specific charge.
Consultation on a freight specific charge for biomass, February 2013	This consultation was issued following the conclusions document issued on 11 January 2013.
Consultation on electricity for traction charges for control period 5, April 2013	This consultation followed-up our high-level decisions on traction electricity charges in our <i>Setting the financial and incentive framework for Network Rail in CP5</i> document from May 2012. In particular, it sought views on the assumed levels of transmission losses for CP5 and how we proposed to reform the volume wash-up.
Consultation on contingency planning for PR13 implementation, April 2013	This set out our proposed approach in the event of a delay to the statutory implementation process.
Draft determination of Network Rail's outputs and funding for 2014-19, June 2013	This set out our proposed determination for CP5 and sought stakeholders' comments. We held conferences in London, Glasgow and Cardiff to enable a discussion on the key issues arising from the draft determination and held meetings with key stakeholders to hear their views on it.
On-rail competition: consultation on options for change in open access, June 2013	This document consulted on potential charging options that would enable greater opportunity for competition from open access passenger train operators.
Consultation on implementing PR13, July 2013	This consultation set out the specific changes we proposed to make to track and station access agreements and Network Rail's network licence to implement our 2013 periodic review (PR13). This was based on the decisions in the draft determination.
Workshop on REBS, July 2013	This discussed our approach to setting REBS baselines and measuring REBS performance.
Draft conclusions on structure of charges and Schedule 8 performance regime for charter operators, August 2013	Following a process of engagement with charter operators and Network Rail following our draft determination, this document consulted on the structure of charges and performance regime for charter operators in CP5. In mid-September, we then consulted on contractual drafting that would implement these decisions.
Engagement on the capacity charge, summer 2013	Following the options we set out in our draft determination, we carried out a process of engagement with the industry in relation to the form of capacity charge that should be applied during CP5. This included RDG, RFOA and train operators and involved a number of meetings and detailed exchanges.

Published document	Purpose / workshops / seminars
Traction electricity cost reconciliation, October 2013	Following on from our July 2013 consultation on implementing PR13, we sought views on the proposed changes to the cost reconciliation (wash-up) for traction electricity and contractual drafting to implement this.

## Other engagement

- J.3. As infrastructure manager, Network Rail has carried out significant engagement and consultation as part of PR13, particularly in respect of access charges. This work informed its submissions to us. Its website sets out details of this engagement<sup>585</sup>. We have been involved in this work, including through attendance of industry working groups relating to charges, such as the variable track access charge (VTAC) group, capacity charge working group and traction electricity steering group (TESG). Further detail on this is set out in chapter 16 relating access charges.
- J.4. We also established industry working groups to discuss issues relating to specific PR13 issues. This includes for example the ‘Schedules 4 and 8 for passenger operators’ industry group’ and ‘Schedules 4 and 8 for freight operators’ industry group’. These discuss technical and policy issues relating to the update of Schedules 4 and 8 possessions and performance regimes for passenger and freight operators.
- J.5. Besides this, we have held many regular and ad-hoc bilateral and multilateral meetings with stakeholders over the course of PR13. This includes the ‘QUADs’ group which has met since late 2011 to discuss key issues relating to PR13. The QUADs group consists of DfT, Transport Scotland, ATOC, the Rail Freight Operators’ Association, Network Rail and ORR.

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<sup>585</sup> <http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/periodic-review-2013/pr13-closed-consultations/>.

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# Annex K: ORR's statutory duties

## Introduction

K.1. We have a number of statutory duties which we must balance when exercising our economic functions. These duties are not in any order of priority and do not point in any one direction. In reaching our decisions, we have considered all of our statutory duties and weighed them as we considered appropriate.

## Our statutory duties

K.2. We have the following duties under Section 4 of the Railways Act 1993:

- To promote improvements in railway service performance;
- Otherwise to protect the interests of users of railway services;
- To promote the use of the railway network in Great Britain for the carriage of passengers and goods, and the development of that railway network, to the greatest extent which we consider economically practicable;
- To contribute to the development of an integrated system of transport of passengers and goods;
- To contribute to the achievement of sustainable development;
- To promote efficiency and economy on the part of persons providing railway services;
- To promote competition in the provision of railway services for the benefit of users of railway services;
- To promote measures designed to facilitate the making by passengers of journeys which involve use of the services of more than one passenger service operator;
- To impose on the operators of railway services the minimum restrictions which are consistent with the performance of our functions under Part 1 of the Railways Act 1993 or the Railways Act 2005 that are not safety functions;
- To enable persons providing railway services to plan the future of their businesses with a reasonable degree of assurance;
- To take into account the need to protect all persons from dangers arising from the operation of railways;
- To protect the interests of users and potential users of services for the carriage of passengers by railway provided by a private sector operator, otherwise than under a franchise agreement, in respect of the prices charged for travel by means of those services, and the quality of the service provided;

- To have regard to the effect on the environment of activities connected with the provision of railway services;
- To protect the interests of persons providing services for the carriage of passengers or goods by railway in their use of any railway facilities which are for the time being vested in a private sector operator, in respect of the prices charged for such use and the quality of the service provided;
- In the case of our safety functions other than those we have as an enforcing authority for the purposes of the Health & Safety at Work etc. Act 1974, to have regard to any general guidance given to us by the Secretary of State about railway services or other matters relating to railways;
- To act in a manner which we consider will not render it unduly difficult for persons who are holders of network licences (i.e. Network Rail) to finance any activities or proposed activities of theirs in relation to which we have functions;
- To have regard to any notified strategies and policies of the National Assembly for Wales, so far as they relate to Welsh services or to any other matter in or as regards Wales that concerns railways or railway services;
- To have regard to the ability of the National Assembly for Wales to carry out the functions conferred or imposed on it by or under any enactment;
- To have regard to any general guidance given by the Secretary of State about railway services or other matters relating to railways;
- To have regard to any general guidance given by Scottish Ministers about railway services wholly or partly in Scotland or about other matters in or as regards Scotland that relate to railways and when doing this to give appropriate weight to the extent (if any) to which the guidance relates to matters in respect of which expenditure is to be or has been incurred by Scottish Ministers;
- To have regard to the funds available to the Secretary of State for the purposes of his functions in relation to railways and railways services;
- To have regard to the ability of the Mayor of London and Transport for London to carry out the functions conferred or imposed on them by or under any enactment;
- To have regard, in particular, to the interests of persons who are disabled in relation to services for the carriage of passengers by railway or to station services; and
- To have regard to the interests, in securing value for money, of the users or potential users of railway services, of persons providing railway services, of the persons who make available the resources and funds and of the general public.

K.3. We also have duties under other legislation, as follows:

- Section 17 of the London Olympic Games and Paralympic Games Act 2006 provides that section 4(1) of the Railways Act 1993 shall be treated as including the objective of facilitating the provision, management and control of facilities for transport in connection with the London Olympics. We do not consider this duty will be relevant for CP5.
- Section 21 of the Channel Tunnel Rail Link Act 1996 gives us an overriding duty to exercise our regulatory functions in such a manner as not to impede the performance of any development agreement. We do not expect this duty to be engaged as part of PR13.
- Section 22 of the Crossrail Act 2008 provides that section 4(1) of the Railways Act 1993 shall be treated as including the objective of facilitating the construction of Crossrail.
- Section 72 of the Regulatory Enforcement and Sanctions Act 2008 requires us to keep our functions under review and secure that in exercising these functions that we do not:
  - impose burdens which we consider to be unnecessary, or
  - maintain burdens which we consider to have become unnecessary.

K.4. We also have an equalities duty under Section 149 of the Equality Act 2010 which requires us in the exercise of our functions to have due regard to the need to:

- eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under that Act;
- advance equality of opportunity between persons who share a relevant protected characteristic<sup>586</sup> and persons who do not share it; and
- foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

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<sup>586</sup> relevant protected characteristics are – age; disability; gender reassignment; pregnancy and maternity; race; religion or belief; sex; and sexual orientation.



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# Abbreviations and acronyms

Access & Management Regulations	Railways Infrastructure (Access and Management) Regulations 2005
ACS	Access Charge Supplement
ADIP	Asset Data Improvement Programme
AMCL	Asset Management Consulting Limited
AICR	Adjusted interest cover ratio
AMEM	Asset Management Excellence Model
AMIP	Asset Management Improvement Plan
AML	Average minutes lateness
AMS	Asset Management Services
BCAM	Buildings and Civils Asset Management
BSOG	Bus Service Operators Grant
BTP	British Transport Police
BTPA	British Transport Police Authority
CAF	Cost analysis framework
Capex	Capital expenditure
CaSL	Cancellations and Significant Lateness (where significant lateness means more than 30 minutes late)
CECA	Civil Engineering Contractors Association
CEFA	Civil Engineering Framework Agreement
CFD	Contracts for difference
CEPA	Cambridge Economic Policy Associates (CEPA) Limited
CIRAS	Confidential Incident Reporting & Analysis System
CLG	Company limited by guarantee
CSRIC	Coal Spillage Reduction Investment Charge
COLS	Corrected Ordinary Least Squares
CP3	Control period 3 (which ran from 1 April 2004 to 31 March 2009)
CP4	Control period 4 (1 April 2009 – 31 March 2014)
CP5	Control period 5 (1 April 2014 to 31 March 2019)
CP6, CP7 & CP11	These are control periods 6, 7 and 11 (assuming five year control periods)
CPI	Consumer Prices Index
CRRD	Congestion-Related Reactionary Delay

CTRS	Constant Traffic Route Sections
CUI	Capacity Utilisation Index
DECC	Department of Energy and Climate Change
DfT	Department for Transport
DSLFF	Distribution System Losses Factor
DST	Decision Support Tool
EAUC	Electrification Asset Usage Charge
EBM	Estimated business miles
EBSM	Efficiency benefit sharing mechanism
ECML	East Coast Main Line
EC4T	Electric current for traction
EGIP	Edinburgh – Glasgow Improvement Programme
EMT	East Midlands Trains
ERTMS	European Rail Traffic Management System
ESI	Electricity Supply Industry
ESTA	Electricity Supply Tariff Area
ETCS	European Train Control System
FAMS	Fleet Asset Management System
FCC	First Capital Connect
FDM	Freight Delivery Metric
FFO	Funds from operations
FIM	Financial indemnity mechanism
FMECA	Failure Modes Effects and Criticality Analysis
FMS	Fault management system
FOC	Freight operating company
FOL	Freight only line
FPIP	Freight performance improvement plan
FSC	Freight specific charge
FTA	Freight Transport Association
FTAC	Fixed track access charge
FTN	Fixed Telecoms Network
FVA	Financial Value Added
FWI	Fatalities and weighted injuries measure
GEOGIS	Geographic and Infrastructure System
GJT	Generalised journey time
GRIP	Governance of Railway Investment Projects
GSM-R	Global System for Mobile communications – Railways
HLOS	High-level output specification

HS1	High Speed 1
HS2	High Speed 2
ICL	Imperial College London
ICM	Infrastructure cost model
IDP	Integrated Drainage Project
IDS	Incomes Data Services
IEP	Intercity Express Programme
IIP	Initial industry plan
IM	Information Management
IOPI	Infrastructure Output Price Index
ISBP	Industry strategic business plan, published in January 2013
JNAP	Joint Network Availability Plan
JPIP	Joint Performance Improvement Plan
KPI	Key performance indicator
LADS	Linear Asset Decisions Support
LEMS	Labour, Energy, Materials and Services cost measure
LENNON	'Latest earnings nationally networked over night' – the rail industry's central ticketing system
LIBOR	London Interbank Offered Rate
LICB	Lasting infrastructure costs benchmarking
LMDSM	Light maintenance depot stewardship measure
LTC	Station long term charge
MAA	Moving annual average
May 2011 document	Our '2013 Periodic review: first consultation' document, published in May 2011
MFSDD	Management of Freight Services During Disruption
MML	Midland Main Line
MPWs	Monitoring Point Weightings
MRA	Maintenance Requirements Analysis
MRE	Marginal revenue effect
MRR	Maintenance, repair and renewal
NDS	National Delivery Service
NOS	National Operating Strategy
NPA	Not primarily abstractive
NPS	National Passenger Survey
NRT	Network Rail telecoms
NRDF	Network Rail Discretionary Fund
NSACs	National Stations Access Conditions

OA	Open Access
OAD	Open Access Operators
OLE	Overhead line equipment
OMRE	Operating, maintenance renewals and enhancement activity
OMA	Opex Memorandum Account
Opex	Operating expenditure
ORBIS	Offering Rail Better Information Services
ORR	Office of Rail Regulation
OSTI	Other single till income
OTM	On-train metering (of traction electricity)
PARL	Percentage Asset Remaining Life
PAYG	Pay-as-you-go
PDFH	Passenger Demand Forecasting Handbook
PDI-F	Possession Disruption Index - Freight
PDI-P	Possession Disruption Index – Passenger
PFM	Partial Fleet Metering
PIM	Precursor Indicator Model
PLBEs	Principal load bearing elements
POG	Planning Oversight Group
PPM	Public Performance Measure
PPP	Purchasing Power Parity
PR08	The 2008 periodic review (relating to CP4)
PR13	The 2013 periodic review (relating to CP5)
PR14	The 2014 periodic review of High Speed One (HS1)
PR18	The 2018 periodic review of Network Rail (relating to CP6)
PTEG	Passenger Transport Executive Group
QX	Qualifying expenditure (for stations)
R&D	Research and development
RAB	Regulatory asset base
RAGs	Regulatory accounting guidelines
RCF	Retained Cash Flow
RCM	Remote condition monitoring
RDG	Rail Delivery Group
REBS	Route-level efficiency benefit sharing mechanism
REEM	Real economic efficiency measure
RFOA	Rail Freight Operators' Association
RFG	Rail Freight Group
RIA	Rail Industry Association

RIPG	Rail Industry Planning Group
RIRG	Route Investment Review Groups
RM3	Railway Management Maturity Model
ROC	Renewables Obligation Certificates
ROSCO	Rolling stock leasing company
ROTE	Risk-based maintenance Of Telecoms Equipment
RPI	Retail prices index
RSSB	Railway Safety and Standards Board
RUOE	Real Unit Operating Expenditure
RVfM study	The Rail Value for Money study, led by Sir Roy McNulty
SAC	Station Access Contract
SBP	Network Rail's strategic business plan
SDG	Steer Davies Gleave
SEUs	Signalling equivalent units
SFA	Stochastic frontier analysis
SFN	Strategic Freight Network
SFO	Station Facility Owner
SICA	Signalling Infrastructure Condition Assessment
SISS	Stations Information and Security Systems
SLA	Service Level Agreement
SoFA	Statement of funds available
SMIS	Safety Management Information System
SPD	Sustained Planned Disruption
SPP	Sustained Poor Performance
SRM	Safety Risk Model
SRS	Strategic Route Sections
SSM	Station Stewardship Measure
S&C	Switches and crossings
TABS	Track Access Billing System
TER	Traction Electricity Rules
TESG	Traction Electricity Steering Group
TFP	Total Factor Productivity
The Act	The Railways Act 1993
TSR	Temporary Speed Restriction
TMS	Traffic Management System
TOC	Train operating company
ToR	Terms of Reference
TRSM	Transitional Risk Sharing Mechanism

TSIs	Technical Specifications for Interoperability
UIC	International Union of Railways
VAT	Value Added Tax
VTISM	Vehicle Track Interaction Strategic Model
VUC	Variable Usage Charge
WACC	Weighted average cost of capital
WCML	West Coast Main Line

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