Network Rail

L4AR004b: Assessment of train performance trajectories in Network Rail's Route Strategic Plans for PR18

Report

REP/001

Issue v3 | 11 June 2018

Job number   259734-00

ARUP

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1.1   General

1.1.1   Arup supported by Winder Phillips Associates has been appointed by the Office of Rail and Road (ORR) and Network Rail (NR) as Lot 4 Independent Reporter to monitor and evaluate Network Rail's delivery of its outputs and commitments for CP5.

Mandate

1.1.2   The purpose of this Mandate (Ref. L1AR004) was to review and provide an opinion on Passenger Train Performance trajectories as defined in Network Rail's Route Performance Plans for PR18. The Mandate was to consider the Consistent Route Measure - Passenger Performance (CRM-P) and:

- *Provide advice based on professional judgement as to whether the CRM-P trajectories specified in the eight geographic Route Strategic Plans (RSPs) are stretching yet realistic taking into account all known circumstances, including funding available in the SoFA.*

- *Identify whether any factors merit further consideration, that might materially impact the delivery of the performance trajectories?*

The Independent reporter will undertake a risk-based review, with a particular focus on performance trajectories that are not agreed between Network Rail and its customers or where any agreed targets appear to have significant risk of delivery.

An opinion on four specific areas was requested:

    i.   *The process undertaken by the Routes to produce robust performance plans;*
    ii.   *The credibility of the CRM-P trajectories;*
    iii.   *The credibility of the TOC train performance trajectories;*
    iv.   *Potential for further train performance improvement, additional to what is in the plans.*

A full copy of the Mandate is included in **Appendix A**.

1.2 Context

1.2.1 In July 2017, the UK[1] and Scottish Governments[2] issued their respective High Level Output Statements (HLOS) and in October 2017 the Secretary of State for Transport issued the Statements of Funds Available[3] (SoFA).

1.2.2 Both HLOSs reference performance, with the Scottish HLOS including a more prescriptive set of KPIs that it expects Network Rail to deliver in Scotland.

1.2.3 In CP5 passenger train performance is a key Regulated Output[4] for Network Rail. The key performance measure was the Public Performance Measure (PPM) and the trajectories were calculated centrally by NR to provide a consistent set of predictions in the context of a set of national targets.

1.2.4 As part of NR's transformation journey to create a more customer-focussed business NR have created a series of devolved route businesses operating within a national framework. Each Route has developed a route scorecard which includes measures for performance to provide a focus on local targets set with their customers. For CP6 (2019-2014) each route has produced a Route Strategic Plan (RSP) with a scorecard setting out their performance trajectory and the measures they are proposing to ensure the performance level is delivered. Each Route will have its own regulatory settlement and be accountable for delivery of their route performance targets.

1.2.5 In addition to locally agreed train performance and customer measures, each route scorecard will include a new measure, the Consistent Route Measure - Passenger Performance (CRM-P) with a target trajectory for CP6. Associated with this trajectory is the CRM-P Regulatory Minimum Floor, which is the point at which ORR is highly likely to formally investigate Network Rail for breach of its licence.

1.2.6 In Scotland, Transport Scotland have set a requirement for the network to be maintained in such a manner as to enable ScotRail to deliver PPM of 92.5% for every year of CP6.

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[1] https://www.gov.uk/government/publications/high-level-output-specification-2017
[2] https://www.transport.gov.scot/media/39496/high-level-output-specification-hlos-for-control-period-6-final.pdf
[3] https://www.gov.uk/government/publications/railways-statement-of-funds-available-2017
[4] Formal Regulated Outputs are set out in ORR's CP5 Final Determination. A failure to deliver these outputs could result in a formal investigation as to whether Network Rail has done everything reasonably practicable to deliver the output.

1.3   Approach

1.3.1   Our review has comprised a combination of desk based review of documentation supplied by NR and a series of meetings with NR Route teams.

1.3.2   We have met with all eight geographic Routes to discuss their approach to predicting performance trajectories for CP6. We have not been asked to consider the Freight and National Passenger Operators (FNPO) route or the System Operator (SO) function.

1.3.3   We have met with NR central teams to understand the guidance that they provided to the Routes and assurance of the Route performance plans that have been undertaken.

1.3.4   A number of Routes have prepared performance models to predict the future trajectories. It was agreed with NR and ORR that we would have sight of these models to gain a sense of their approach but not to review them or undertake any independent performance modelling of our own.

1.3.5   As part of our review we have also met with a number of industry stakeholders to discuss and identify possible ways of improving the performance trajectories. These have included representatives from DfT, RDG, Transport Scotland, Network Rail and Train Operating Companies.

1.4   Findings

Measures on Route scorecards

1.4.1   Our review of the eight Route Strategic Plans has identified that a number of different performance measures have been adopted by the Routes in addition to the proposed CRM-P. The range of performance measures included in Route Scorecards is shown in **Table 1.1** below.

Table 1.1: Summary of Performance Measures adopted by Routes

	Anglia	LNE & Midlands	LNW	Scotland	South East	Western	Wessex	Wales
Right Time Metrics				Right Time Departures		Right-time departure at Bristol Parkway and Reading [Cross Country]		
	On Time	On Time at all recorded stations	Caledonian Sleeper Right Time Arrivals	Caledonian Sleeper Right Time Arrivals	On time	Punctuality at all recorded stops [GWR]	Right-time arrivals at Reading [Cross Country]	GWR Right Time Departures leaving Wales Route at Severn Tunnel Junction
			On-Time Moving Annual Average			Right-time at destination [HEX]	SWR Right-time (right time departures Waterloo)	Cross Country – On Time Departures from Cardiff
Passenger Lateness		Average Passenger Lateness			Average Passenger Lateness	Average Passenger Lateness		Average Passenger Lateness
Punctuality Measure	Public Performance Measure (PPM)	PPM Moving Annual Average (MAA)	PPM MAA	PPM		PPM [GWR & MTR Crossrail]	PPM	PPM
							GWR Measure (PPM North Downs and Portsmouth Cardiff Route)	
			T3 Moving Annual Average (Euston-Watford Service Group)		Time to 3		Time to 3	
Cancellations	Cancellations	Level of Cancellations		Cancellations	Level of cancellations CasL	Level of cancellations	CaSL	
Delay Metrics		NR caused Delay Minutes by the route	Infrastructure Delay (Track & Non-Track Assets)	DPI Reduction		NR caused delay minutes	GTR Measure (NR Wessex Delay Minutes)	
Consistent Route Measure – Performance	CRM-P	CRM-P	CRM-P	CRM-P	CRM-P	CRM-P	CRM-P	CRM-P

Process undertaken by the Routes to produce Route Performance Plans;

<u>Definition of Requirement</u>

1.4.2   Fundamentally there are 'trade-offs' between train performance target, level of confidence and amount of expenditure required. In simple terms higher train performance targets (%) and / or a higher degree of confidence of achieving them requires higher levels of intervention expenditure by a route infrastructure team. No specific confidence level for the performance targets seems to have been specified by either ORR or NR.

1.4.3   In the absence of a definition, the Routes decided locally on its method of calculating their central performance trajectories. When asked by the ORR to state their level of confidence in the resulting trajectories, the Routes generally assessed their confidence retrospectively instead of producing trajectories at a target level. Their level of confidence varies from 40% to 80%. It is recommended that a consistent level of confidence is specified [2018APR01].

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NR Central Guidance

1.4.4   To allow freedom for the devolved businesses and promote Route
ownership of performance trajectories, the NR central team have
minimised the level of central guidance provided to the Routes in
terms of performance modelling.

1.4.5   All Routes have been provided with guidance on an overall process to
adopt, which includes, engagement with stakeholders, review of
historic performance, setting of objectives, identification of risks &
constraints, then planning initiatives to achieve the required
trajectories. This guidance seems to have been followed by the
Routes.

Record of Assumptions

1.4.6   None of the Routes have compiled a single document that
comprehensively describes the assumptions made in their performance
trajectories. This would have provided greater transparency. We
recommend that each Route provides such a document [2018APR02].

External Input – Passenger and Traffic Growth

1.4.7   The effects of passenger and traffic growth are amongst the biggest
drivers of performance (downwards). The central NR team provided
each of the Routes with guidance on their impacts by TOC in March
2016, updated in July 2017. Some Routes have used these figures or
updated them with more recent growth forecasts; others have used
their own performance assessments – in some cases more optimistic
e.g. LNW (West Midlands Railway impact -0.1 pp vs central advice -
0.6 pp for passenger growth) and others more pessimistic e.g. Western
(GWR -0.96 pp vs -0.34 pp for passenger growth).

1.4.8   It has not always been clear to us why the centrally provided figures
have not been used and, if not, how impacts have been assessed - in
particular treatment of additional vehicle capacity and traffic growth.

1.4.9   In summary, the method for assessing impacts of passenger and traffic
growth have varied between routes and in some cases is unclear. The
impacts on performance vary between TOCs and this may, in part, be
because of the method used.

External Input – TOC Initiatives and New Fleet

1.4.10   All Routes have recognised that TOC initiatives and / or the
introduction of new fleet will impact the route performance. We have
found a range of assumptions, with some routes 'toning down' the
impact proposed by TOCs to what they feel is more realistic and
others taking it at 'face value' after discussion with the TOC. To an
extent, CRM-P is isolated from these assumptions, but there will still
be an impact on reactionary delays attributed to Network Rail.

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Modelling of Performance

1.4.11　Within the overall guidance provided by NR central team, the Routes have adopted different approaches, in particular around modelling the impact of their planned initiatives and setting the CP6 trajectories.

1.4.12　We have seen a number of highly credible performance modelling approaches being adopted, but a wide range of approaches have been adopted ranging from professional judgement to Monte Carlo simulation. It is unclear if this is an issue, however the lack of a single consistent approach to modelling means that there is increased uncertainty that the Route performance trajectories are fully compatible.

1.4.13　We are uncertain that the modelling for Anglia route is treating a number of factors as intended. Although the trajectories produced are credible, we recommend reviewing the model and its assumptions to check the resulting trajectories [2018APR04].

Line of Sight

1.4.14　The Routes have carried out a lot of work to try to ensure there is line of sight between the operations, maintenance & renewals (OMR) plans and their impact on performance. To quantify the effects of the planned interventions the Routes have used a mixture of subject matter expert advice / professional judgement (e.g. discussion with the RAMs) and delay analysis / modelling.

1.4.15　Whilst we accept that achieving a clear line of sight is challenging, in some Routes there is a lack of transparency between their OMR plans / interventions and the planned impact on performance. This makes it hard to know how (or indeed if) the impact of OMR investment on train performance has been assessed by the Routes.

Agreement with TOCs

1.4.16　Apart from Caledonian Sleeper, MerseyRail and GWR (up to 2020 when their Direct Award franchise ends), we understand that none of the TOCs have formally signed up to the CP6 trajectories. Generally, the TOCs appear to have been consulted and in general appear to agree to the Route's methodology. The reason for not signing up seems to be that the trajectories are lower than what they have agreed with DfT, or relevant Transport Authority, in their franchise commitments. [2018APR03]

Scotland Route

1.4.17　The performance trajectories for Scotland were amended during the course of this review, in the light of the publication of an independent report into ScotRail's train performance. We have not received any models for review so are unable to comment on the process undertaken to produce the trajectories. The confidence scoring is

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based on the waterfall charts for the first three years of CP6 and other information provided.

Network Rail's Internal Assurance

1.4.18 The Routes have adopted different levels of assurance. The central performance team carried out a high level review of all Routes and their approaches, and offered further advice if requested. There is an opportunity for good practice in individual Routes to be shared with the other Routes. [2018APR02]

1.5 Overall Opinion

Credibility of the TOC train performance trajectories

1.5.1 As noted above we have identified that there are different views on level of confidence of central PPM trajectories and there are different ways of assessing that confidence. Stated confidences vary from 40% (VTEC and Northern on LNE&EM) to 80% (GTR and Southeastern on SE). In addition, the method of assessment varies from Monte Carlo simulation to professional judgment.

1.5.2 Whilst it is difficult to judge the difference between 40% and 80% confidence trajectories, such differences are likely to be significant. As an example, the Monte Carlo simulation used by SE Route suggests the gap between P50 and P80 on that route is about 2pp on PPM.

1.5.3 We note that there are seven operators which have to make up a gap of at least 2pp in 2018/19 to hit their CP5 exit / CP6 start trajectories, reversing recent negative trends: VTEC, Hull Trains, TPE, VT, ScotRail, SWR and GWR. This gap may present a risk for achieving their trajectories in the early years of CP6.

1.5.4 Our view of the trajectories in the latter years of CP6 generally agrees with that of the Routes in many cases. Overall, we judge them to be more realistic than stretching but there are exceptions (e.g. TfL Rail and TPE). There are two TOCs where we have a significantly different opinion to the Routes. With its CP6 exit trajectory lower than performance at the end of 2017/18, we view ATW's trajectory as not stretching. We also view SWR as not stretching.

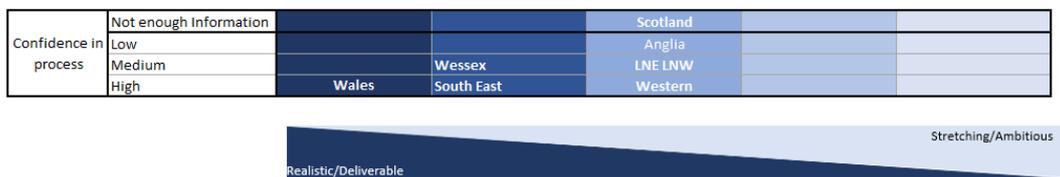### Credibility of the CRM-P trajectories

1.5.5 CRM-P is calculated centrally through a methodology developed by the National Performance Analysis Team. The calculation is based on the change in NR caused PPM failures which is then converted to delay minutes based on the historical relationship between PPM and delay minutes for each TOC. The Routes provide these inputs to allow CRM-P to be calculated.

1.5.6   Our discussions with the Routes indicate that they are slightly more confident in the CRM-P trajectories than the PPM trajectories. We have found it difficult to assess the confidence levels associated with the CRM-P trajectories but intuitively CRM-P removes one of the uncertainties of the trajectories, namely 'TOC-on-self' delays but, reactionary delays to NR incidents are affected by TOCs' ability to recover from them.

1.5.7   Our confidence of the CRM-P trajectories is that Anglia, LNE&EM, LNW and Western are both realistic and stretching. South East is not as stretching as the aforementioned Routes, reflecting its choice to produce trajectories for its TOCs at 80% confidence of delivery, although there are still some potential risks to delivering the forecasts. We also judge Wessex and Wales CRM-P trajectories to be less stretching than Anglia, LNE&EM, LNW and Western.

1.5.8   Our view of the credibility of trajectories for CRM-P and our overall confidence in the process to produce them is summarised below in **Figure 1.1**. It shows that we judge that Wales to be the least stretching but we have confidence in the process they have undertaken. Comparatively we judge Anglia to have produced realistic and stretching trajectories but our confidence in the modelling they have undertaken is low.

Figure 1.1: Credibility of CRM-P trajectories and confidence in process

Confidence in process	Not enough Information				Scotland		
	Low				Anglia		
	Medium			Wessex	LNE LNW		
	High	Wales		South East	Western		

Realistic/Deliverable → Stretching/Ambitious

Potential for further train performance improvement

1.5.9   Our review and discussions with stakeholders has identified the following areas that might yield improved train performance:

- Becoming more customer centric such as improving customer management and holding parties to account for disruption;

- Greater alignment of the system across the industry, notably the franchise and periodic processes but also investment in performance management systems;

- Leadership to bring together all parties to address systemic challenges; and

- A strategic response to creating a sustainable talent pipeline for the industry at all levels.

1.6 Recommendations

1.6.1 The following recommendations are made in relation to this review.

Table 1.2: Recommendations

No.	Recommendation	Benefits	Evidence of implementation	Owner	Target date for completion
2018APR01	It is recommended that ORR consider advising NR of the required confidence level for the performance trajectories to allow NR to provide a consistent and comparable set of trajectories across the Routes	Improved consistency across Routes	ORR to consider providing confidence level to NR	ORR	July 2018
2018APR02	It is recommended that NR Routes each produce a single document of assumptions made, and share their approaches adopted to date. And that NR Central Team review the guidance on calculation of performance trajectories provided to the Routes and the degree to which the resulting performance trajectories are consistent and comparable across the Routes.	Improved consistency across Routes	Documentation of assumptions made by each Route	NR	Publication of Final Determination
2018APR03	It is recommended that disparities between Route performance trajectories and TOC Franchise commitments are identified and acknowledged.	Improved join planning	Joint planning	NR	CP7
2018APR04	Anglia to review its performance model and assumptions to check performance trajectories	Greater confidence in trajectories	Documented review	NR	July 2018

1.7 Acknowledgements

1.7.1 The Independent Reporter Team would like to thank both NR and ORR staff for their assistance with this study.

2　Introduction

2.1　Aims of mandate

2.1.1　In January 2018 Arup and Winder Phillips Associates were commissioned by the Office of Rail and Road (ORR) and Network Rail (NR) to review the December versions of the eight geographic Route Strategic Plans (RSPs) and the Freight and National Passenger Operator RSP. This work was commissioned under the Independent Reporter framework (Lot 4). The aim of the work was broadly to gain familiarity with the Routes' performance plans by:

- Looking at historical performance of the eight Routes

- Familiarisation with associated evidence base

- Reviewing on-going assurance by Network Rail

- Forming and sharing early thoughts on the plans, the evidence base and the Network Rail's assurance activity

2.1.2　Based on this work, we proposed several options for reviewing the February versions of the RSPs.

2.1.3　In March we were commissioned to undertake a fuller review with a focus on a new measure of train performance called the Consistent Route Measure - Passenger Performance (CRM-P). This measure has been defined by the ORR to allow comparison of performance between the Routes. The ORR has asked NR to propose a trajectory for CRM-P for each Route in CP6, as well as a "Regulatory Minimum Floor" against which ORR will monitor NR's performance. If one of the Routes breaches the CRM-P Regulatory Minimum Floor, the ORR is highly likely to formally investigate NR for breach of its licence.

2.1.4　The mandate for our work is presented in Appendix A. Its overall aims are to:

- Provide advice based on professional judgement as to whether the CRM-P trajectories specified in the eight geographic Route performance plans are realistically stretching and deliverable, taking into account all known circumstances, including funding available in the SoFA.

- Identify whether any factors merit further consideration, that might materially impact the delivery of the performance trajectories?

2.1.5　In doing so, we have been asked to give our opinion on four questions:

1. The process undertaken by the Routes to produce robust performance plans;

2. The credibility of the CRM-P trajectories;

3. The credibility of the TOC train performance trajectories;

4. Potential for further train performance improvement, additional to what is in the plans.

2.2 This report

2.2.1   This report is structured to answer each of the above questions in turn. We have, though, switched round questions 2 and 3 because CRM-P is calculated from the TOC train performance trajectories. In considering the credibility of CRM-P we believe it makes sense to first consider the credibility of the train performance trajectories.

2.3 Our approach

2.3.1   In answering the first three questions we gathered evidence from the Routes and ORR. This consisted of presentations and minutes of "deep dive" meetings held between ORR and each of the Routes to discuss their performance plans. We attended a proportion of these meetings. We also requested copies of the performance models to help understand the approach taken and assumptions made by the Routes.

2.3.2   We then held a number of additional meetings as listed below to further understand elements of the performance plans and the calculation of CRM-P. We based our assessments on these discussions and the evidence provided to us. The list of all documents received is provided in **Appendix B**.

Table 2.1: Additional meetings held by Arup

Date	Meeting
20 March	ORR – feedback from all deep dive meetings
26 March	NR National Performance Analysis Team – CRM-P calculation
5 April	SE – overview of performance model
18 April	LNW – clarifications on performance plan
19 April	Wales – clarifications on performance plan
19 April	LNE&EM – clarifications on performance plan
27 April	Western – clarifications on performance plan
27 April	Anglia – clarifications on performance plan
2 May	Wessex – clarifications on performance plan

2.3.3 The fourth question is a wider one, looking at industry wide constraints that restrict train performance. For this we undertook a series of consultation meetings from representatives from across the industry. These meetings and their findings are described in section 6 of this report.

3 Process undertaken by the Routes to produce Route Performance Plans

3.1 Introduction

3.1.1.1 In this section we review the process undertaken by the Routes to develop their performance trajectories. We do so under two questions:

1. Has a reasonable approach been taken?

2. Do the plans support the CRM-P trajectories?

3.2 Has a reasonable approach been undertaken?

3.2.1 Setting the objectives

3.2.1.1 All of the Routes have engaged with their stakeholders and customers to understand their priorities for CP6 and beyond. These are clearly described in the RSPs and are used to inform the objectives for CP6.

3.2.1.2 It is clear, however, that some stakeholder priorities cannot be delivered within the funding available, in particular achieving the performance trajectories contained within many franchise agreements. In such cases, it appears that the Routes have explained this to stakeholders and their approach to maximise delivery within the funding constraint. They have also presented additional schemes to deliver more and better meet objectives if additional funding is made available.

3.2.1.3 The CP6 objectives are quantified in each Route's long-term scorecard, consisting of measures for safety, train performance, customer, sustainability / asset management and financial performance. They provide a central target as well as "worse than" and "better than" targets. For the train performance measures, each Route has decided its own methodology for calculating the central trajectories; Routes' confidence in delivering these varies from 40-80% and is assessed on the basis of professional judgement or by Monte Carlo simulation. The definitions of "worse than" and "better than" for train performance are varied and are summarised in **Table 3.1.**

Table 3.1: Definition of "worse than" and "better than"

Route	Worse than	Better than
Anglia	Below the range around the central target, calculated from the average variation in periodic PPM within CP5	Above the range around the central target, calculated from the average variation in periodic PPM within CP5
LNE&EM	Below the range around the central target, calculated from the average variation in periodic PPM within CP5 + factor to widen range for later years in CP6	Above the range around the central target, calculated from the average variation in periodic PPM within CP5 + factor to widen range for later years in CP6
LNW	1.3 pp - 1.4 pp below central target (PPM)	1.3 pp - 1.4 pp above central target (PPM)
Scotland	Not reviewed by us	Not reviewed by us
South East	95% confidence in achieving target based on Monte Carlo simulation	55% confidence in achieving target based on Monte Carlo simulation
Wales	Traffic increase in line with aspirational services in new franchise	Inclusion of additional asset schemes in Appendix D of RSP; TOC achieves operating service level target
Wessex	Assume all the risks (i.e. negative factors) and none of the opportunities (i.e. positive factors) except for resolution of Industrial Action	Assume none of the risks and all of the opportunities
Western	Each component of plan delivers 65% of target delay saving	Each component of plan delivers 95% of target delay saving

3.2.1.4   The lack of a consistent definition of targets means that it will be difficult to compare performance between the Routes. For example, achieving the central target will, all other things being equal, be easier for South East Route (who are 80% confident in delivering) than for Wessex (48% confident).

3.2.2   Modelling approach

3.2.2.1   NR's Business Review Team provided guidelines to each Route for developing their RSPs. For train performance, this consisted of guidelines on the impact of forecast passenger and traffic (trains) growth on PPM in CP6, based on modelling carried out by the National Performance Analysis Team (NPAT). Estimates were provided for each TOC, showing separately the impacts of passenger growth, service enhancements delivering additional capacity, and compounded network congestion effects.

3.2.2.2   NPAT were available to the Routes to provide additional guidance. The Routes each developed their own performance models to estimate the impact of their plans on train performance trajectories. This resulted in a variety of modelling approaches. We have summarised

these approaches below based on a quick review of any models sent to us, presentations to ORR and our own discussions with the Routes.

Table 3.2: Modelling approach

Route	Description of modelling approach
Anglia	High level performance model, forecasting changes in PPM failures from 2017/18 base. Each year in CP6 is treated independently.
LNE&EM	Delay forecasts developed based on forecast incident count and historical relationship between DPI and number of delay causing incidents for each TOC. Additional structured assessment of the impacts of Thameslink on delays. Delay forecasts converted to PPM based on historical relationship between delay and PPM for each TOC.
LNW	Forecasts are in terms of changes to PPM for a number of high level risks, opportunities and enablers, based on professional judgement and high level of analysis of delay data. PPM converted to other performance measures by central tool.
Scotland	Not reviewed by us. We understand that the benefits of high level initiatives have been estimated by professional judgement for each year in CP6. An overall risk adjustment is then made.
South East	Detailed structured model of 394 initiatives with defined minimum, maximum and average delay impacts. Includes structured assessment of the impacts of Thameslink on delays. Monte Carlo modelling with @Risk software, involves running 10,000 simulations to calculate PPM at different confidence levels. Model was reviewed by NPAT
Wales	Forecasts based on Route NR delay minutes. Detailed and evidenced modelling has been undertaken to consider a number of factors affecting performance. Based on 5 years of historic data.
Wessex	Performance impacts of high level factors assessed as changes to PPM. Based on analysis of historic data of similar events. Linear regression of 4 years data to convert PPM to other performance metrics, based on central tool. Monte Carlo simulation to assess level of confidence.
Western	Model based on GWR franchise model (only route we know to have used a TOC model): bottom up model of detailed initiatives in delay minutes by service group. We have not seen the model but understand HEX is modelled similarly. Conversion to PPM by linear regression.

3.2.2.3   Some of the models seen by us contain analysis of historic data which is used to estimate the impact of initiatives. In other cases, the analysis has happened elsewhere which we have not seen. As far as we have established, no Route has a single document that describes all of the assumptions made in their model(s) and plans - although we have seen some overviews (for example, South East).

3.2.2.4   It is difficult to say which modelling approach is best for a strategic 5-year model. We do, however, have concerns about Anglia's model as it appears to model certain aspects in an unintended fashion. By treating each year independently, the gains or losses in performance

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made the previous year are lost unless specified in the model. We are
uncertain if this is intended.

3.2.3   Assurance

3.2.3.1   The RSPs are self-assured by the Routes. The process of assurance
has been defined NR's Business Review Team. It contains three
levels of assurance as illustrated below.

Figure 3.1: RSP levels of assurance
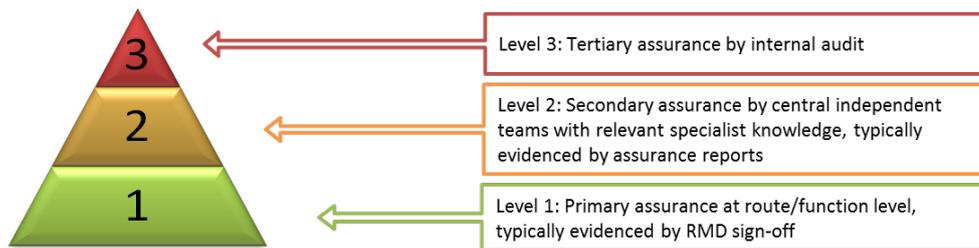
Source: Business planning process overview

3.2.3.2   **Level 1** assurance was evidenced by sign off by the Route Managing
Director as shown in the RSPs.

3.2.3.3   **Level 2** for the performance plans was carried out by NPAT. NPAT's
role is described as a "critical friend". They reviewed the RF2
submission plans in June 2017 and provided two pages of feedback to
each Route. This was repeated for the RF6 submission plans in
September / October 2017 when they also provided a grade. They
provided a third review of the RF9 submission in December 2017 to
help the Routes finalise their plans.

3.2.3.4   The grading of the performance plans in the RF6 submission is shown
below. The scoring ranged from 1 "serious concerns" to 5 "strong
robust plan" and represented NPAT's view of confidence and
completeness of the plans at that stage.

Figure 3.2: NPAT grading of performance plans (RF6 submission)

	Grading (0-5)	[A] Commentary
Anglia	2	RF6 significantly reduced from RF2, key issue around rolling stock and timetables
LNE	3	Good plan but with substantial challenge of ECML presented as a supplementary plan
LNW	4	Practical plan, presented as keeping performance stable as HS2 works progress
Scotland	3	Plan more clearly towards specified output (compared to other plans; as Scotland HLOS), inputs focussed on continuous improvement with less cover of potential bigger picture issues
Southeast	4	Strong plan against a relatively ambitious set of objectives with clear performance improvement supplementary plan
Wales	4	Performance plan aligned with asset management plans and franchise output expectations including operator improvements and growth
Wessex	2	Difficult plan built around challenging baseline trend - RF6 significantly reduced from RF2, and requirement for growth
Western	2	Plan for Route transition with performance products led by transition needs
FNPO	3	Plan to champion objectives of Freight and National Operators

Source: SBP Assurance Activity, January 2018

3.2.3.5 **Level 3** is carried out by each Route on its own plans. Based on our discussions with the Routes, this has been carried out in various ways on the performance plans. They include a performance specialist (not the modeller) sense checking the assumptions and outputs of the model, presentation of findings to the Route executive group, and a structured set of assurance meetings of various elements of the plans.

3.2.4 Conclusion

3.2.4.1 The process for setting route objectives appears to be robust. The lack of guidance from the centre, however, has led to different definitions of "worse than" and "better than" targets. In addition, the lack of guidance from ORR on the level of confidence in delivering the central performance trajectories has led to a variety of methods for producing them with resulting confidence ranging from 40% to 80%. Further, the method of assessment in confidence has varied between the Routes which could lead to inconsistent views.

3.2.4.2 The Business Review Team provided some high-level guidelines for the performance plans and left it to the Routes to determine their

modelling approach. This has led to a variety of methods and in some cases disparate analysis files. No standards have been mandated although guidelines for the impacts of passenger and traffic forecasts were provided. No documentation standards were mandated and we have seen no single document that describes all assumptions for any Route.

3.2.4.3   Although it is difficult to say which modelling approach is best, we are uncertain if the Anglia model has modelled all factors in the intended way.

3.2.4.4   More generally, the Routes have faced a number of challenges in producing their performance trajectories for CP6. These have included:

- Significant changes to the network and train service patterns, notably the Thameslink Programme (South East and LNE&EM) and Crossrail (Western and Anglia) – these involve new trains, operations, and new possibilities of delay transfer between routes, all requiring close working with TOCs and neighbouring Routes;

- Significant engineering works affecting train operations, notably HS2 works at London Euston (LNW) and at Old Oak Common (Western) for which plans are at an early stage;

- Managing the introduction of several new fleets and cascades of existing fleets, which is largely in the hands of TOCs (most Routes);

- Uncertainties in the outcome of franchise bidding that could significantly impact train service patterns, notably ATW with the possible transfer of the Core Valley Lines (Wales);

- Managing the introduction of new timetables with additional train services on congested parts of the network, affecting most Routes but notably SWR (Wessex), Northern and TPE (LNE&EM and LNW) and services on the East Coast Main Line (LNE&EM);

- Forecasting future passenger growth and its impact on small but frequent 'sub-threshold' delays – and how best to address them; and

- New operations from the introduction of Digital Railway and Traffic Management Systems.

Addressing these challenges is not straightforward and requires suitably skilled staff.

3.3 Do the plans support the CRM-P trajectories?

3.3.1.1 The Route CRM-P trajectories are derived from the appropriate TOC PPM trajectories (see section 4 for more details). The Routes have provided waterfall charts and fishbone analysis to explain their PPM trajectories so we have examined these to check if the Route's wider plans support the PPM and hence CRM-P trajectories. We have done so by considering plans associated with external factors, internal NR factors and Route management.

3.3.1.2 The following table compares the impacts of these factors on PPM for each TOC between the start and end of CP6. We discuss these further in the sub-sections that follow.

Table 3.3: Key performance drivers

Drivers		Anglia [1]				LNE & EM					LNW					South East [3]		Scotland	Wales	Wessex	Western
		c2c	GA	ARL	TFL Rail	Northern	VTEC	EMT	GC	HT	VT	WMR	TPE	Chiltern	Mersey	GTR	Southe-astern		ATW	SWR	GWR
External Factors	Planned Passenger Growth	-0.01%	-0.49%	-0.49%	-0.49%	NC	NC	NC	NC	NC	-0.10%	-0.10%	-0.40%	-0.10%	-0.10%	-1.00%[2]	-1.80%[2]	NC	-0.05%	-1.50%	-0.96%
	Planned Timetable Changes/Traffic Growth	-0.01%	-0.03%	NC	-0.01%	-0.13%	-0.48%	-0.45%	-0.54%	0.61%	-	0.20%	0.30%	0.20%	0.30%	0.30%[2]	-1.20%[2]	NC	-0.10%	-	0.22%
	New Trains	-0.06%	-0.02%	-	-0.01%	1.40%	1.25%	-	-	0.46%	-	-	0.30%	-	-	NC	NC	+[4]	-	0.22%	0.56%
	Planned TOC Initiatives	NC	NC	NC	NC	0.56%	-0.03%	-0.13%	-0.03%	-0.05%	-0.05%	-0.20%	-0.10%	-0.20%	-0.40%	2.00%	1.80%	+[4]	0.22%	1.90%	?[6]
	HS2 Impact	NC	NC	NC	NC	NC	NC	NC	NC	NC	-0.80%	-0.20%	NC	NC	NC	NC	NC	NC	NC	NC	-0.85%
	Other External Delays	NC	NC	NC	NC	0.01%	0.25%	0.04%	0.04%	0.20%	0.10%	0.10%	0.10%	0.10%	0.10%	NC	NC	NC	-	-2.10%[5]	?[6]
Internal NR Factors	Planned Changes from Digital Railway / TMS	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1.10%	0.70%	NC	0.03%	NC	0.46%
	Planned Enhancements	NC	NC	NC	NC	NC	NC	NC	NC	NC	-0.10%	-	-0.20%	0.10%	-	NC	NC	+[4]	-	0.20%	?[6]
Route Management	Planned Asset Maintenance and Renewals	0.01%	0.04%	0.01%	0.02%	0.03%	0.51%	0.09%	0.09%	0.98%	-0.10%	0.10%	-	-0.10%	0.10%	-	0.10%	+[4]	0.09%	1.10%	0.90%
	Planned Temporary Speed Restrictions	NC	0.01%	0.00%	0.00%	0.00%	0.05%	0.00%	0.00%	0.25%	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	?[6]
	Planned DPI / Service Recovery	NC	NC	NC	NC	0.20%	0.25%	0.05%	0.05%	0.25%	0.15%	0.30%	0.30%	0.30%	0.35%	0.40%	0.50%	+[4]	0.10%	1.20%	1.28%
	Planned Weather Resilience Actions	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.05%	0.10%	0.20%	0.20%	0.15%	NC	NC	+[4]	-	-	?[6]

Key	
0.20%	PPM positive impact
-0.20%	PPM negative impact
NC	Not calculated
-	No impact

1. The numbers for Anglia come from the waterfall chart, we are uncertain on some of the numbers.
2. The overall impact of the Thameslink programme, including the introduction of new trains, has been included in the "Planned Timetable Changes" figure
3. South East provided waterfall charts on based on the p50 level.
4. The plus symbols indicate a positive change but numbers have not been quantified by Scotland.
5. Historical trend has been included in other external delays.
6. We have not seen the Western model, just summary waterfall charts. The figures in this table are therefore based on the detail supplied in these charts.

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3.3.2 External factors

Passenger and traffic growth

3.3.2.1 This is the one area on which all Routes were provided with guidance from the centre. However, we found that there was a wide variation in the way that its performance impact was forecast.

- Wessex based their assessment on the NPAT March 2016 figures, albeit uplifted for higher passenger growth seen on the route

- South East based their assessment on the NPAT March 2016 figures for passenger growth and mitigations of additional vehicle capacity. The increased congestion from traffic growth was considered within their separate Thameslink assessment.

- LNW based their assessment on the updated NPAT 2017 figures although only for passenger growth and we could not reconcile all figures. They have not explicitly shown the impact of traffic growth.

- Western agreed the impact of both passenger and traffic growth with GWR.

- Wales used TfW's passenger forecast and estimated its impact on average minutes late and PPM using relationships from historic data. No traffic growth is assumed for the lead TOC although a small impact from other operators using the route has been assumed.

- LNE&EM did not consider passenger growth. We understand that the impact of traffic growth was derived from an assessment of delay per incident on the known quantum of trains.

- Anglia started with the NPAT figures for passenger growth, subsequently amended after discussion with the TOCs. The Route is still considering mitigations of additional vehicle capacity for CP6. Traffic growth is assumed to be performance neutral.

- Scotland appears not to explicitly consider passenger and traffic growth.

Timetable change

3.3.2.2 The impacts of planned timetable changes are generally assessed as positive for a variety of reasons: by optimising the timetables and improving right time resilience (LNW), improving timetables through GPS timings (LNE&EM), removal of poor performing Heathrow Connect services to Crossrail (Western) and timetable structural improvement and more accurate timings (South East).

3.3.2.3 Wessex considered timetable changes as performance neutral but noted a risk from SWR's plans to reduce dwell times. Anglia based

impacts on experience from a previous timetable change on c2c in 2015/16. We understand the intent is for this to be an initial performance dip that then bounces back (which is what has been modelled) although the waterfall shows, incorrectly, a small negative impact for three of their TOCs.

TOC initiatives and new fleet

3.3.2.4　Generally, the Routes have assumed a "bathtub" curve for new fleets to assess initial teething problems and then improvements so that their reliability is better than those replaced. We have not seen how these have been calculated but understand in some cases they have been agreed with TOCs (e.g. Western) and in others have been factored down to what is considered more realistic reliability (e.g. Wessex). The Anglia waterfall chart shows that the new fleets perform worse than those replaced, but we understand the intent is for them to be performance neutral (as per the model), even though some unreliable trains are being replaced (e.g. Class 315s).

3.3.2.5　Most Routes have included TOC initiatives in their trajectories, in some cases factored down to what they consider realistic. Anglia has not considered them explicitly. Some Routes (e.g. LNW) show a negative impact for TOC initiatives due to anticipated industrial relations risks.

Other external

3.3.2.6　LNE&EM and LNW forecast a small performance improvement from reducing crime and trespass. The other Routes assume no change from the end of CP5 with one reason given that they have invested in improvements during CP5 (e.g. Western and Anglia).

3.3.2.7　Wessex shows a negative impact of 0.4 pp per year during CP6, which is an extrapolation of the historical downward trend seen in CP5. It excludes delays from passenger growth but represents all other causes of change in performance, the largest of which is increased sub-threshold delays (categorised as Network Management / Other).

3.3.3　Internal Network Rail factors

Digital Railway / TMS

3.3.3.1　TMS will be installed and delivered on a number of routes during CP6. However, the only Routes that have included it within their performance trajectories are LNE&EM, assessed as part of Thameslink, South East which has a plan for its deployment through CP6 and CP7, and Wales with benefits split across 2018/19 and 2019/20.

3.3.3.2　A number of other Routes have aspirations that TMS will deliver benefits including 12% reduction in reactionary delays (Western), and

6% reduction in DPI or 12% if integrated with c2c (Anglia). However, given they are currently being trialled and/or are not yet committed, their benefits have not been assessed.

Planned enhancements

3.3.3.3   Enhancements are not generally included within the RSPs but are subject to a separate governance and approval mechanism. However, some Routes have considered the impact of known enhancements or work on their performance trajectories including:

- LNW will have to manage the disruption of engineering works for HS2 during CP6, in particular at London Euston. This has been assessed at a high level. We understand that the Route is planning to assess it further with stakeholders in a more structured manner similar to that used by South East and LNE&EM for Thameslink.

- LNW has also assessed the negative impact of more work on the Route with the risk of more failures including the Transpennine Route Upgrade work.

- Western will have to manage HS2 works for the new station at Old Oak Common. Their assessment has been based on the impacts seen in a similar vicinity for the Crossrail works.

- Western also face the uncertain impacts of the opening of Crossrail, assessed by professional judgement. They have also assessed the delivery of current enhancements by data analysis (for example, Filton Bank Four Tracking).

- LNE&EM have assessed delivery of enhancements as performance neutral, on the assumption that the extra capacity provided will be used.

3.3.4   Route Management

Planned asset maintenance and renewals

3.3.4.1   All Routes have considered the impact of asset maintenance and renewal plans on performance. Generally, we understand that the RAMs have been consulted to forecast the impact of their management plans on the number of Service Affecting Failures (SAFs) during CP6. This includes the application of predict and preventative maintenance with increased asset condition monitoring.

3.3.4.2   In most cases we have not seen the method for assessing the impact of SAFs on performance but understand it varies from a high-level assessment (LNW) to a more detailed assessment by service group / delivery unit / asset type (Western) based on an analysis of historic data.

3.3.4.3   We note that all RSPs predict a fall in SAFs during CP6. This results in performance improvement except for Virgin Trains and Chilterns

on LNW where the Route has also considered the increasing age of assets will result in worse failures.

Planned Temporary Speed Restrictions (TSRs)

3.3.4.4   Some Routes make specific mention of reducing TSRs as part of their performance plans: for example, LNE&EM and Anglia. We have also seen an example from Western where TSRs have been included in its assessment of a project.

Planned Service Recovery

3.3.4.5   Many Routes have plans to improve service recovery such as improving control systems, developing robust contingency plans, introducing incident officers, and a focus on right time operation. They have estimated these plans will have a positive impact on performance although the precise method for doing so was not seen by us in most cases (Wales and South East being exceptions). Anglia did not consider service recovery and reducing DPI as a separate initiative because, we understand, they have focussed on this during CP5 and assume it will remain constant during CP6.

Planned weather resilience actions

3.3.4.6   Most Routes have assumed that the impact of weather on performance will remain at the same level as during CP5. LNW is the exception which has forecast small benefits from enhancing industry wide responses to bad weather.

3.4   Conclusion

3.4.1   Our assessment of confidence in each Route's process for developing its performance trajectories is summarised below using the following categories:

Level of confidence
Reasonably high confidence
Some confidence
Low confidence
Insufficient information provided

Table 3.4: Assessment of confidence in process

Route	Our assessment of confidence in process to produce performance plans	Opportunities for improvement
Anglia	We are uncertain that the modelling of all factors is as intended.	- Re-design performance model to aid clarity - Review assumptions - Consider TOC initiatives - Support cross route discussions with Western and South East
LNE&EM	The approach seems to be rigorous but we have seen little detail on how assessments were made. We are uncertain why the impacts of passenger growth have been excluded.	Greater transparency in the way that factors have been assessed
LNW	A well reasoned high level strategic approach although lacking in detail on how assessments were made. We are uncertain on how passenger and traffic growth were assessed.	- Greater clarity on impact of M&R plans - Consider using the Thameslink method for HS2 with operators - Consider if passenger growth and traffic growth pose additional risks - Consider formalising incident management plans on service recovery
Scotland	We have not seen how the waterfall charts have been calculated.	Not applicable
South East	A detailed, structured and assured bottom-up model.	- Consider extending the base data in the model beyond just 2016/17 - As noted in the RSP, might be worth re-visiting the trajectories early in CP6 given the significant uncertainties of Thameslink and TMS
Wales	A detailed, structured bottom up model that includes some details on assumptions.	A minor point, inclusion of all calculations
Wessex	Extrapolation of trends in performance seen in CP5, with adjustments made to reflect CP6 plans.	- Collate all relevant analysis into a single spreadsheet - Review SWR vehicle and traffic forecasts to check NPAT assumptions are still valid - Review Industrial Action (IA) residual risk
Western	A rigorous approach at service group level based on detailed analysis and working closely with lead TOC	- Uncertain on HEX as we have not seen the model or output - Worth checking for consistency with other Routes (e.g. Anglia) - Consider inclusion of specific TOC initiatives

4 Credibility of TOC train performance trajectories

4.1 Context

4.1.1 The charts below summarise the recent historical PPM trajectories for each of the 21 TOCs, alongside the forecasts both for end CP5 (i.e. 2018/19), and for each year of CP6.

Figure 4.1: Charts of historical and forecast performance

4.1.2   For a number of TOCs, we observe a notable gap between current
         PPM (MAA at end of 2017/18) and the end-CP5 projections, which
         may present a risk to delivering forecast performance levels in the
         early years of CP6. In particular, there are seven TOCs for which this
         gap is 2 pp or more, and for whom PPM has been declining over the
         last year or two; VTEC, Hull Trains, TPE, VT, ScotRail, SWR and
         GWR.

4.1.3   For most TOCs, an improvement in PPM across the life of CP6 is
         forecast. However, we observe that for seven TOCs, PPM is predicted
         to be lower at the end of CP6 compared with the end of CP5: Greater
         Anglia, Arriva Rail London and TfL Rail (Anglia Route); EMT and
         Grand Central (LNE&EM Route); Virgin West Coast (LNW Route);
         and Southeastern (South East Route).

4.2   Basis of review of trajectories

4.2.1   We reviewed all materials that were provided by the Routes which
         included meeting minutes and any supplementary information, for
         example the Thameslink modelling from South East and LNE&EM.
         Performance models that were provided by Routes were also reviewed
         along with the risks and opportunities of each performance plan. After
         reviewing the available information, professional judgment was used
         to form an opinion on where each TOC sits on the scale of the two
         factors, realistic/deliverable and stretching/ambitious.

4.3   Easy or challenging?

4.3.1   Our view has focussed on the end of CP6. We then compared our
         view against the level of confidence expressed by the Routes. In
         doing so, we have assumed 50% confidence is a balance between
         being realistic and stretching, with 0% as fully realistic but not
         stretching and 100% as too ambitious and not realistic.

4.3.2   **Figure 4.2** below shows the comparison of Arup and Route
         confidence for the PPM trajectories.

Figure 4.2: Arup and Route confidence for PPM trajectories

4.3.3   Note that

- If route confidence is, say, 40% that implies that the trajectory is on balance slightly ambitious – and shown further to the right-hand side.

- We are unaware of Scotland's view on their confidence. During our review process we have not seen Scotland's models, consequently our confidence for Scotland is based on the waterfall charts that were provided for the first three years of CP6 and additional information.

- We have not seen any information on the Heathrow Express trajectory and so have not provided a view for it.

4.3.4   Overall our assessment is similar to those stated by the Routes. In the table below, we summarise our opinion. For those TOCs where we differ significantly, we provide a fuller description in the following section.

Table 4.1 – Our opinion on TOC performance trajectories

Route	Our opinion on the credibility of the TOC performance trajectories
Wessex	See below on SWR which is the lead TOC on the Route
Western	Given current levels of performance the GWR target for the end of CP5 / start of CP6 will be challenging. In addition, there is significant change to navigate at the start of CP6 with the introduction of Crossrail creating the probability of delay transfer from Anglia Route as well as the completion of electrification works. New operating strategies will need to develop to maximise recovery from disruption. By the end of CP6 the main risk issues will have been addressed with new fleets in place and all infrastructure works delivered. On that basis the end of CP6 target of 89.2% PPM should be deliverable, with focus on the identified actions.
Anglia	A review of current performance against the CP6 exit point suggests all four TOCs need to improve between 0.3 and 0.5pp. When compared to the revised CP5 exit points as agreed with the TOCs (with the exception of GA) only TfL Rail is forecast to improve performance by the end of CP6, the other TOCs' performance trajectories fall. There is a large degree of uncertainty on the Route, in particular the scale of passenger growth forecast. However, this also needs to be set alongside the levels of investment by the TOC (especially in rolling stock replacement), the Route itself and projects such as Crossrail to deal with and generate further growth. TfL Rail's trajectory faces the largest challenge given its target is the only one to improve in CP6 and it has the largest change with the opening of Crossrail and risk of delays from Western Route. The targets for the other three TOCs fall and so cannot be described as stretching, nor are likely to meet TOC aspirations.
LNE&EM	The targets set by the route appear to be realistic but not overly ambitious or stretching. The effects of the completion of the Thameslink project and additional TPE services north of York greatly affect the overall delivery of the CP6 targets. Given the transformation of services with the wholesale introduction of new and more reliable electric rolling stock, the positive performance impact seems to have been outweighed by the greater congestion of the network. The targets appear not to be stretching but given the uncertainties of future timetable enhancements, a stretching target may not be appropriate for the route. The key deliverable for the control period will be the stabilisation of performance following the completion of the Thameslink project.
LNW	With the exception of VT, the forecasts for the end of CP6 show a modest improvement on current performance and the CP5 exit point. VT is forecast to fall by nearly 2pp over the control period. Chiltern and MerseyRail are considered realistic targets given the relative stability of operations. VT and WMR are considered realistic and stretching given the scale of the changes to navigate on the route and with the uncertainty of HS2 works. TPE is considered more challenging given the plans to extend services to Scotland and the complex movements round Manchester, the works required in the north of England and current performance levels.
South East	The detailed level of analysis give confidence the route understands the drivers of performance and the risk associated with each. We therefore broadly agree with their assessment that the trajectories are realistic. The new SE franchise will increase service levels but the extent is currently unclear as the bidding process is still in progress. The impact of the new GTR timetable is a major factor in the forecasts with the impact in service increases and the introduction of through services estimated to have a significant downward

Route	Our opinion on the credibility of the TOC performance trajectories
	impact on performance. This, though, is balanced against the benefits of the full capacity of London Bridge, the introduction of high capacity digital signalling in the Thameslink core, and the full introduction of the Class 700 trains offering a more suitably internally configured rolling stock and improved boarding and alighting.
Wales	See below on ATW which is the lead TOC on the Route
Scotland	The figures for ScotRail are a realistically ambitious target for performance improvement. On a diverse network such as Scotland, with a breadth of railways from high frequency urban network to low frequency rural railways, a 1 pp improvement over 2 years provides an ambitious target.
	A static target over the remaining 3 years could be seen as less stretching but must accommodate pressure from forecast passenger growth.

4.4 Differences with Route views

4.4.1 ATW

4.4.2 A CP6 target which recovers performance to less than the position at the start of CP5 (when it was 93%) does not feel stretching. We also note that PPM at 2017/18 period 13 was 92.2% which is higher than the CP6 exit target of 92.1%.

4.4.3 The trajectory for the last year of CP5 (2018/19) appears to be cautious with a drop in PPM MAA of 0.7 pp. We note that some of this is due to a drop in fleet availability before franchise change in October 2018, and some to fleet reliability and autumn fleet preparation plans afterwards. We are uncertain as to the extent of the inclusion of ATW's current improvement plans and then the incoming TOC's improvement plans in the performance trajectory.

4.4.4 With the outcome of the Wales & Borders franchise currently unknown, the Route has assumed its current service pattern will continue without traffic growth. They have assumed the CVL network will continue to be part of the national rail network so the impact of any works on these routes is not relevant within the forecast provided. These are the best performing service codes on the Wales franchise so if these are removed from the figures during CP6 this will mean change to the trajectory for the remaining services which is recognised within the RSP. Prior to then, the reasons for a lower entry point to CP6 are unclear.

4.4.5 SWR

4.4.6 Based on the information reviewed, a 1 pp improvement in PPM over CP6, seems neither ambitious nor stretching, although the likely CP5 exit point may result in a stretching target early in CP6 especially without early resolution of the current IA on SWR.

4.4.7 The introduction of new fleets with greater capacity early in CP6 will have a greater performance impact than what seems to have been cautiously built into the plans. The performance strategies within the SWR franchise plans such as a greater focus on dwell time management through better door configurations and automatic door release on metro services do not appear to have been factored in. The major resignalling schemes at Portsmouth and Feltham should have a significant impact on route performance which appear to have been understated.

4.4.8 With the Route also investing heavily in first response training and provision as well as continuing to reduce service affecting failure, the plans seem coherent and well-structured but without a large improvement in performance.

4.5 Possible additional factors for consideration

4.5.1 Below we describe some additional factors that might warrant consideration for inclusion in the performance trajectories.

Table 4.2 – Additional factors for consideration

Route	Possible factors for consideration
Anglia	No long-term improvements plans by the operators for fleet and other delay causes have been taken into account. Given that some old and unreliable fleets are being replaced (e.g. Class 315s) this could be significant and it is likely the TOC franchise bids will have factored in reliability improvements. TOC initiatives in other areas also appear to be missing from the trajectories. These include plans to reduce station delays to offset passenger growth forecasts, and to improve other key areas such as traincrew management.
LNE&EM	The significant risk of performance undershoot at the end of CP5 could make the CP6 targets in the early years more challenging. In particular, VTEC have to make up a deficit of 2.3 pp PPM MAA in a little over 12 months.
LNW	The one area that may not be fully exploited is process and systems. Changes in the relationships between TOCs and NR offer opportunities to improve joint working and deliver better performance management processes. Aligning this to better systems such as improved reporting or sub threshold data capture offers opportunities to find additional improvements.
Scotland	The Donovan plan concentrates solely on ScotRail services and takes no account of other operators such as Caledonian Sleeper and Virgin services into both Glasgow and Edinburgh, and potential for importing poor performance from other parts of Network Rail's infrastructure.
South East	Any plans to improve Brighton Mainline from East Croydon inwards need to take account of London Overground, from Norwood Junction to New Cross Gate. We note there are also proposals to increase service frequency on the East London Line, with new trains already ordered for the route with a potential December 2019 implementation. The interaction of freight on the Channel Tunnel Corridors and into and around Clapham Junction is another possible consideration.
Wales	None identified.
Wessex	The Route has demonstrated that there have been many root causes of performance in CP5 which vary by year. A key factor, though, is sub-threshold delays which appears to be growing. Understanding these better and drawing up plans with the operator to address them would help reverse the historic trend of drop in performance (subject to available funding). The route appears to have a coherent strategy to deal with improving the response to incidents which should help control the larger impacting events. A clearer understanding of why these larger events are occurring could help to further increase performance in the next control period.
Western	Change in contingency planning will need to be managed given the recognised change in service priorities. Working with GWR to develop and evaluate the effectiveness of TOC initiatives would help deliver the trajectory.

5 Credibility of CRM-P trajectories

5.1 Definition of CRM-P and setting of the Floor

5.1.1 The "Consistent Route Measure – Passenger Performance" has been defined as:

"Annual minutes of NR-attributed delay to in-service passenger trains from incidents occurring within the route boundary normalised by the actual distance travelled by in-service passenger trains within that route"

5.1.2 The calculation of CRM-P CP6 forecasts was carried out using a central spreadsheet model by the National Performance Analysis Team, based on the forecasts of PPM for each TOC as provided by the Routes. As well as an overall PPM forecast, the Routes were required to provide a breakdown of the forecast PPM change each year attributable to Network Rail and the TOC separately.

5.1.3 CRM-P was then calculated based on:

- Applying historical relationships between PPM and delay minutes for each TOC to convert change in NR-caused PPM failures into change in NR delay minutes; and

- Using historical levels of NR-caused delay for each TOC by 'Cause Route' (the incident location) and 'Suffer Route (the event location), e.g. how much NR-caused delay by LNW for TPE was suffered on each Route, how much NR-caused delay by LNE/EM was suffered on each Route, etc.

5.1.4 The flow chart below summarises this calculation process for CRM-P.

Figure 5.1: CRM-P calculation process
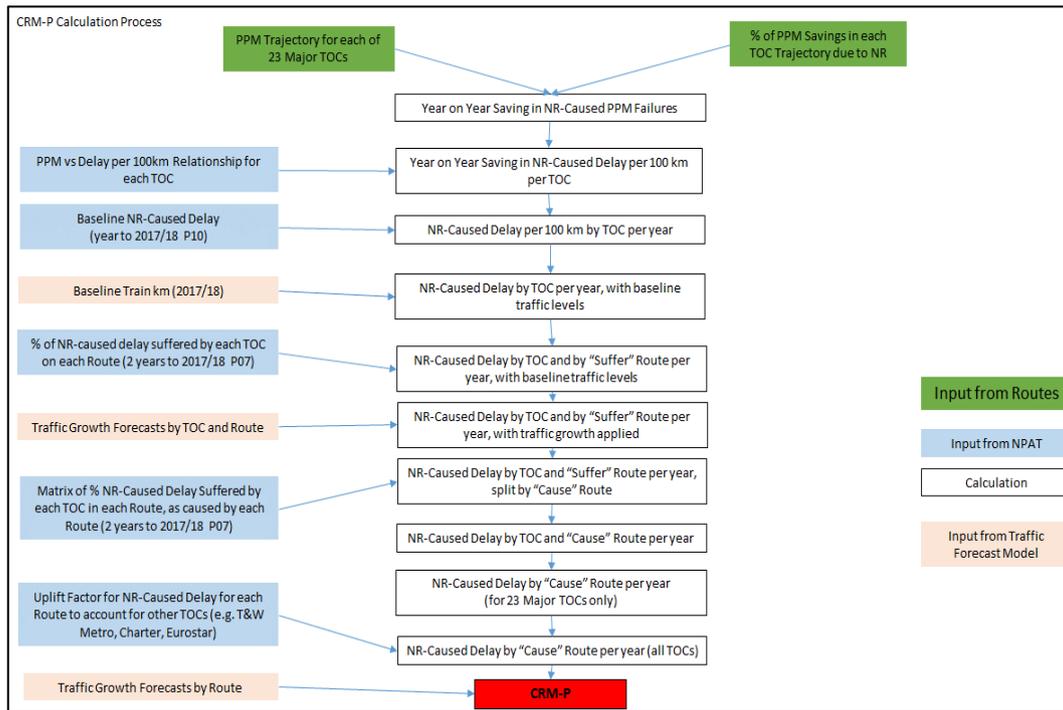
5.1.5

The CRM-P Regulatory Minimum Floor was set using a consistent approach for all Routes, and set at a level which is only expected to be breached should the Route display signs of being in systematic failure in terms of performance.

5.1.6

The Floor is calculated based on a 'buffer' which reflects the maximum deviation (in minutes) from the Target in each year. This buffer was set at 30% of the latest calculated CRM-P MAA value at the time of production (2017/18 Period 10), and the absolute minutes value applied to the Targets in each year of CP6. For example, if Route X's CRM-P MAA in 2017/18 Period 10 was 1 minute, the buffer would be 0.3 minutes. If Target CRM-P in 2019/20 was 1.5 minutes, the Floor would be set at 1.8 minutes.

5.2   Relationship between CRM-P and PPM

5.2.1

As noted above, Network Rail has used TOC PPM forecasts as the common currency from which to derive CRM-P forecasts, and converted to delay minutes based on historical relationships between PPM and delay minute.

5.2.2

We have reviewed the Network Rail model to confirm the calculation approach, and to test the sensitivity of CRM-P to changes in PPM, i.e. particularly to understand how sensitive the Routes' CRM-P projections are to their underlying PPM change assumptions.

5.2.3   As an indicator, we have used this model to estimate how much lower the average PPM for Lead TOCs on a Route would need to be for the Route to breach the CRM-P Floor, using 2023/24 as the basis. To simplify this, we have applied the change to the forecast change in NR-attributed PPM failures only – so to provide an indication of the sensitivity to the Route's projections for their own performance only. We recognise there is some simplification here since TOC plans can impact on reactionary delay minutes to NR incidents in terms of how well the service can recover from an incident.

5.2.4   Therefore, this analysis should be treated as indicative only, and to provide a view of the variability of change in NR-attributed PPM failures on CRM-P across the Routes.

Table 5.1: CRM-P sensitivity

1% Reduction in NR-Attributed PPM Applied to all Lead TOCs (based on 2023/24)			Avg NR-Attributed PPM Change to breach Floor
Route	CRM-P Impact (Mins)	Proportion of Gap to Floor	
Anglia	0.19	42%	2.4%
LNE/EM	0.10	28%	3.6%
LNW	0.13	27%	3.8%
Scotland	0.13	39%	2.5%
South East	0.26	27%	3.7%
Wales	0.21	46%	2.2%
Wessex	0.21	28%	3.5%
Western	0.18	30%	3.3%

5.2.5   The table indicates, for example, that a 1 percentage point increase in NR-attributed PPM failures on ATW (Wales) and SWR (Wessex) would each lead to an increase in CRM-P of 0.21 minutes. However, because the gap to the Floor for Wales is much smaller than Wessex, this means just a ~2.2 percentage point increase in NR-caused PPM failures for ATW would breach the Floor for Wales, whereas a ~3.5 percentage point increase in NR-caused PPM failures for SWR would breach the Floor for Wessex.

5.3   Our view of the CRM-P trajectories

5.3.1   Judging how realistic and/or stretching the CRM-P trajectories are is not straightforward. Given its focus on NR incidents, we would expect Routes to have more direct control over CRM-P than for PPM. However, as noted above, TOCs can influence the reactionary delays from NR incidents.

5.3.2   During some of our clarification telcons, we asked Routes about their level of confidence in the CRM-P trajectories. They generally stated they were slightly more confident than for PPM. We would tend to agree.

5.3.3   We therefore base our view of CRM-P on those we have for the relevant PPM trajectories. Specifically, we have weighted our views

of PPM by the relevant TOC train km and produced the following assessment of each Route's CRM-P trajectory.

Figure 5.2: Arup confidence of CRM-P trajectories by Route

5.4 Conclusion

5.4.1 CRM-P is a new performance metric which has been designed by NPAT and is based on historical relationships between PPM and delay minutes for each TOC, and NR proportion of delay caused by each TOC. The CRM-P Regulatory Minimum Floor is set using a consistent approach for all Routes, and set at a level which is only expected to be breached should the Route display signs of being in systematic failure in terms of performance. Some of the Routes commented that CMR-P trajectories may be slightly easier to meet due to having more control over the NR delay rather than TOC delay. We have assessed the confidence of CRM-P as shown in **Figure 5.2.**

6 Potential further train performance improvement

6.1 Introduction

6.1.1 As well as reviewing the process for developing and credibility of the performance trajectories for CP6, our mandate included investigating a wider question: setting money aside, what are the key constraints within the rail industry which, if addressed, would improve train performance. This is looking beyond what is in Network Rail's direct control and beyond the CP6 timeline.

6.2 Industry consultation

6.2.1 In order to inform future options around improving performance we interviewed stakeholders from several parties involved in delivering train operations (DfT, NR corporate, NR route, TOC, RDG, Transport Scotland) to gather their views. These interviews were carried out under the Chatham House rule to encourage the participants to be open and frank in their comments and maximise potential value of the output of the interviews. The questions used to structure the interview can be found in Appendix C and the output is shaped around the question themes rather than in answer to specific questions.

6.3 Key messages

6.3.1 As will be shown, there was definite differentiation of opinion between different parties but overall there were some messages that were consistent across most parties, being:

- The need for and opportunity for the industry to be more customer centric – examples were cited from the airline industry which was considered to be better at customer management and holding parties to account for disruption;

- That there were significant opportunities in aligning the whole system across the industry – notably the franchise and control period processes where performance should have a greater focus and, for example, Network Rail could have more input to the former; also systems investment to improve performance management at the granular level;

- A real sense of pride in the industry and a want to deliver better for customers from those working in it;

- That most, if not all of the challenges are systemic and cannot be addressed by one party or the other, with leadership required to create industry wide standards;

- That a strategic response is required to creating a sustainable talent pipeline for the industry at all levels; and

- That devolution within Network Rail has lead, largely, to positive outcomes.

6.4 Detailed findings

Performance

6.4.1 The views on performance, without exception, reflected a perception that the network is currently underperforming and that improvement is required for passengers. There were degrees of challenge around how and why the network is underperforming but agreement from all participants that current performance levels are unacceptable.

Constraints to Performance

6.4.2 There were a broad range of views around the current constraints to performance and even when probed and pushed on opportunities for unlocking performance through a single strategic intervention (the so-called 'silver bullet') there was little or no consistency in the responses.

6.4.3 The factors currently constraining performance were described in the follow ways:

- The conflict between short term performance and long-term investment in the infrastructure.

- The challenge of one party being driven by reliability and the other being driven by profitability.

- The overcapacity in constrained areas of the network leading one participant to ask, "Have we passed the maximum capacity of the GB network?"

- The creation of capacity to support development of the network.

- Too many different fleet types being present on the network with a lack of compatibility between them.

- Disruption recovery not being a strategic focus, a consistent process across routes/TOCs and the capability within the network to allow recovery from perturbation.

- That the network is not being managed closely enough to drive every problem down to its root cause and to find the opportunities for marginal gains.

- The challenge of balancing operations with major programmes and asset renewal – it was felt that in certain areas this was too much of a focus for Network Rail.

- Network Rail not being strategically focussed on performance but rather a focus on engineering and safety.

- A feeling that funding being built around less than 100% PPM made opportunities for improvement strategically limited.

Incentives

6.4.4   There were general questions around incentives and specific questions around schedules 4 and 8. It was during these specific discussions that the topic of system wide alignment generally arose and some participants spoke with emphasis around the need to increase the personal incentives of key industry leaders with performance.

6.4.5   The responses to the general questions on incentives were:

- The need for system wide incentives;

- The recreation of a performance fund that could be used to intervene across entities;

- That the creation of delay repay schemes has had little or no impact on performance and is largely a symbolic gesture to customers with one participant noting, "it doesn't hurt enough so has limited impact";

- There were some who thought the incentive arrangements were broadly fine and that a lengthy repositioning exercise would have little value.

Schedule 4

- Here is was felt that Schedule 4 gave little support to long term investment in the network and created incentive to focus on short term/lower value work.

- The lack of a mechanism to work any given impact to its root cause and the accountable party were felt to weaken the effectiveness of this incentive.

- The indirect impacts on other TOCs were largely overlooked in this arrangement.

- One participant challenged Schedule 4 saying, "it relies on a steady state railway" and felt that given the dynamic nature of GB rail, the incentive had limited impact.

Schedule 8

- Several participants made specific note of the fact that Schedule 8 and its impacts are not front of mind for the Operational staff making the hour to hour decisions on the network.

- It was felt that Schedule 8 supports blame and negative conflict and drives misalignment with one participant noting, "it's a perverse incentive that supports poor performance".

- It is expensive to administer.

- The fact that sub-threshold delays fall out of the scope was felt to limit its effectiveness.

- That potentially it is not valuable enough to make a case for performance.

Targets

6.4.6   On the subject of targets there was a fair amount of agreement that any targets need to be bottom up (from local, granular) and not a top down national target, and that any targets need to be based on joint and aligned performance plans that have been consulted on and built collaborative by both the TOC and the NR Route.

Franchise Process

6.4.7   One of the perceived key underlying challenges to the current franchise is the disconnect between the franchise period for the TOC and the Control Period for Network Rail. It was felt, quite strongly in some cases, that this misalignment was one of the fundamental issues driving system misalignment. It was also felt that DfT needs to be more realistic in setting franchise targets and ensuring that those targets are realistically deliverable, and that Network Rail need to be thoroughly consulted and involved in creating the franchise targets. It was also felt that the franchise process needs to have improved focus on performance in general.

Periodic Process

6.4.8   In respect of the ORR periodic process the responses identified the following opportunities to improve the alignment between DfT and ORR:

- It was felt by some that the process is very high level and has opportunities to be more granular with particular respect to performance;

- That there was insufficient focus on performance in general;

- That this is where targets should be discussed and that the process should be more ambitious in considering stretch targets.

Systems

6.4.9   The discussions around systems again made reference to the lack of 'systemic' alignment across the network and highlighted the risks of over differentiating the systems, but also the opportunity to improve performance through specific investment. The specific responses highlighted:

- That significant investment is required to change legacy, inconsistent and complex systems;

- That modelling and train location systems need to be better and consistent;

- That only with significant systems investment/improvement will the industry be able to tackle performance management at the granular level required;

- That leadership is required to create industry wide standards where possible and appropriate.

Behaviours

6.4.10   The questions on behaviours further confirmed challenges that had already been discussed around alignment in the industry. The responses reflected some systemic challenges between two parties in a contractual relationship but also further emphasised the desire to see improved focus on performance. Some specifics that arose from the responses were:

- Functional silos still remain a challenge within Network Rail;

- It is felt that Network Rail's planning process is risk averse especially with respect to performance;

- The conflict between projects and day to day operations was seen as a key driver to poor behaviour experienced by the participants;

- Where the response cited great behaviour, it was felt this was still too reliant on that individual rather than being a reflection of systematic repositioning of behaviour;

- It was also felt that the broader stakeholders (ORR, DfT, Other Transport Authorities) needed to be more realistic and understand the impact on behaviour of their decisions.

Skills

6.4.11   The questions around skills elicited a broad range of responses and a range of positions from those who were aspirational about the industry, those who saw strategic talent opportunities as a means to unlock performance, and those who were frustrated that in some instances the industry has gone backwards from previous positions. The specific responses highlighted:

- The need for improved leadership, not just in senior positions but throughout the industry was recognised and in some cases emphasised as a key opportunity/requirement to drive performance;

- Both the opportunity and the need to encourage a diversity of experience and opinion;

- The perception that under pressure the industry looks to the past and an expert to solve problems;

- Not enough current operators or future operational talent, specific reference being made to the British Rail schemes of the past and the perception we are now experiencing the impact of that being absent;

- A fundamental lack of performance professionals was limiting improvement;

- The lack of timetabling and modelling talent prevent the industry being able to quickly make improvements;

- The transition of skills from public to private sector is a significant risk;

- The opportunity and risk of apprentices and ensuring they were not just another compliance target.

Lessons from Overseas

6.4.12   The questions around lessons that can be learned from railways outside of the UK again underpinned the system alignment points – the opportunity to align from Government right down to track and the opportunity to take a system wide view on talent. The specific responses also highlighted:

- Could the UK be bolder in trading off revenue against economic value – the specific example suggesting making car parking free to encourage train travel;

- Improving contingency resource (trains and crew) to recover from perturbation;

- Improving the design of the infrastructure to support recovery from perturbation;

- Making the network control fully and wholly accountable for the integrated system.

Lessons from Other Industries

6.4.13   The responses to these questions highlighted two major focus areas.

6.4.14   The first was customer centricity, the understanding that the industry is moving people not just running trains and here the airline industry was cited three times as an exemplar as being more customer focussed, more innovative in managing customers and holding themselves more accountable for disruption.

6.4.15   The second was around people and the recognition that only through a strategic view on talent and leadership would the industry get the people and skills it requires, able to operate and collaborate effectively to deliver performance.

Single focus questions

6.4.16   The final question offered the participants an opportunity to highlight one activity they prioritise that they believed would have the greatest impact on performance. Unfortunately, there were a range of choices:

- Root and branch review of the franchise process to improve alignment and realism;

- Building both the capability and capacity to improve;

- Taking a system wide view;

- Both the DfT and ORR holding Network Rail to account;

- Tackling sub threshold delays;

- Balancing performance and commercial focus.

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Appendix A

Mandate for study

Mandate for Independent Reporter Lot 4

Title	Assessment of the train performance trajectories in Network Rail's Route Strategic Plans for PR18.
Unique Mandate Reference Number	L4AR004b
Provisional Start Date	28/02/2018
ORR Lot Lead	Sneha Patel
ORR lead for this inquiry	Matt Durbin
Network Rail Lot Lead	Jon Haskins
Network Rail lead for this inquiry	John Thompson

Background

The Periodic Review for CP6 (PR18) is underway. In PR18, ORR is focusing on Route regulation and regulation of the System Operator, as part of its regulation of Network Rail as a whole. More information can be found on the PR18 pages of our website.

In July 2017, the UK and Scottish Governments issued their respective High Level Output Statements (HLOS) and in October 2017 the Secretary of State for Transport issued the Statements of Funds Available (SoFA). Both HLOSs reference performance, with the Scottish HLOS including a more thorough and prescriptive set of KPIs that it expects Network Rail to deliver in Scotland.

Unlike in the previous Periodic Review, there will be individual plans for each of the eight geographic routes, the Freight and National Passenger Operators and the System Operator. These Route Strategic Plans (RSPs) will be supported by an additional suite of documentation and engagement with Network Rail.

Due to the publication of the SoFA in October (in PR13 it was published in June of the equivalent year), the timescales for Network Rail's development of its RSP have been constrained. As such the initial RSPs were sent to ORR on 08 December.

This is the second phase of a review of the performance trajectories which will be based upon the Strategic Business Plan, including the finalised RSPs, which was published on 09 February 2018.

Purpose

- Provide advice based on professional judgement as to whether the CRM-P trajectories specified in the eight geographic Route Strategic Plans (RSPs) are stretching yet realistic taking into account all known circumstances, including funding available in the SoFA

- Identify any factors that merit further consideration which might materially impact the delivery of the performance trajectories?

Scope

The Independent reporter will undertake a risk-based review, with a particular focus on performance trajectories that are not agreed between Network Rail and its customers or where any agreed targets appear to have significant risk of delivery.

In providing this assurance, the Independent Reporter should provide advice based on its professional judgement on the following areas.

1. The process undertaken by the Routes has produced a robust plan. Specifically

   - Has a reasonable approach been undertaken by each Route to produce the CRM-P trajectory and performance plan for CP6?

   - Do the (Network Rail maintenance, renewals and operational) plans produced by each Route support the CRM-P trajectory through providing:

     o suitable quantitative and qualitative evidence of the process undertaken and the plans created?

     o the whole range of opportunities and risks to performance delivery, including planning and delivery uncertainty?

     o the potential trade-offs towards other objectives; and

     o consistency with the proposed CP5 exit and CP6 entry?

2. The credibility of the CRM-P trajectories. Specifically

   - Taking into account all known circumstances, including funding available in the SoFA, is the CRM-P trajectory realistically ambitious and stretching but still deliverable? The method of calculation of CRM-P will be out of scope, being assessed by the ORR Analytical Team, although any observations would be welcome.

3. The credibility of the TOC train performance trajectories. Specifically

   - Is Network Rail's 'contribution', both in planned delivery and expected performance outcomes, realistically ambitious and stretching but still achievable?

4. Potential further train performance improvement. Specifically

   - Setting money aside, what are the key constraints that if addressed, might materially improve the industry performance trajectory?

In developing its opinion, the Independent Reporter should consider the following:

   - The level of funding available within the SoFA

   - The trajectory on which the Routes has performed in CP5 and will exit CP5

   - The portfolio of activity proposed to optimise performance

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- Whether the operational plans can be sufficiently resourced (looking wider that just cost) and delivered

- The linkages between the different trajectories, including the TOC trajectories, on the scorecard

- The level of performance committed to through the Route's respective TOC franchises

- The evidence gathered from the ORR lead analytical meetings and deep dives

The Independent Reporter will be required to review the plans across the eight geographic routes, with some Routes requiring greater scrutiny. FNPO is not within the scope of this mandate.

The working level Analytical meetings that have been led by ORR, will provide inputs to the Reporter's assessment. ORR will provide a schedule of such material. Network Rail will also provide relevant reports of performance currently commissioned by Scotland Route.

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Timescales and deliverables

The work will be delivered to the following timescales:

- Presentation of initial findings – 28 March 2018

- Presentation of final conclusions – 25 April 201

- Final report – 23 May 2018

The Independent Reporter should provide weekly updates as part of this review, it expected that these would be provided as flash reports of progress. If there are exceptional issues conference calls should be scheduled.

The reporter should engage with routes as necessary, arrangements for this will be supported centrally by Matthew Blackwell (Network Rail). We request that the reporter attends the meetings that ORR is having with LNE and Scotland, and that these costs are built into the proposal.

Independent Reporter Proposal

The Reporter shall prepare a proposal for review by ORR and Network Rail on the basis of this mandate.

The final approved proposal will form part of the mandate and shall be attached to this document.

The proposal will detail methodology, tasks, programme, deliverables, resources and costs.

Given the importance of this inquiry, the Reporter shall provide qualified personnel with direct experience in the respective disciplines to be approved by ORR and Network Rail.

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Appendix 1 – Working Level Analytical Meetings on Route Performance Trajectories

The purpose of the analytical meetings is to carry out a technical review of the methodology used to produce the PPM performance trajectories. This is to facilitate a proper understanding of how the trajectories have been pieced together, rather than focussing on the final outcome.

Meetings have been held with each of the eight geographic Routes and FNPO.

The first round of meetings in January/February has been used to obtain a technical overview of the methodology used. The broad areas covered include:

- The technical detail about how the performance trajectories have been compiled.

- Details about the base methodology used for forecasting (e.g. Time series modelling)

- Information about underlying assumptions (e.g. What assumptions have been made and where they have come from)

- How the impact of events have been quantified (e.g. Enhancement projects)

- How risk and modelling uncertainty has been built in

- How the CP5 exit point will affect performance in CP6

- How the other performance measures have been aligned with the PPM performance trajectory.

Each Route has also been asked what engagement they have had with other Routes, including the FNPO provision of FDM-R targets, with a particular focus on where there are scorecard measures for non-lead TOCs.

As well as following up on any outstanding items or seeking further clarification from the first round of meetings, the second meeting with each Route in February/March will focus on the following:

- The confidence (in percentage terms) of meeting the trajectory throughout CP6

- An overview of what quality assurance processes are in place, in terms of the integrity of working documents

- A detailed look at how performance affecting schemes or events have been integrated into the final trajectory

Separate meetings have been held with Network Rail Centre to understand how the Route performance trajectories are being converted into a value for CRM-P.

Appendix 2 – Joint ORR and Network Rail Guidance to Reporters

1. The purpose of this document is to describe the trilateral relationship between ORR, Network Rail and each Reporter. It sets out in a practical context what both ORR and Network Rail expect from Reporters, and seeks to encourage best practice. This will help Reporters to deliver work in a way which meets these expectations and requirements. These requirements will be taken into account as part of the Reporter Framework (as provided to Reporters).

2. This guidance is owned and updated as necessary jointly by ORR and Network Rail. In the event of any discrepancy between this document and the Reporter contract, the latter will prevail. This guidance does not provide an exhaustive list of responsibilities and should Reporters wish to discuss these guidelines further they should contact the following for a trilateral discussion:

   - Andy Lewis for ORR; and
   - Jonathan Haskins for Network Rail.

The trilateral relationship

3. Licence Condition 13 (LC13) of Network Rail network licence states:

   - "The role of the Reporter is to provide ORR with independent, professional opinions and advice relating to Network Rail's 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 under, or in consequence of, the Act. Where appropriate, ORR shall give the licence holder an opportunity to make representations on those opinions or advice before relying on them."

4. Reporters should be familiar with the obligations as set out in LC13 and the terms of the contract.

5. For the avoidance of doubt, in delivering this role, ORR and Network Rail expect that Reporters will also add value to Network Rail in helping it to improve its performance and business as provider of railway services, wherever possible. However, it is recognised that this is not the primary purpose of the Reporter under the Licence and that this may not always be possible to deliver each mandate.

Role & duties of the reporters

6. Reporters must provide an independent view and remain impartial throughout the review. For example:

   - information should be shared equally and at the same time with both clients. Any correspondence or clarifications sought by Reporters should also be dealt with in the same way; and
   - communication between all three parties should be open e.g. both ORR and Network Rail should be invited to or made aware of meetings or discussions even if the meeting is more appropriate with only one client.

Identifying Reporter work

7. ORR will identify instances where there is a requirement to engage a Reporter. In practical terms, this is likely to arise from on-going discussions with Network Rail and in most cases (except urgent or exceptional cases) the potential for engagement of Reporters will have been identified in advance.

Mandates – Reporter Proposals

8. Clause 4 of the contract sets out the key requirements around provision of services. Requirements for reporter work normally arise from the day to day discussion of issues between ORR and Network Rail.

9. ORR will prepare a draft mandate for each piece of work and will in most cases agree this with Network Rail.

10. Mandates will be presented in a standard format for consistency and will clearly set out:

    - the purpose;
    - the scope;
    - why the review is necessary;
    - what it will achieve;
    - the expected outputs; and
    - timescales for providing reports.

11. Once agreed with Network Rail, ORR will email the mandate to the relevant Reporter(s), asking for comments and a proposal for the work, which should include costs and CVs for the proposed Reporter team. The Reporter has seven working days to respond with a proposal or such other timescale as determined by ORR. Every proposal must include:

    - costs;
    - resources;
    - CVs of the proposed mandate team – when providing proposals, Reporters should make the most efficient use of their resources including the most appropriate make-up of the review team;
    - methodology for delivering the aims of the mandate;
    - timescales;
    - framework of meetings, including a tripartite findings meeting before issue of the draft report;
    - expected deliverables and a concise explanation of how the aims of the mandate will be met; and
    - for larger scale reporter studies, the project management approach and project plans should be made explicit

12. Where there are multiple Reporters on a Lot, the ORR and Network Rail will use the following criteria to determine which Reporter they will select to conduct the work:

Procedure for Call Off under the Framework Agreements

Where more than one Contractor has been selected for any particular lot, ORR and Network Rail will allocate mandates on the basis of the following criteria:

1. The expertise required is only available from one source. This may be due to ownership of exclusive design rights or patents.
2. Where the mandate constitutes follow up work, which is directly related to a recently completed study.
3. The Contractor which demonstrates the greatest expertise in the subject matter of the mandate or the approach required.
4. The Contractor's performance against the performance framework
5. An overall assessment of value for money based on cost and complexity of work.

If the ORR and Network Rail cannot determine the most appropriate Contractor for a mandate using the above criteria, ORR and Network Rail will conduct a mini-tender with the Contractors who have been awarded the relevant lot using the following criteria in order to determine the most economically advantageous proposal:

1. The Contractor demonstrates sufficient knowledge of subject matter and possesses the technical skills, resource and competencies required for the work.
2. Contractor Costs.
3. The Contractor demonstrates innovation and value for money in its proposal.
4. The Contractor's performance against the performance framework.

13. Prior to conducting such a mini-tender, ORR and Network Rail will inform Contractors of the relative weighting of the above criteria and of any additional sub-criteria applicable in the context of a particular mandate.

14. ORR and Network Rail will endeavour to discuss the proposals received and to confirm by e-mail within five working days that the proposal is acceptable (or otherwise). There may be circumstances where ORR and Network Rail need longer to respond.

15. ORR will then formally instruct the reporter to start work, and the reporter will arrange a start-up meeting with key representatives from both ORR and Network Rail.

Mandates – During Delivery

16. The following sets out some key points regarding conduct of any inquiry. Reporters must provide an independent view and remain impartial throughout the inquiry. They should expect to discuss their progress and findings trilaterally with ORR and Network Rail and for some challenge to be given – particularly in relation to the factual accuracy of the findings.

Costs and expenses

17. If additional funds are required to deliver a mandate beyond those agreed at the outset, a timely proposal and justification must be given to ORR and Network Rail (as soon as the issue arises). The Reporter should notify ORR and Network Rail who will discuss and respond in a reasonable timescale. Additional work (and cost) must not proceed without approval.

18. Any reasonably incurred expenses will be reimbursed by Network Rail. Only expenses that have been incurred in accordance with Network Rail's expenses policy will be paid. It should be specifically noted that reporters must use standard class travel and plan journeys in advance as much as possible. In addition no claims for lunch will be processed even if submitted. In the event that a Reporter is working on a 'call out' during the night which takes them into the morning, the Reporter will be eligible to claim up to £7.50 for breakfast. No other scenario qualifies for claiming breakfast. Hotel accommodation costs will only be paid up to the maximum rate limit (per person per night, including VAT) as set out in Network Rail's expenses policy.

19. All invoices should be sent to Emma Trestrail at Network Rail prior to being sent to Network Rail Accounts Payable.

Amendment to mandates

20. For practical reasons it may be necessary for a mandate to be revised once work has commenced or awarded. For the avoidance of doubt this will not lead to the ORR and Network Rail seeking to re-run the award of the mandate unless ORR and Network Rail agree that the revision constitutes a material change to the original mandate.

Meetings

21. Unless otherwise directed, all key meetings must be trilateral and both parties should be made aware of any other meetings taking place.

22. The Reporter should take minutes of meetings, which should be provided to all parties within 7 working days.

Issues or concerns

23. Should a situation arise whereby either ORR or Network Rail is dissatisfied with the quality of a piece of work, we will explain clearly our reasons, gain approval from the other client and then, if we deem appropriate, may request the Reporter to re-do that part of work at no additional cost.

24. Should the Reporter encounter any issues with an inquiry (review) the Reporter should notify:

- Andy Lewis for ORR
- Jonathan Haskins for Network Rail

Reports

The report document

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2\L4AR004B ASSESSMENT OF TRAIN PERFORMANCE TRAJECTORIES - FINAL ISSUE V3 SIGNED FOR WEBSITE.DOCX

25. All Reports must include an 'Executive Summary' which should be written clearly, concisely and highlight key findings and key recommendations.

26. The full reports should also be written concisely in plain English, and should provide a brief 'Introduction' outlining the aims of the mandate and how these have been met. They should provide further detail on what is mentioned in the Executive Summary and there should not be any material points raised in the main report which have not already been mentioned in the Executive Summary.

27. Where there is commercially sensitive information in the report, the Executive Summary will be published on ORR's website, with any necessary redactions, instead of the full report. Otherwise, usually the full report will be published unless any redactions are appropriate due to a Freedom of Information Act exemption.

Recommendations

28. A recommendation is a specific action that the Reporter considers, following its analysis, should be undertaken by either Network Rail, or any other party. While the majority of recommendations are likely to be for Network Rail, not all need to be.

29. Reporters should make all recommendations SMART (Specific, Measureable, Achievable, Realistic and Timebound). The Reporter should:

- provide a clear description of the recommendation and the benefit that implementation will deliver;
- outline the evidence which is required in order for the recommendation to be closed out; and
- discuss and agree a target date for completion of the recommendation with ORR and Network Rail.

30. Recommendations should only be included in the report if they actually add value to either ORR or Network Rail or another industry party and the benefits are sufficient to justify implementation. It is acceptable for a report not to include recommendations, as long as key requirements of the mandate have been met (e.g. if an inquiry finds that Network Rail is fully compliant with its requirements). A smaller number of well-targeted and SMART recommendations which will deliver tangible improvements is preferable to a large number of general recommendations.

31. In order to add further value, the report may also include observations on areas for improvement which do not need to be captured in a formal Recommendation if they are not central to delivery of the mandate requirements.

32. Recommendations will be tracked by the Reporter which generated them.

Payment

33. Reporters must include the purchase order number, and unique mandate reference (UMR) number for work when invoicing Network Rail for payment.

34. The clients can query invoices and have the right to check timesheets (and expenses) and investigate work before payment is agreed.

Post-mandate review

35.   The clients will provide feedback on the work carried out, having assessed performance using the Performance Framework on a per mandate basis. This will reflect any issues or concerns raised with the Reporter during delivery of the mandate.

36.   The clients will also hold formal feedback sessions with each Reporter every six months to review progress.

Appendix 2 – background information

Train performance

Definition

These are the measures that will be used to inform ORR's view on whether NR is doing everything reasonably practicable to deliver optimal train performance for its TOC customers. This section sets out how train performance will be measured and provides context on the measures, which will be the benchmarks against which the robustness and challenge of the plans will be established.

Approach in CP5

In CP5, PPM and CaSL are the sole regulatory measures for train performance. They are used in the context of a national target, exit targets for CP5 and Performance Strategy (PS) targets agreed between NR and the TOCs. These PS targets are Customer Reasonable Requirements (CRRs) and have a 'threshold', outside which ORR will consider Regulatory intervention to ascertain if NR is doing everything reasonably practicable to deliver train performance for that TOC – these are 2.0pp for PPM and 0.2pp for CaSL.

CP6 approach

In CP6, to reflect ORR's approach to PR18, the intention is to have two broad categories of train performance measure.

i.   Consistent Route Measure (CRM)

This will be a key measure, and new for CP6. Network Rail will include in its RSPs trajectories for the CRM, and will propose a "performance floor" as per our PR18 Overall Framework consultation and associated supporting document on Route Requirements and Scorecards Once the level of CRM is established for each Route, it will be a key metric against which the Value for Money of NR's plans will be judged. ORR is mandating this measure at GB level.

It will be based on delay minutes, with an appropriate normalisation factor. There will be a 'floor', and if performance falls below this floor, then Regulatory intervention will be considered. For context, there are a number of details to be agreed:

- Will it include TOC reactionary delay?
- Reactionary delay imported into the route
- How will it take account of cancellations?
- How will the comparison be done:
    o   on headline performance?
    o   against target? or
    o   against variation to previous year?
- Will the CRM 'floor' be fixed for the full five years, or will it flex depending on set criteria?

At this point it is not clear if Scotland Route's RSP will include the Consistent Route Measure.

ii.   The New Performance Measures

In CP6, as set in the HLOS, there will be no single National target, and operators will agree with NR what measures they wish to include on NR's scorecards, in order that these can reflect each operators' business. There is a suite of CP6 New Performance Measures such as 'on time at all stations', cancellations, and time to 15 arrivals. NR and its TOC customers will agree the most appropriate measures for the TOC's business and agree targets for each one. As with the CRM, there are a number of issues to resolve (out of scope for this reporter piece of work).

Additionally, in Scotland, a separate package of KPIs has been mandated by the Scottish government. It will be necessary to ascertain whether the plan in Scotland is equally stretching to the England and Wales Routes' plans.

The reporter will need to establish whether the targets agreed with NR's customers - which may be expressed using different measures from the CP6 suite of metrics - represent a consistent challenge based on the specific circumstances of that route/operator.

Feedback from stakeholders from the Route Requirements and Scorecards Consultation

There was a good deal of interest from consultees in this area. The main points were:

1. Cancellations should be included (cancellations will be reported periodically to ORR, we would propose to monitor this and, although not a specific output could investigate if the data showed cause for concern)
2. TOCs felt the measure should include TOC reactionary delay. NR felt that TOC reactionary delay should not be included (work is ongoing with NR as to the final shape of the CRM).

Appendix B

List of documents received

External Data Register

Project:	PR18 Performance Plans Review
Number:	259734

No.	Filename	Description
1	SBPT206_Capacity_and_performance_planning_framework.pdf	PR13 document relevant as background to this review
2	SBPT230_Performance_Plan_Summary.pdf	PR13 document relevant as background to this review
3	SBPT3312_Performance_Plan.pdf	PR13 document relevant as background to this review
4	SBPT3330_Freight_Performance_Measurement.pdf	PR13 document relevant as background to this review
5	14. Train Performance as submitted.xlsx	Central Performance Team Assessment of Route Plans – scoring
6	RF6 NPT Review of Route plans for ORR.zip	Central Performance Team Assessment of each Route Plan
7	Anglia – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
8	FNPO – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
9	London North Eastern and East Midlands – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
10	London North Western – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
11	Scotland – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
12	South East – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
13	Wales – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
14	Wessex – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
15	Western – Route Strategic Plan.pdf	Dec 2017 Route Strategic Plan
16	180125 Business planning process overview.pptx	Business Planning Process – presentation
17	RF6 BRT guidance.pdf	RF6 Business Planning Guidance version 1.0 (28 July 2017)
18	SBP Assurance Activity 25-01-2018.pptx	SBP Assurance Activity – by Central Performance Team
19	SFS – Operational Performance.pdf	Operational Performance – Short Form Strategy
20	Wales CP6 Performance trajectories slides reissued 050218.pdf	Wales Route slides – methodologies for performance trajectories
21	Wales Route CP6 Performance trajectory plan submission.xlsx	Wales Route – performance model
22	Wales Route Performance – MAA P10 to CP6 fishbone.pdf	Wales Route – fishbone analysis
23	Anglia-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
24	Asset-Information-Services-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
25	Comms-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
26	CP6-Strategic-Business-Plan-Comprehensive-Executive-Summary.pdf	Feb 2018 Route Strategic Plan
27	Digital-Railway-Programme-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
28	Finance-Strategic-Plan-1.pdf	Feb 2018 Route Strategic Plan
29	FNPO-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
30	HR-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
31	Legal-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
32	London-North-Eastern-and-East-Midlands-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
33	London-North-Western-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
34	Property-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
35	Route-Businesses-HQ-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
36	Route-Services-Strategic-Business-Plan.pdf	Feb 2018 Route Strategic Plan
37	Safety-Technical-and-Engineering-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
38	Scotland-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
39	South-East-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
40	Strategic-business-plan-high-level-summary.pdf	Feb 2018 Route Strategic Plan
41	System-Operator-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
42	Telecoms-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
43	Wales-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
44	Wessex-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
45	Western-Route-Strategic-Plan.pdf	Feb 2018 Route Strategic Plan
46	20180126 LNEEM CP6 RSP ORR Presentation_performance – FINAL_updated.pdf	LNEEM Route – slides for ORR analytical meeting 26 Jan 2018
47	180222 LNEEM Presentation.pdf	LNEEM Route – slides for ORR deepdive meeting 22 Feb 2018
48	Wessex CP6 Performance Trajectories v2.pptx	Wessex Route – slides for ORR meeting
49	Agenda - Anglia – 2018 01 26 – Performance Trajectories Meeting 1 - ID 78.docx	Agenda for meeting 1 with the regions, these agendas are the same for all regions so have only been included once
50	Agenda - Anglia – 2018 02 23 – Performance Trajectories Meeting 2 - ID 87.docx	Agenda for meeting 2 with the regions, these agendas are the same for all regions so have only been included once
51	Meeting Notes - Anglia – 2018 01 26 – Performance Trajectories Meeting 1 - ID 78.do	Anglia meeting 1 notes
52	Meeting Notes - Anglia – 2018 01 26 – Performance Trajectories Meeting 2.docx	Anglia meeting 2 notes
53	CP6 Forecasting 180118 SBP submission.xlsx	Anglia Performance Model
54	Meeting Note – LNE-E.Mids - 2018 126 – Performance Trajectories Meeting 1 - ID 80	LNE/E.Mids meeting 1 notes

55	Meeting Note – LNE-E.Mids – 2018 2 22 – Performance Trajectories Meeting 2 – ID 89	LNE/E.Mids meeting 2 notes
56	20180126 LNEEM CP6 RSP ORR Presentation_performance – FINAL.pptx	LNE ORR presentation
57	Thameslink Phasing Split v01.1.7.xlsx	LNE Performance Spreadsheet
58	LNEEM CP6 RSP Performance Projections Methodology.pptx	LNE/E.Mids presentation
59	Meeting Note – LNW – 2018 02 08 – Performance Trajectories Meeting 1 – ID 81.docx	LNW Meeting 1 notes
60	CP6 SBP ORR Performance Session 1.pptx	LNW meeting 1 presentation
61	Meeting Note – LNW – 2018 03 07 – Performance Trajectories Meeting 2 – ID 90.docx	LNW Meeting 2 notes
62	CP6 SBP ORR Performance Session 2.pptx	LNW meeting 2 presentation
63	HS2 Performance Risk Matrix Draft.xlsx	LNW HS2 risk matrix draft
64	LNW CP6 Performance Plan Chiltern.xlsx	LNW Performance Modelling Spreadsheet examples (Chiltern)
65	Meeting Note – Scotland – 2018 02 07 – Performance Trajectories Meeting 1 – ID 82.	Scotland Meeting 1 notes
66	Meeting Note – Scotland – 2018 02 20 – Performance Trajectories Meeting 2 – ID 91.	Scotland Meeting 2 notes
67	Meeting Note – Scotland – 2018 03 14 – Performance Trajectories Meeting 3 – ID 212	Scotland Meeting 3 notes
68	ORR Presentation with IH annotations.pdf	ORR Information 1 presentation
69	Asset Failure Reduction 201819.xlsx	Asset performance to 17/18 p6
70	Class 385 EnG Impact.xlsx	Class 385 potential impact
71	Asset categories 201415-YTD.xlsx	Incidents, PPM failures and delay minutes
72	Meeting Note – South East – 2018 3 07 – Performance Deep Dive Meeting – ID 188.do	South East Meeting 1 notes
73	Meeting Note – South East – 2018 1 29 – Performance Trajectories Meeting 1 – ID 83.	South East Meeting 2 notes
74	Meeting Note – Wales – 2018 1 29 – Performance Trajectories Meeting 1 – ID 84.docx	Wales Meeting 1 notes
75	Meeting Note – Wales – 2018 2 22 – Performance Trajectories Meeting 2 – ID 93.docx	Wales Meeting 2 notes
76	Wales CP6 Performance trajectories slides.pdf	Wales CP6 performance modelling slides
77	Meeting Note – Wessex – 2018 02 28 – Performance Trajectories Meeting 2 – ID 94.d	Wessex Meeting 1 notes
78	Meeting Note – Wessex – 2018 1 19 – Performance Trajectories Meeting 1 – ID 85.doc	Wessex Meeting 2 notes
79	Wessex CP6 Performance Trajectories v5.pptx	Performance trajectory slides and waterfalls
80	Example Business Case.xlsx	Example Business Case
81	Maintenance Performance Schemes Chart 070218.xlsx	Performance trajectory slides and waterfalls
82	Wessex CP6 Performance Trajectories v2.pptx	Wessex Opex opportunities bubble chart
83	PPM Wessex Forecasts v23.xlsm	Wessex peformance modelling
84	Wessex CP6 PPM and Performance Metrics Forecasting.docx	Modelling methodology
85	Meeting Note – Western – 2018 2 28 – Performance Trajectories Meeting 2 – ID 95.do	Western Meeting 1 notes
86	Meeting Note – Western – 2018 1 17 – Performance Trajectories Meeting 1 – ID 86.doc	Western Meeting 2 notes
87	ORR CP6 Methods.pptx	Western modelling presentation
88	Confidence Summary.xlsx	Modelling Confidence Summary
89	LNEEM CP6 RSP ORR deep dive 220218.pdf	ORR deep dive presentation with IH annotaions
90	CP5 PPM Waterfall.pdf	CP5 PPM Waterfall
91	Model Review SE route v01 (TW Comments).docx	SE Model Review
92	ORR CP6 Performance Reviews v01.pdf	ORR CP6 performance review
93	Growth in CP6 Analytical Methodology Steps.docx	Growth Impact in CP6 – Detailed Analytical Steps
94	LNW CP6 Performance Plan TPE.xlsx	LNW performance modelling TPE
95	LNW CP6 Performance Plan WMT.xlsx	LNW performance modelling WMT
96	LNW CP6 Performance Plan Virgin.xlsx	LNW performance modelling Virgin
97	LNW CP6 Performance Plan MerseyRail.xlsx	LNW performance modelling MerseyRail
98	Western response to 2018 01 17 Initial performance questions from ORR AF Respons	Western response to initial performance questions
99	CP6 Performance trajectory – status for NTF .docx	CP6 Performance Trajectories – Status Review for NTF
100	CP6_forecasts v1.4.xlsx	CP6 PPM forecasts
101	LNE – Long Term Scorecard 20180119 RF11 – v13.xlsm	LNE Long term scorecard
102	ORR Asset Deep Dive – train performance 2nd session_v5.pdf	ORR Deep dive 2nd session
103	ScotRail Alliance Summary Report ISSUE 27 March 2018.pdf	ScotRail independent summary report
104	CP6 Plan CP5 90.5%.pptx	ScotRail CP5&CP6 Performance Plan
105	2018-04-13_150019_Ian Hood_FW Meeting with Scotland Route.msg	ScotRail plan email notes
106	Master Input Sheet v4.1 (RF11 Submission).xlsx	Master input sheet
107	Thameslink Phasing Split v09 (ORR Review).xlsx	Thameslink spreadsheet – SE
108	Master Input Sheet v4.1 (ORR Review).xlsx	Master input sheet updated
109	Anglia JPIP split.xlsx	Angliga JPIP Breakdown

Appendix C

Meeting agenda for industry consultation

1.   **Introductions and Background**

Arup's role as Independent Reporter

2.   **Purpose of meeting**

Setting money aside, what are the key constraints that if addressed, might materially improve the industry performance trajectory?

3.   **Taking an industry perspective, what are your opinions on the following topics**

Overview

How is the GB rail network currently performing?

What are the key constraints to improving train performance?

Which of these constraints should be addressed first?

Incentives

What incentives within the industry currently work well?

Could the franchising process be adapted to incentivise improved train performance? If so, how?

Similarly, how might the Periodic Process be adapted to improve train performance?

What else could be done to better align infrastructure and train service elements?

How well do Schedules 4 and 8 incentivise performance improvement? What improvements could be made?

Has the growth of delay repay schemes improved performance?

Systems

Are the current systems in use across the industry for performance management a constraint to delivering improvement? If so, what improvements would you like to see?

Behaviours

What current behaviours within Network Rail and train operators constrain performance? Are there examples of good behaviours that optimise train performance delivery?

What about behaviours from other stakeholders?

Skills

Are there skills shortages that constrain performance? How might they be best addressed?

How should performance targets be set for both TOCs and Network Rail? Currently, of NR Routes, only Scotland has a specified target for CP6.

Lessons from elsewhere

Are there any lessons from overseas railways that could be adopted on the GB network to improve performance?

Are there any lessons from other industries?

Finally

From this discussion, what one improvement would you like to see to improve train performance?

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Appendix D

Glossary

D1   Glossary of terms

Acronym/Initialism	Definition
ARL	Arriva Rail London
ATW	Arriva Trains Wales
CP	Control Period
CRM-P	Consistent Route Measure – Passenger Performance
CVL	Core Valley Lines
DfT	Department for Transport
DPI	Delays per Incident
EMT	East Midlands Trains
FNPO	Freight and National Passenger Operators
GA	Greater Anglia
GC	Grand Central
GTR	Govia Thameslink Railway
GWR	Great Western Railway
HEX	Heathrow Express
HLOS	High Level Output Statements
HT	Hull Trains
IA	Industrial Action
KPI	Key Performance Indicator
LNE&EM	London North Eastern & East Midlands
LNW	London North Western
MAA	Moving Annual Average
NPAT	National Performance Analysis Team
NR	Network Rail
OMR	Operations, maintenance, renewals
ORR	Office of Rail and Road
PPM	Public Performance Measure
RAM	Route Asset Manager
RDG	Rail Delivery Group
RSP	Route Strategic Plan
SAF	Service Affecting Failure
SE	South East
SO	System Operator
SoFA	Statements of Funds Available

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SWR	South Western Railway
TfL	Transport for London
TfW	Transport for Wales
TMS	Traffic Management System
TOC	Train Operating Company
TPE	TransPennine Express
TSR	Temporary Speed Restriction
VTEC	Virgin Trains East Coast
VT	Virgin Trains
WMR	West Midlands Railway