



OFFICE OF RAIL AND ROAD

Network Rail Monitor Scotland

Quarters 1-2 of Year 4 of CP5

1 April to 14 October 2017

6 4 December 2017



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1. Overview

- 1.1 This Monitor provides ORR's assessment of Network Rail's performance in Scotland over periods 1-7 of 2017 -18, the fourth year of Control Period 5 (CP5).

Health and safety

- 1.2 The first half of 2017-18 has seen health and safety performance in Scotland continue on a broadly positive trend. Network Rail Scotland has significantly out-performed its targets for Lost Time Injury Frequency Rate (LTIFR), numbers of close calls raised and level crossing risk reduction milestones. However, it has missed targets for closing out close calls and is behind target in a number of the workstreams that comprise the corporate measure of 'passenger train accident risk reduction'. At period 7 Network Rail had achieved under half of its intended rate of improvement although it does have credible plans in place to recover the situation.
- 1.3 This half year also saw signs of growing management maturity and specifically a willingness to seek, acknowledge and address areas where improvements can be made. Examples included post-implementation reviews of the creation of the ScotRail Alliance and of Section Manager workload improvements. Both resulted in findings that acknowledged areas for improvement. Changes are being made to address these areas and to secure improvements. Network Rail Scotland has committed itself to continuing to strengthen its assurance arrangements, in particular implementing the new company assurance framework (due in December 2017).

Train service performance

- 1.4 The Public Performance Measure (PPM) Moving Annual Average (MAA) for the franchises let by the Scottish Government (ScotRail and Caledonian Sleeper) at the end of Period 7 of 2017-18 was 91.1%, 0.9 percentage points (pp) below the year-end regulatory target of 92.0%. However, this was 1.6pp better than at the same time last year and an improvement of 0.8pp since the start of 2017-18.

Asset management

- 1.5 Network Rail Scotland has improved the overall performance of the network assets so far this year, recovering from a slight decline last year. The Composite Reliability Index (CRI), which measures asset reliability across the network compared to the end of CP4, has risen to +13.3%, from +12.0% at the end of 2016-17.
- 1.6 This recovery reflects performance gains in track, points and signalling. Telecoms has also improved, although performance is still not as good as at the end of CP4 (following the rollout of GSM-R). These gains are partially offset by a continuing fall in the performance of electrical power systems.
- 1.7 So far this year the volume of renewals work completed by Network Rail Scotland compared to plan is variable across the asset areas. However, the company is

forecasting that it will end the year on or ahead of plan in Scotland for all asset areas, recovering work on switches and crossings deferred from last year, and delivering additional work on embankments.

- 1.8 The cost of the renewals work delivered so far this year has been in line with budget, and this is forecast to continue through to the end of the year.

Developing the network

- 1.9 Delivery of the enhancements portfolio in Scotland remains mixed. Works on the ground are progressing well on most projects and construction activity is in line with forecasts. However, the legacy issues with inadequate design and development work across the portfolio continue to drive up costs and present challenges to programme schedules. For example, on the Edinburgh Glasgow Improvement Programme (EGIP) Key Output 1 (electrification of the line between Edinburgh and Glasgow) was not delivered in line with the March 2017 regulated milestone (infrastructure ready for passenger services). Electric trains have now run on the route, but the revised milestone date of October 2017 was also missed.
- 1.10 Despite these challenges Network Rail Scotland remains within the overall affordability envelope and has demonstrated it can deliver the bulk of its planned CP5 works within the control period. We have observed improvements across the year in terms of client management, reporting and overall transparency, and Network Rail has demonstrated a high degree of skill and flexibility in dealing with external challenges.
- 1.11 ORR has commissioned an Independent Reporter to look at the embedment of the outputs of the *Enhancements Improvement Plan*, which we had flagged in our last monitor as an area of concern in Scotland. The reporter found that while there was more to do in Scotland, progress had been made to address some of the issues arising from inadequate design and development in the current control period.

Expenditure and finance

- 1.12 Financial headroom, i.e. the difference between forecast CP5 borrowing and available borrowing is forecast to be £139m for Scotland. Forecast financial headroom at the end of CP5 has decreased by 21% in Scotland in the first half of 2017-18. This headroom is not as low as for England and Wales, however the route may not achieve its planned efficiencies. Movements in interest rates and inflation are uncertain and money may be needed to fund movements in the value of its financial instruments. Some risks are now starting to decrease as Network Rail gets nearer to the end of the control period. The company is considering whether risk provisions can be released. In Scotland, enhancement costs are being reforecast which should allow renewal volumes to be increased in the final year of CP5.

2. Health and Safety

2.1 Over the first half of 2017-18 we have seen evidence of growing management maturity in Network Rail Scotland and there appears to be an increasing willingness to undertake critical assurance and self-challenge as a result. For example, in September 2017, a review of the arrangements created by the formation of the ScotRail Alliance in 2015 led to the decision that the integrated safety function had not been successful in several respects; Scotland will now revert to the Network Rail template structure. There was also a post-implementation review of improvements introduced to alleviate Section Manager workload (see below). This has allowed Network Rail to reinforce the measures it has taken to try to bring consistent improvements. Network Rail Scotland has indicated its intention to embrace the opportunity for change that the revised national framework for assurance will bring when it is introduced in December 2017.

Health and safety performance measures

- 2.2 Performance, as measured by corporate scorecards and targets is mixed. In relation to close calls, for example, Scotland is the most successful route on the network, achieving 171% of target in period 7. In contrast, it missed its target for 85% of close calls to be dealt with within 90 days, achieving 74.2% close out within target. Network Rail is making changes to the processes for handling reporting and responding to close calls as well as recruiting additional staff to deal with them. It is forecasting that it will achieve the target by the end of the year.
- 2.3 Network Rail has a national programme to reduce the risk of a passenger train accident. It is comprised of a range of improvement plans and each route is given a target figure of a percentage of the programme to be delivered. For Scotland that target is 80%. At period 7 it had achieved 42%. This gap in achievement is attributable to difficulties in the off-track portfolio.
- 2.4 In terms of maintenance and renewals volumes, there are three areas where Scotland is behind target in delivering plans, in contrast to the national network overall where corporate volumes are ahead of target. These are: drainage, vegetation and fencing. The vegetation figures are slightly misleading as the latest returns do not include some of the volumes delivered due to data input problems. However, the route recognises that there is still a gap and has therefore embarked on a programme of mechanised removal to recover the situation. As a result of these efforts Network Rail Scotland is forecasting that it will, by the end of the year, outperform its vegetation target.
- 2.5 Network Rail Scotland has taken a risk-based approach to prioritising resource for vegetation – outperforming target by the end of the year. Consequentially, it is forecasting that it will miss its drainage target and just miss its fencing target. Taken

together these forecasts lead to a prediction of meeting 56% of Scotland's passenger train risk reduction milestones by the end of 2017-18. This will fall short of the 80% target, but is a meaningful recovery from the period 7 figure of 42%.

- 2.6 The route had achieved its previous level crossing risk reduction milestone (legal closure of St Ninian's crossing) and is predicting that all other 2017-18 milestones will be met. We understand however that the route will struggle to achieve some other closures intended for CP5 within the timescale.

Track

- 2.7 Building on the good work that had been done in Scotland around Section Manager (SM) workload, Network Rail Scotland undertook an assessment of the effectiveness of implementation. The results of the review were mixed. Changes had been introduced where the aim was to ensure that SMs delegated work that was not core to their role – freeing them up to discharge their responsibilities better and avoiding excessive working hours. The review found that this was not happening consistently well. Carrying out this assurance activity has given Network Rail Scotland an opportunity to reinforce the improvements and spread best practice more effectively.
- 2.8 We have been inspecting the handback of track following interventions on the infrastructure by Works Delivery. We have found some examples where the infrastructure had been handed back following work that was incomplete or of poor quality. For example, when following up a report of a 'block the line' twist fault we found that re-sleeper work had been carried out by the Works Delivery organisation and had been handed back without all the necessary track geometry checks having been carried out.
- 2.9 In contrast, we have found good practice in similar works carried out by other contractors. One factor in this appears to be an extended period of 'liability' for faults following handback (12 months for the contractor compared to 3 months for Works Delivery). This seems to be a powerful driver of higher standards. Our inspections are not yet complete and these are therefore only emerging findings. We will provide full feedback when the work is finished.

Civils structures and earthworks

- 2.10 Our enquiries into a cutting failure at Gilshochill, Lochburn in April 2017 revealed that while Network Rail believed that masonry facing formed a retaining wall, the thickness and stability had been overestimated in examinations/evaluations. This lack of clarity about the history and function of assets is by no means unique to Scotland and has been a feature of a number of recent asset incidents, including retaining wall failures at Liverpool Lime Street (March 2017) and Moses Gate (August 2017) and the cutting failure and derailment at Watford in September 2016. The

Scotland Route Asset Manager responsible for structures has since produced an action tracker to identify higher risk structures using existing knowledge of conditions and historic performance, such that detailed examination of such structures can be prioritised.

2.11 We have continued our investigation into an incident on 23 January 2017 when a freight train derailed between Corrour and Tulloch after striking a boulder which had dislodged and landed on the track. It followed a similar incident at Stromeferry, and appears to be part of a pattern of such occurrences. A serious derailment took place on the same line in the summer of 2012 as well as two incidents at Falls of Cruachan on the Oban line during the same summer. This type of risk is serious but potentially difficult to manage, as the hazards often originate on third party-owned land. Our continuing investigation seeks to identify if there are improved management arrangements which Network Rail could reasonably practicably introduce.

2.12 We have begun inspecting a range of aspects of the management of civil and geotechnical assets, including:

- the management of adverse weather contingency plans;
- the effectiveness of earthwork drainage management plans; and
- the quality of structural examinations carried out by contractors.

It is too early to report emerging findings.

2.13 We have also commenced inspections of the management of the risk of scour at high risk bridge sites. Initial findings are positive and demonstrate that Network Rail is prioritising and implementing its remediation works appropriately.

Electrical safety

2.14 ORR engagement with the Edinburgh Glasgow Improvement Project (EGIP) has continued through the first half of 2017-18 as we monitor and assist the project's attempts to remedy design deficiencies in its original proposals. The relationship has become a mature, constructive one and we acknowledge the efforts Network Rail has made to avoid similar errors in the next scheme: Stirling-Dunblane-Alloa where Network Rail has sought to design optimal risk reduction and legal compliance measures in from an early stage. The company has also developed a decision support tool to inform the assessment of risk and option selection. This has potential for use in other electrification schemes.

2.15 It was inspection work in Scotland that first identified deficiencies in understanding and application of aspects of the electrical lifesaving rules. The Scotland RAM for electrical assets has taken the lead in tackling this issue and in ensuring that appropriate action is taken across the whole network, not just in Scotland.

Off-track

- 2.16 As mentioned above, Scotland has been behind plan in delivering volumes of vegetation work. We have been pressing Network Rail to remedy this and the response has been positive. Further, we have been made aware of a number of complaints from train and freight operating companies that vegetation was encroaching onto rolling stock – damaging trains and dislodging aerials. Our inspections found that in some locations there was no separation between lineside vegetation and sides of trains. This has a potential safety risk, particularly where there are drop light windows or observation verandas. As a result of our work, freight operating companies are repositioning RETB aerials to make them more resistant to being dislodged and Network Rail is stepping up mechanised removal of vegetation. This increase in volumes means that the route will not only recover its target for the year, but exceed it.
- 2.17 We began an inspection of how Maintenance Delivery Units (MDUs) in Scotland are resourced to maintain off track (OT) assets. We found:
- an OT Section that was routinely using Track Section staff to deliver some of its reactive work;
 - Section staff reporting that the Ellipse workbank does not reflect the condition of the OT asset; and
 - some managers who reported that their sections were significantly under-resourced.
- We have fed these findings back to Network Rail Scotland to help the company to better understand its off- track resourcing requirements.
- 2.18 We completed our investigation into an incident in August 2016 where a 13-year-old boy suffered serious electrical burns after climbing a stationary freight train near Dalkeith. We have passed a prosecution report to the Procurator Fiscal. Our investigation revealed that Network Rail’s assessment of risk from trespass did not specifically identify the hazards from the presence of overhead electrification and the stabling of trains. This has now been raised nationally to allow a network-wide remedy.
- 2.19 We note an increase in trespass incidents during 2017-18, but accept that this might reflect more accurate reporting. We will not draw conclusions until the pattern is clearer. Cattle incursion, on the other hand, is reducing compared to 2016-17 – a welcome development as 12 months ago we noted increasing risks in this area. Although Network Rail has not achieved its target for fencing we have seen evidence suggesting that better risk-based prioritisation of boundary measures has led to improved control of risk.

Level Crossings

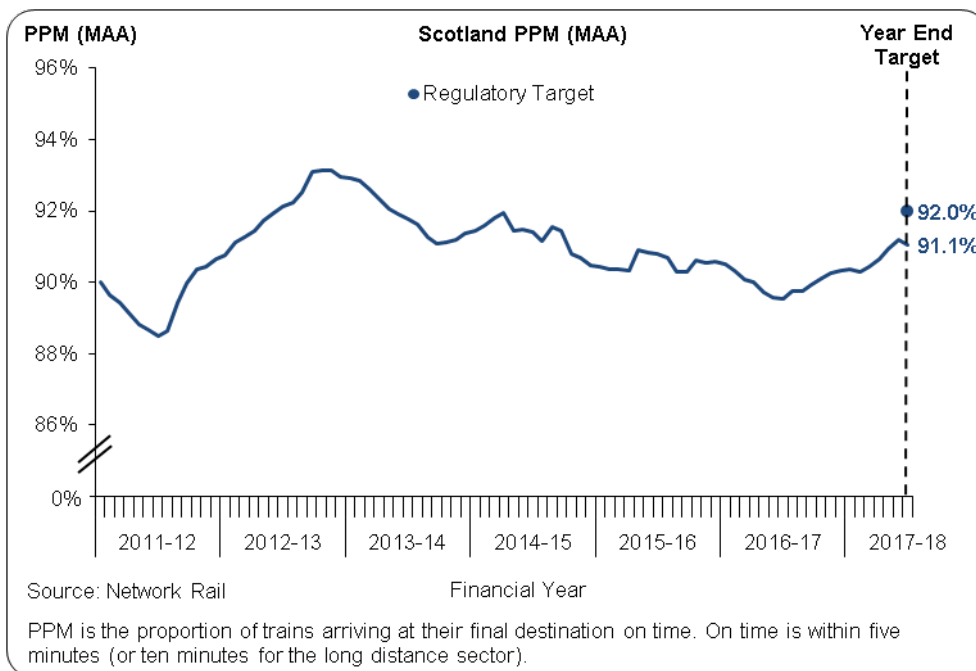
2.20 A focus for our inspection work has been on user-worked crossings in long signal sections where the user has to telephone to seek permission to cross. We have found a good understanding of the issues amongst responsible managers – but noted a significant challenge for them in securing physical improvements on the ground. There is a particular issue in Scotland where many dozens of crossings are controlled from a single location under Radio Electric Token Block (RETB) signalling. The signaller has only the most rudimentary knowledge of train position to aid advising crossing users. Many of these crossings are in remote rural locations and may only see a handful of traverses a year. These characteristics, allied with the high cost of improvements (red and green lights operated by a supplementary train detection system such as ‘VAMOS’) mean that the Scotland route finds the corporate strategy for passive crossings unaffordable and undeliverable. It is focussing on its top ten risk locations, but it is not clear how far beyond that it will be reasonably practicable to go.

2.21 Over the last five years Network Rail has delivered a programme to convert open crossings (AOCL – automatic local crossings monitored locally) to crossings with half barriers, known as AOCL+B. In Scotland, although these changes were welcome, we noted that at some locations with high pedestrian use the change had not fully addressed the risk profile for pedestrians. At the commissioning of the crossings we required Network Rail to consider how to address these risks. That was in 2013. Despite repeated dialogue in the intervening time we felt that insufficient progress had been made. On 31 May 2017 we issued Improvement Notices for Ardrossan and Dingwall AOCL+B crossings, requiring Network Rail to engineer a solution that prevents unimpeded pedestrian access to the railway when a train is crossing.

3. Train service performance

Scotland performance

3.1 We are holding Network Rail Scotland to account for delivery of its regulated performance targets throughout CP5. The PPM MAA for the franchises let by the Scottish Government (ScotRail and Caledonian Sleeper¹) at the end of period 7 of 2017-18 was 91.1%, 0.9 percentage points (pp) below the year-end regulatory target of 92.0% and 1.6pp better than at the same time last year.



3.2 The improvement is in part due to the reversal of some of last year's negative factors. For example, industrial relations are now much more settled and severe weather did not really begin to impact performance until October 2017.

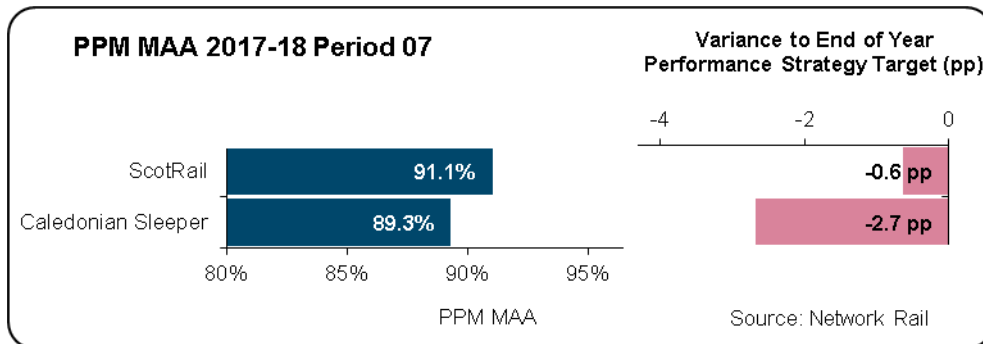
3.3 We have been closely scrutinising the steps Network Rail Scotland has been taking to ensure that performance recovers to targeted levels. We have observed how its performance improvement plan is governed across each function within the Alliance and have been encouraged when it has been strengthened as new actions have been identified. We also received assurance from Network Rail Scotland that its improvement plan is designed to deliver longer term benefits and aims to put in place measures that will help achieve 92.0% PPM MAA by the end of 2017-18.

¹ The PPM MAA for Caledonian Sleeper was 89.3%. However, the small number of trains operated means this had no impact on the combined PPM MAA.

3.4 We will continue to monitor performance in Scotland closely and engage with the Alliance to obtain assurance that all elements of the performance improvement plan are being delivered and having the impact predicted.

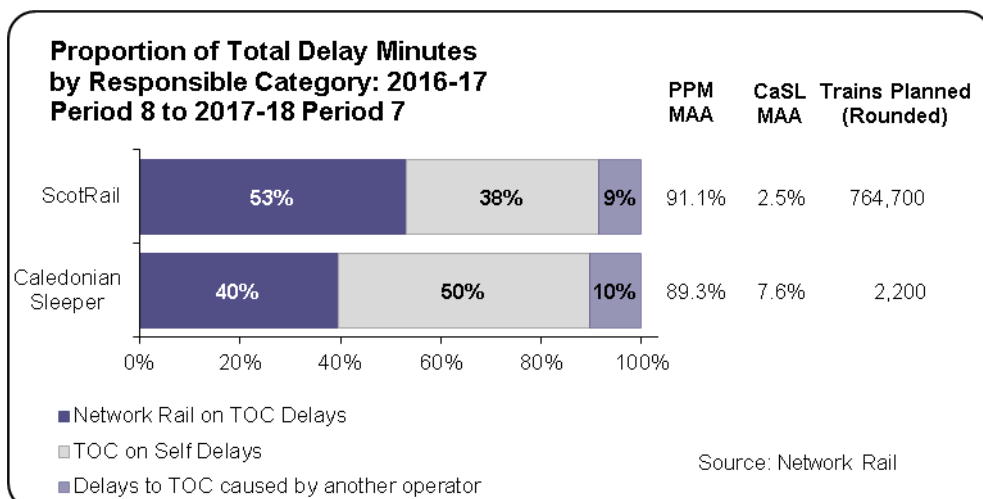
Performance at TOC level

3.5 PPM MAA for ScotRail is 91.1%, 0.6pp behind target. Caledonian Sleeper is also behind, with PPM MAA at 89.3%. This is however a slight (0.1pp) improvement since the end of 2016-17.



Delay minutes

3.6 In the first half of 2017-18, 53% of ScotRail delay minutes and 40% of Caledonian Sleeper delay minutes were attributed to Network Rail. The remaining delay minutes were attributed to the operators themselves and other operators.



Freight

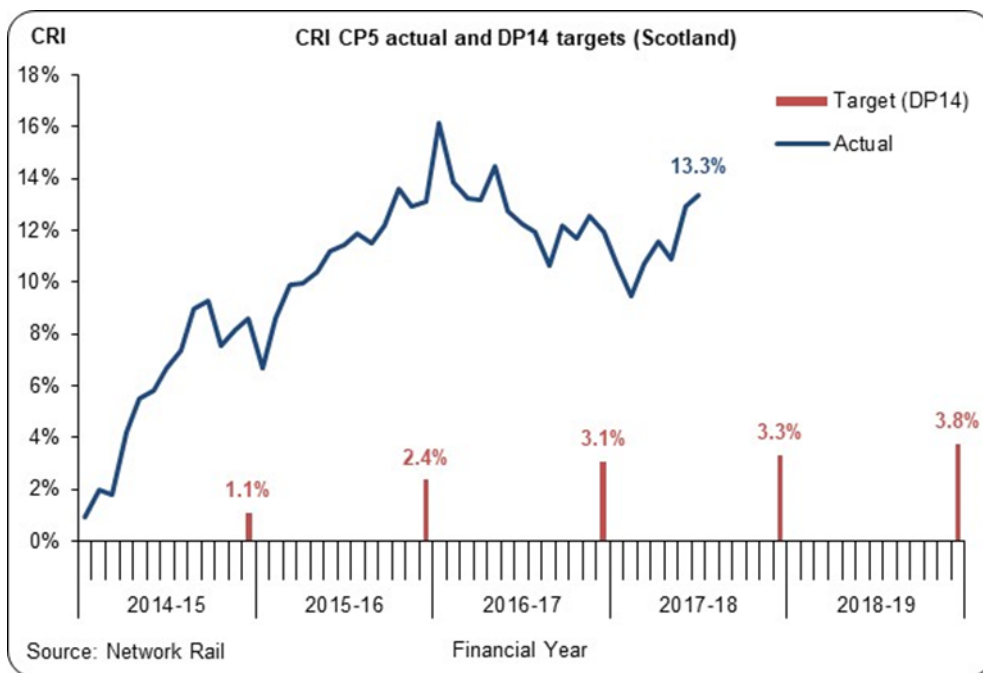
3.7 The regulatory performance measure for freight is the Freight Delivery Metric (FDM). This measures the percentage of freight trains arriving at their destination within 15 minutes of scheduled time. FDM covers delays for which Network Rail is responsible i.e. not those caused by other train operators. FDM MAA at the end of the period 7

for the Scotland Strategic Freight Corridor was 96.9%, 4.4pp ahead of the national annual regulated target of 92.5%.

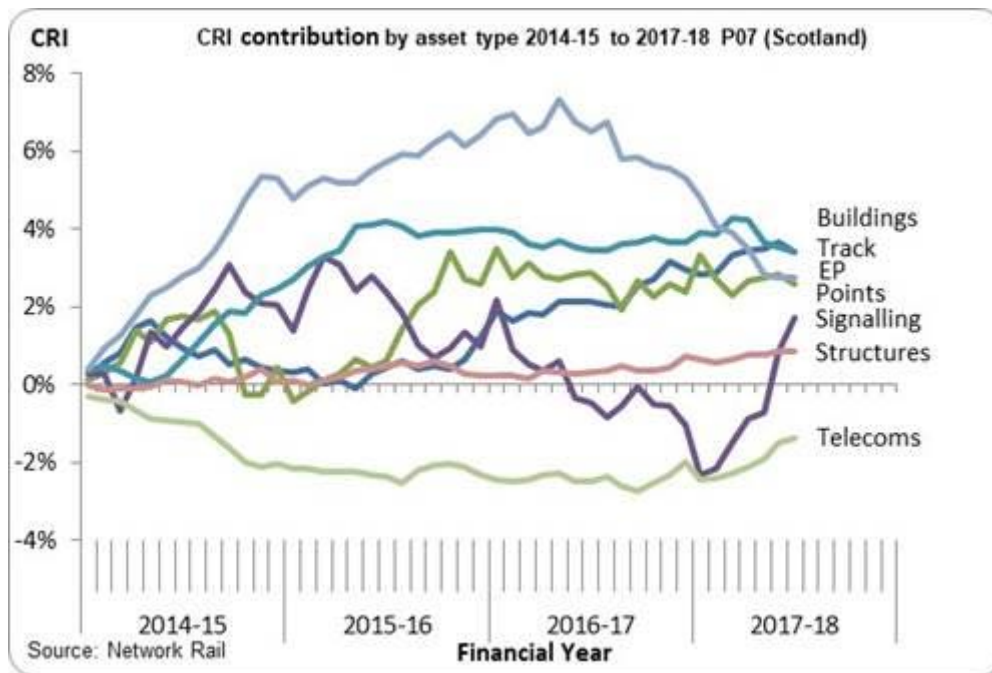
4. Asset management

Asset performance

4.1 During the first two years of CP5, Network Rail achieved a significant reduction in service-affecting asset failures in Scotland, with the overall Composite Reliability Index (CRI) showing a 13.1% improvement relative to the end of CP4. Last year it declined slightly, with CRI falling to 12.0%, but at this point in 2017-18 it has recovered to 13.3%.



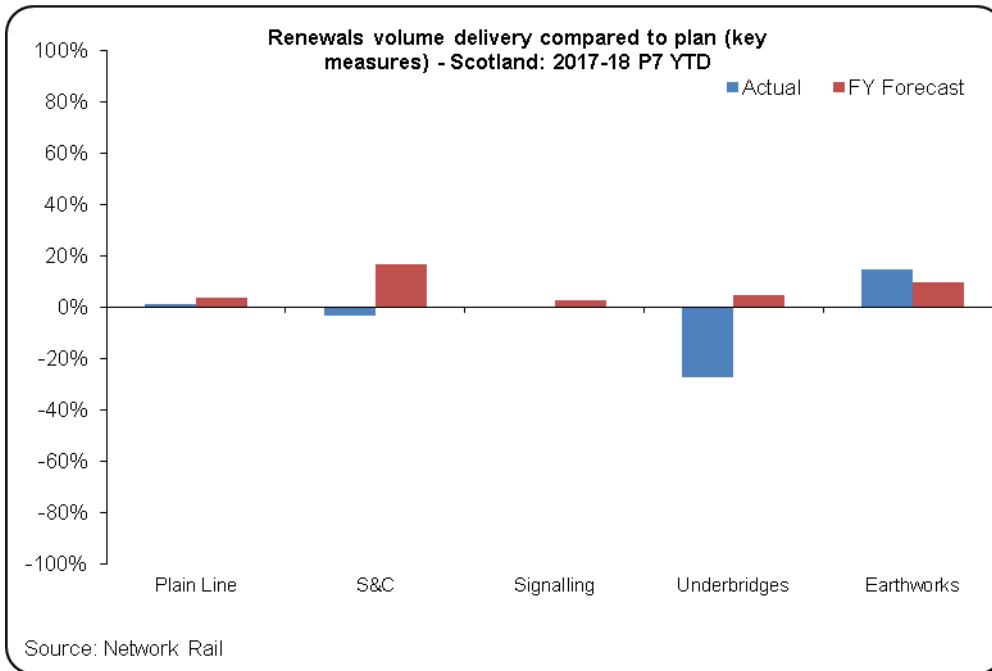
4.2 This recovery reflects performance gains in track, signalling and points. Signalling is now once again performing better than at the end of CP4. Telecoms has also improved, though performance is still not as good as at the end of CP4 (following the rollout of GSM-R). These gains are partially offset by a continuing fall in electrical power which may be reflective of a growing call on maintenance resource in the context of a growing electrical asset base.



Asset sustainability

- 4.3 Maintaining and renewing the network is fundamental to Network Rail's responsibilities. Regular maintenance counters the incremental effects of wear and aging to keep the assets safe and performing as intended, but eventually it becomes uneconomic or impractical to maintain them any longer and they have to be renewed.
- 4.4 Network Rail's asset policies set out the renewal work required to sustain the condition of the network assets at least whole life cost. The resulting volume of renewals required during CP5 was set out in Network Rail's 2014 delivery plan (DP14).
- 4.5 We monitor the actual volume of work completed by Network Rail, to hold Network Rail to account for achieving its current plan, and to understand any volume of work deferred from the original DP14 plan, which will increase the cost of future control periods.
- 4.6 During the first year of CP5 (2014-15) the volume of renewals projects completed by Network Rail Scotland was significantly less than planned, but the situation improved in years 2 and 3 with renewals finishing on or ahead of plan in most areas. So far this year the picture is variable across the asset areas, but Network Rail Scotland is forecasting to end the year on or ahead of plan in all areas.
- 4.7 The volume of plain line track renewals completed so far this year is 1% ahead of plan, and forecast to finish the year 4% ahead. Switches and crossings is 3% behind plan, but forecast to recover to 17% ahead of plan by year end, recovering work deferred from last year. Signalling is on plan and forecast to finish the year 2% ahead of plan. Underbridges is 27% behind plan, but forecast to recover to 5% ahead of

plan by yearend. Earthworks is 15% ahead of plan, and forecast to finish the year 10% ahead of plan, bringing forward work from next year.



4.8 The cost of the renewals work delivered so far this year was in line with budget and this is forecast to remain the case through 2017-18.

5. Developing the network

- 5.1 Network Rail Scotland is responsible for completing over £1 billion of enhancement projects in CP5. This section provides an update on our reviews and progress on each project.
- 5.2 There were no regulatory milestones during this reporting period (1 April – 14 October 2017).

Enhancements capability

- 5.3 In October 2015 we found Network Rail in breach of its licence for not having the required capability with regard to enhancements. The *Enhancements Improvement Programme* was Network Rail's response. We have been monitoring Network Rail's progress in delivering the EIP since October 2015 and we have provided a view on this in the [GB Monitor](#).
- 5.4 The implementation of the EIP has been slower in Scotland than in England and Wales. We asked the Independent Reporter to look at the approach Network Rail is taking to managing programmes with complex interfaces with other parts of the rail industry. As part of this review, the Independent Reporter reviewed the *Edinburgh Glasgow Improvement Programme (EGIP)* and *Edinburgh Suburban Enhancement Programme (ESEP)* for evidence that Network Rail is embedding the tools developed. The report can be found [here](#).
- 5.5 As in the rest of Great Britain, the overall conclusions are that, while there is more work to do, there is clear evidence that Network Rail has changed how it does things as a result of EIP. An example is the change in approach to the early stages of programmes seen at ESEP, and its approach to risk and value. We are optimistic that with continued effort in this direction some of the issues, which have arisen during delivery in CP5 projects, can be avoided in the future.

Project progress

Edinburgh Glasgow Improvement Programme (EGIP)

- 5.6 Key Output 1 (electrification of the line between Edinburgh and Glasgow) was not delivered in line with the March 2017 regulated milestone (infrastructure ready for passenger services). Although electric test trains have now run on the route, the revised milestone date of October 2017 was also missed. Challenges remain around the process of authorising the line into service and Network Rail must demonstrate that it has managed the electrification safety risk appropriately on the line in order for passenger services to commence. We will be leading a lessons learned review into the issues that have affected EGIP Key Output 1 once passenger services have begun. We plan to report on this alongside our next monitor.

5.7 Delivery of Key Outputs 2, 3 and 4 has picked up across the year following the completion of the Transport and Works Scotland (TAWS) process for purchase of land adjacent to Glasgow Queen Street station. Network Rail has identified and defined the packages of work, the outputs that can be delivered in CP5, the scope that has been necessarily pushed into the next control period, and work has now begun on site. The cost impact of the lengthy TAWS process has yet to be fully determined. We expect the forecast cost of the project to continue to fluctuate next year. We will continue to carry out efficiency reviews of any further changes to the target price.

Scotland Rolling Programme of Electrification (RPE)

- 5.8 The Stirling Dunblane Alloa (SDA) project has seen a number of cost, programme and scope challenges over the past six months, increasing pressure on project outputs and on the overall funding limit. These have included negotiating the necessary engineering access, the overall procurement strategy for the project and the work on infrastructure in Stirling required to achieve compliance with relevant standards for ensuring safety and interoperability.
- 5.9 We commissioned an Independent Reporter review looking at how these issues arose and the adequacy of Network Rail's responses. The reporter found failures in early project development, including a lengthy hiatus when development work on the project effectively stalled, and a lack of confidence from the client and train operator in Network Rail's ability to deliver the outputs. The reporter did find that Network Rail was making a concerted effort to deliver the project outputs in line with the regulated milestone (March 2019) and other key milestone dates (including the interface with EGIP Key Output 3).
- 5.10 Since the report was completed (in July 2017) there has been significant progress and Network Rail has secured the necessary engineering access and revised its procurement strategy to improve confidence in the overall plan. The estimated cost of the works remains far higher than Network Rail's initial forecast and ORR will carry out an efficiency review of the estimate.
- 5.11 ORR carried out a similar review of the Shotts Line electrification earlier in 2017. The Shotts estimate was also significantly above the initial forecasts, largely due to complications around ensuring that infrastructure complied with electrical safety standards (a recurring problem for Network Rail in CP5, although the company has taken steps to address this). The review found some evidence of inefficient or unjustified cost, but there was a far higher level of confidence in the robustness of the revised estimate and we have set a new efficiency determination to reflect this.

5.12 Progress on Shotts remains good; numerous complicated bridge reconstructions have been completed successfully and handed back on time. The forecast cost remains stable and there is a high degree of confidence the project will deliver its outputs in line with the regulated milestone (March 2019).

Aberdeen to Inverness Improvements Phase 1

5.13 Aberdeen to Inverness has begun to deliver works on the west end of the line for the new station at Forres, platform extensions at Elgin, as well as beginning the signalling works along the route. Progress has been good and the new station at Forres opened successfully in mid-October 2017.

5.14 Design work for the east end of the line continues to progress in line with the current programme. Although engineering access is close to being agreed for 2018 with the principles of the strategy agreed with the train operator, there are significant issues around consents. This places the overall programme and cost of the project at risk. We will monitor this situation closely.

5.15 The cost estimate for the project has stabilised - and reduced slightly in recent months as the project procures items and confirms its risk management strategy. However, it is still considerably higher than ORR's efficient determination made in 2016.

Highland Mainline improvements phase 2

5.16 The Highland Mainline project continues to progress well. It is currently significantly under the initial forecast cost for delivering the c.10-minute journey time improvement. Surveys and outline design work are substantively complete and construction activity is expected to commence in January 2018. The regulated milestone EIS GRIP 6 March 2019 is not currently considered to be at risk.

5.17 There remains some risk to the overall journey time output due to a lengthy timetable modelling process to confirm whether outputs are deliverable with the new rolling stock. It is important Network Rail addresses this issue as soon as possible to provide confidence in the project's ability to deliver. ORR will carry out an efficiency assessment of the Highland Mainline estimate in late 2017.

6. Expenditure and finance

6.1 This section examines Network Rail Scotland's efficiency and wider financial performance, including debt and borrowing. It covers the first six of the 13 financial periods in 2017-18. For convenience, we refer to these first six periods as the first half of 2017-18.

Financial performance

6.2 We consider Network Rail's financial performance in two ways; firstly by comparing income and expenditure to the company's budget and secondly using our regulatory financial performance measure. The Scotland route is reporting an underspend of £7m against its budget for the first half of the year and a full year forecast of a £53m underspend.

Table 1: Scotland route's income and expenditure variances to budget

£m	Half-year			Full year		
	Budget	Actual	Variance b/(w)	Budget	Forecast	Variance b/(w)
Turnover	330	328	(2)	712	714	2
Schedule 4	(9)	(7)	2	(28)	(23)	5
Schedule 8	1	0	(1)	(4)	(5)	(1)
Operations	(21)	(20)	1	(43)	(45)	(2)
Support	(52)	(48)	4	(109)	(107)	2
Maintenance	(60)	(58)	2	(125)	(128)	(3)
Capex - Renewals	(159)	(152)	7	(380)	(367)	13
Capex - Enhancements	(183)	(188)	(5)	(440)	(404)	36
Financing costs	(78)	(79)	(1)	(218)	(217)	1
Total	(231)	(224)	7	(635)	(582)	53

6.3 The main variances to budget in the first half of 2017-18 were:

- £4m of underspend on support costs as a result of lower recharges from Network Rail's central units;
- £7m of underspend on renewals;
- £5m of overspend on enhancements due to increased costs on EGIP (Edinburgh Glasgow Improvement Programme). This is largely due to inadequate project development and lower than expected productivity;
- an underspend in ring fenced funds;
- an overspend in the Aberdeen to Inverness enhancement as a result of bringing forward £14m of work; and
- a slight overspend of £1m on the 'Rolling programme of electrification'.

- 6.4 The regulatory financial performance measure (FPM) provides a more comprehensive understanding of Network Rail's financial performance than simple income and expenditure variances to budget. This is because FPM:
- ensures that Network Rail does not benefit from delaying work to a later date if that work still needs to be done;
 - adjusts for the value of any outputs that Network Rail was funded to deliver, but has not delivered such as reliability of train performance;
 - compares to the income and expenditure assumptions in the PR13 determination which underpin the company's level of funding, and;
 - excludes some income and expenditure that is not as controllable by Network Rail².
- 6.5 We currently expect the Scotland route to meet its own budget and to underperform against the regulatory financial performance measure by £256m. This difference is because Network Rail's internal budget is £256m higher than our PR13 financial assumptions for 2017-18. Network Rail is forecasting to outperform in some areas (in particular turnover, schedule 4, support costs and renewals) by £8m, offset by £8m of forecast underperformance on enhancements.

Debt and borrowing – increasing financial pressure

- 6.6 Network Rail's net debt in Scotland increased by £0.3bn to £4.3bn in the first half of 2017-18, which was in line with the company's budget.
- 6.7 Network Rail's Scotland route has a £3.3bn fixed borrowing limit with the Department for Transport for CP5. Forecast financial headroom at the end of CP5, i.e. the difference between the route's forecast CP5 borrowing and available borrowing is forecast to be £139m. Financial headroom has decreased by 21% in Scotland in the first half of 2017-18.
- 6.8 In light of the risks to the route's financial forecast, this headroom is low, although not as low as for England and Wales. Some risks are now starting to decrease as Network Rail gets nearer to the end of the control period. The company is now considering whether risk provision can be released, for example relating to Scotland enhancements. This would allow additional expenditure in some areas.

² These include network grant, fixed track access charges, traction electricity income and costs and business rates.

7. Glossary

Term	Explanation
Alliances	The term 'alliances' is currently being used to describe a wide range of different relationships from project-based partnerships through to potentially long-term and comprehensive commercial arrangements covering a wide range of activities carried out by Network Rail routes and train operators. The common factor is that Network Rail and a train operator reach agreement to work together more closely and share the benefits of doing so, within the framework of their existing individual accountabilities and responsibilities. As currently being discussed, alliances do not involve the creation of new legal entities such as formal joint ventures
CAPEX	Refers to the funds used by Network Rail to acquire or upgrade physical assets on the railway and related infrastructure in order to maintain or increase the scope of their operations. Such expenditure is referred to as Renewals (of existing infrastructure e.g. works that will provide long term benefits such as replacing a section of track) or Enhancements (upgrading existing or building new infrastructure, e.g. electrification of a railway line).
Civils	Civil engineering assets including bridges, structures and earthworks
Close Call	Any unsafe act or unsafe condition that in different circumstances could have led to an accident or personal injury, or could have resulted in damage to property or equipment, but would not introduce risk to the railway infrastructure.
Composite Reliability Index (CRI)	An index which provides an indication of the contribution of asset reliability to the safety and performance of the railway.

Term	Explanation
Control Period	<p>A control period is the period to which an access charges review (e.g. a periodic review) applies. Control periods are typically five years in length, but maybe shorter or longer depending on what the regulator decides as part of the review.</p> <ul style="list-style-type: none"> • CP6 covers from 1 April 2019 to 31 March 2024 • CP5 covers from 1 April 2014 to 31 March 2019 • CP4 covers from 1 April 2009 to 31 March 2014 • CP3: 1 April 2004 to 31 March 2009 • CP2: 1 April 2001 to 31 March 2004 • CP1: from the privatisation of Railtrack to 31 March 2001
DfT	Department for Transport
Earthworks	Natural earth slopes and earth-related structures such as cuttings and embankments
EGIP	Edinburgh to Glasgow Improvement Programme
EIP	Enhancements Improvement Programme
Ellipse	Computer based asset management system used by Network Rail to record and prioritise the maintenance work required to be done and when.
Enhancements	Schemes to change to network outputs, usually involving construction, that improves network capacity or capability (e.g. enabling higher speeds, allowing heavier loads) relative to the level of network outputs funded at the last relevant periodic review. Usually outputs are required at specific times (in contrast to most renewals).
FPM	Financial Performance Measure

Term	Explanation
Freight Delivery Metric (FDM)	This measure tracks the punctuality of freight services at destination taking into account Network Rail caused delays.
GRIP	Guide to railway investment projects. A Network Rail formal procedure through which every investment project on Network Rail's network must pass. It consists of a number of stages; at the end of these a review is carried out and if the project cannot meet the pass criteria it is stopped or held until it does.
GSM-R	Global system for mobile communications - railway. An international wireless communications standard for railway communication.
High Output Track renewal	A system for renewing track in part or as a whole far more quickly than has been possible in the past.
Improvement Notice	An enforcement notice requiring an improvement in activity within a set timescale
Independent Reporter	The role of the independent reporter is to provide ORR with independent, professional opinions and advice relating to Network Rail's (as licence holder) provision or contemplated provision of railway services, with a view to ORR relying on those opinions or advice in the discharge by ORR of its functions.
MDU	Maintenance Delivery Units
Moving Annual Average (MAA)	Moving annual average - the average of the last 13 four-week time periods.

Term	Explanation
Network Grant	A proportion of Network Rail's income in the past has been paid directly by DfT and Transport Scotland in the form of network grants in lieu of FTAC. Over CP5, more than 60% of Network Rail's income is forecast to come from network grants.
ORBIS	Offering Rail Better Information Services. A Network Rail initiative, its aim is to make information available in all forms including a mobile access and a local view to avoid site visits.
Overhead Line Equipment (OLE)	An assembly of metal conductor wires, insulating devices and support structures used to bring traction supply current to suitably equipped traction units. The conducting wires are normally strung between masts or poles in some form of catenary arrangement but simple systems may have a single trolley wire.
Passive crossings	Passive crossings have static warning signs (stop or give way) that are visible on approach. This signage is unchanging with no mechanical aspects or light devices.
Plain Line Track	Track without switches and crossings
Possessions	Network Rail needs to restrict access to its network to carry out many of its maintenance and renewals activities. These restrictions of access are referred to as possessions.
Public Performance Measure (PPM)	The Public Performance Measure (PPM) is the percentage of trains arriving at their final destination within 5 minutes of their scheduled arrival time (within 10 minutes for long distance services).

Term	Explanation
RAB	Regulatory asset base: The Office of Rail and Road's calculation of the value of Network Rail's assets.
Renewals	Major capital works or replacement of the network in order to maintain its required capability. These may be required at specific times but are more often carried out according to Network Rail's own timetable
RETB	Radio electronic token block
Schedule 4	Schedule 4 (the possessions regime) is the part of passenger and freight operators' track access contract with Network Rail that sets out arrangements for compensation to the operator in the event of planned disruption to their services.
Schedule 8	Schedule 8 (the performance regime) is the part of passenger, freight and charter operators' track access contract with Network Rail that sets out arrangements for compensation in the event of unplanned disruption to services.
Scour	The removal of material from a bed or bank of a watercourse or material from a beach by current or wave action. This is a particular problem where the removed material was providing support or restraint to a structure such as a bridge pier or retaining wall, ultimately leading to its collapse.
Section Manager	A supervisory post responsible for the day to day maintenance of the track within a permanent way section or area or division.

Term	Explanation
Switches and Crossings (S&C)	Track consisting of switches (an assembly of two movable rails – the switch rails) and two fixed rails (the stock rails) and crossings (an assembly that permits the passage of wheel flanges across other rails where tracks intersect).
TOC	Train operating companies: run the passenger trains and services on the network.
Track Geometry	The horizontal and vertical alignment of the track.
Train Regulation	The management of the passage of trains on a route using junctions and loops so that slower trains do not impede faster ones.
Underbridge	Bridges that allow passage under the railway.
Works Delivery	Part of Network Rail which delivers smaller schemes that are more complex than those delivered by the maintenance function but smaller than those falling to Infrastructure Projects
Whistle Board	A white circular sign with a grey edge and black W in the centre that indicates to a train driver that they must sound the horn or whistle. This is often used to provide warning to users of accommodation, footpath and occupation crossings.



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