NETWORK RAIL

Response to ORR's Provisional Order

Contents

1   Executive Summary

1.1   The performance context

This report sets out how Network Rail (NR) intends to develop and embed a robust Performance Management System to address the rail industry's long-term challenge of performance. This responds directly to the matters raised in ORR's Provisional Order relating to performance planning and service recovery and gives further detail of our plans for CP6 nationally and regionally to help give confidence in our wider approach.

Improving punctuality is not just a priority for NR and ORR but is a key priority for the GB rail industry. National performance has been on a deteriorating trend since 2011/12 with a sharp drop over the last 12 months. More disappointingly, the industry has failed to deliver its planned levels of performance in each of the last nine years.

As the body tasked with co-ordinating performance plans and management of performance on the day, we accept the challenge implicit in the Order. Our focus in the future will be on service to our customers and the requirements of our funders. We will work with industry stakeholders to ensure we collectively deliver the levels of reliability that customers rightly expect, while meeting growing demand. We will ensure that the balance is tilted towards delivering our promises and away from stretching our promises and our credibility.

1.2   Understanding the causes

Our plans to deliver a robust Performance Management System are based on a clearer understanding of the factors that are contributing to the deterioration. Whilst there are increases in most categories of delay, whether caused by NR, operators or external factors, industry analysis of the underlying causes has shown the following key themes:

- a gradual decline in the robustness of the timetable (the industry's ultimate promise to the customer) and the resourcing plan that sits behind it;
- the increasing delay minutes per incident as capacity becomes more constrained; and
- the erosion of operational competence, evidenced in the increases in reactionary delay and poor service recovery.

NR has acknowledged that the industry and independent reviews carried out in the last year have told us things that we should have known and if we did know should have acted upon earlier. Through the National Task Force (NTF) we commissioned a 'Review of Reviews' to identify the common learning. The key conclusions are the need to address performance as a whole system and for industry to pull together around a common approach to performance management. This work informs our plans at NR and all relevant recommendations are being tackled and tracked.

1.3   Creating a framework for delivering excellence in performance

As the Infrastructure Manager with responsibility for capacity allocation and co-ordinating the activity of all operators using the route (including service recovery), we have an industry-leading role on performance management. For CP6 we are restructuring our business to better carry out this role, providing the necessary leadership, planning, operations and

assurance in a more devolved structure, developing operational competence, and giving our front-line people more time to focus on delivery.

Yet with its underlying issues rooted in the timetable, under-capacity and industry capability, there is no easy fix to the performance issues we face. Therefore, we will drive systemic and sustainable change in all aspects of our operational model over the next three to five years, with steady progress and improvement being a realistic goal.

We will, with the wider industry, tackle performance management as seriously as we have systematically driven safety management improvement. For NR this means we will continue to invest in our assets to ensure sustainability, especially with increasing traffic volumes. We will develop technology to better understand the underlying causes of performance issues and plan for them more effectively. We will develop the competency of our people to help them cope with increasing pressure and technology change. Importantly, and central to this report we will pull this together through an industry-based Performance Management System and develop tools to check, benchmark and review the maturity of our Performance Management approach.

NR, with our industry partners in the NTF, are therefore developing 'PM3' – adapting the RM3 safety management maturity model to our performance task. This will cover every aspect of system, from high-level decisions on future specification to management of disruption on the day, people, processes and technology, plan/do/check/act routines and define maturity in every area. This is intended to drive long-term sustainable change in how we operate and forms the basis for future benchmarking studies to assess and deploy best practice.

When we deploy the model, we will use the Route Scorecards to help define our customers' expectations. We will judge our success on "leading" or predictive measures of performance, as well as relevant customer outcomes and we will include end-Customer Satisfaction. We will work with TOCs to develop more robust joint performance strategies with supporting action plans as a key building block of achieving these outcomes. Our routes are already engaged with operators in driving improvements and will sign off refreshed Route Scorecards and performance strategies by April 2019.

1.4 Industry engagement

Performance is an outcome of a complex system: getting the basics of operations, maintenance and renewals right requires cross industry support and commitment, and collective recognition of the importance of performance in all areas of our decision-making. This needs true collaboration, mutual challenge and drive to deliver for customers and end users.

To address this collaborative challenge, we are not only actively engaging through NTF on developing PM3 and Route Scorecards, we are also engaging on our plans for devolution and encouraging individual routes to determine an appropriate collaborative model for delivery. We have already transformed collaborative working between our Wessex Route and SWR on all aspects of performance planning and delivery, supported by a deep dive analysis using new analytical tools into all aspects of service delivery. The change in approach has been welcomed by industry stakeholders, and we will share the continuing learning with other Routes and operators.

The main body of the report summarises key actions being taken across all the Routes to step up engagement on performance planning, delivery and service recovery with our customers.

1.5 Delivering performance improvement

Tackling the challenge requires sustainable improvement and change in every aspect of the performance system. This requires having plans that allow us to succeed, on time delivery on the day, fixing failures quickly and managing around failures effectively, and a continuous improvement approach to the whole system. The plans set out in this report cover this spectrum.

This report does not seek to give complete coverage of all that is happening. Rather it gives clear examples of the actions of Routes and TOCs, to demonstrate that our approach is being implemented and that we are confident of success. There is not a single solution as Routes and TOCs face different issues with differing priorities so local planning is key to successfully meeting the needs of customers. There are issues requiring a consistent national response, e.g. capability development. These are set out in this report, with a summary of the issues being addressed set out in the table below.

Area	Issues identified	Section	Response
Performance management	Recognising performance as a system	4	Performance Management System
		6.2	Organisational change for performance improvement
	Industry commitment to performance strategies	4.3	Performance Strategies
		5	Industry engagement - Wessex/SWR collaboration - Other Routes
	Incomplete understanding of causes of delay	6.8	Improving operational analysis
Change management	Gradual reduction in resilience of timetable	6.3	Industry alignment on specification and franchising
	May 2018 timetable change	6.4	Managing timetable change
Operating plan	Gradual reduction in resilience	6.5	Timetable planning
People	Operational capability and competence	6.6	Developing operational capability
		6.7	Creating the performance culture
Assets – fixed and fleet	Overall asset condition	6.9	Improving asset reliability
	Access for maintenance		
Recovery	Increasing reactionary delay	7.5	Control organisation
		7.6	Reducing time to fix
		7.7	Operating services during failure
		7.8	Restoring service after failure
Other	Rise in external causes	6.10	Externals – trespass and suicide

1.6   Why will this time be different?

The rail industry has promised to halt the slide in performance in the past seven years, but failed to deliver this or indeed, any improvement. It is therefore reasonable to consider what is and will be different;

- the deterioration of performance throughout 2018 reached a level that is unacceptable to customers and funders. There will be no place for excuses.
- the leadership of Network Rail has changed, with a CEO committed to putting passengers first and focusing on operational capability to deliver;
- the restructuring of Network Rail focused on delivering those outcomes through devolving authority and responsibility to the local level and a consistent message from top to bottom of the organisation what those responsibilities are;
- a strong collective desire to deliver excellence in performance management, with industry agreement at the NTF;
- the development of a performance management maturity model to enable review and benchmarking of the inputs and not just relying on the results;
- governance arrangements to ensure we deliver the actions we promise; and
- honest conversations with funders, customers and stakeholders about the trade-offs between higher levels of performance and increasing capacity.

It can be done. Results since the December 2018 timetable change prove that good performance can be achieved. For example, some TOCs have had 100% performance days for the first time in many months. The challenge now is for us all to deliver this good performance more consistently.

1.7   Risks to approach

We are committed to driving the improvement in performance management expected by funders and customers. It is appropriate however that we set out potential risks to this performance improvement, both to mitigate them and to make explicit choices the industry faces when high levels of performance may be secondary to other considerations.

At a programme level our biggest risk is that we cannot secure buy-in to the PM3 approach across the industry, but we are confident that through our industry engagement and the support of NTF to date that this remains on balance an upside risk, with more opportunity than downside.

In terms of actual performance delivery, we have identified the following national performance risks in CP6:

- further major changes to timetables that are already built in to franchise requirements, bringing benefits to customers and the economy but presenting further challenges in balancing capacity provision and performance;
- the scale of new train investment with more than 7,000 new vehicles coming on to the network between now and 2022, bringing benefits to passengers and long-term performance but presenting significant short-term risks; and
- major projects, including HS2, will cause reductions in capacity during construction.

1.8   Next steps

This report describes the start of a long-term journey to deliver excellence in performance. This requires continuous improvement throughout CP6 and beyond. This report describes a range of activities, some of which are already underway while others are being planned, some are delivering early benefits while others will see benefits delivered in two to three years. The activities include trials and pilots that may be successful and will be rolled out widely, while others may not.

In this report we have included high-level plans. We will engage proactively with ORR to establish appropriate monitoring of the delivery of these plans. In particular, we wish to work closely with ORR and the industry on the development of PM3 so we can use this as a benchmark measure of our maturity in performance management.

1.8   Next steps

2   Introduction

This report is Network Rail's response to the Provisional Order served by ORR on 28 November. The Provisional Order, driven by concern about performance management capability, required Network Rail to:

> a)   *Engage and work with Train Operating Companies (TOCs) to further review and develop actions to address the underlying causes that have led to the findings identified in the relevant reviews;*
>
> b)   *Deliver a report to ORR by 15 February 2019 detailing the following:*
>
> > i.   *how it is identifying the common underlying issues relating to performance planning and its capability to recover service from incidents on its network. In doing this, Network Rail must take into account of the findings of all the relevant reviews and their application across the whole of its business, whether or not the relevant review was limited to a single Route;*
> >
> > ii. *how it is addressing and implementing the conclusions of its report going forward into CP6, ensuring that the conclusions are agreed and being embedded throughout each of the Routes and share best practice between all of its Route businesses;*
>
> c)   *Provide ORR with regular updates on progress in delivering its report. These updates may include any interim findings and representations regarding the extent to which it considers it is doing everything reasonably practicable to meet its obligations in condition 1 in relation to its performance management capability.*

This report sets out our strategy and plans for tackling the challenge of reversing the downward trend in punctuality and driving performance improvement in CP6 to meet the requirements of funders and customers, and the requirements of ORR's provisional order. It is critical that we develop and embed **sustainable** changes to our performance management systems, processes and people. This report describes a continuous improvement process, not just a set of short-term actions to fix the most visible problems and is therefore wider in application than simply responding to the provisional order.

The report does not seek to collate the full detail of our Routes' plans to drive performance improvement, in collaboration with Train Operators, but provides relevant examples of specific plans and signposts the completion of updated performance strategies and the process for maintaining these.

The report is structured as follows:

- *Context* – CP5 performance trends and the industry's understanding of the underlying issues;

- *Driving excellence in performance* – our vision for building excellence in performance management to drive continuous and sustainable improvement during CP6 and beyond, developing a Performance Management Maturity Model "PM3", that builds on the learning from the Safety Risk Management Maturity Model RM3);

- ***Industry engagement*** – how we are working collaboratively with operators to enable performance improvement;

- ***Performance improvements*** – describing industry's plans for improvements in some of the critical areas of the overall performance system;

- ***Service recovery*** – describing activity to mitigate the impact of incidents, focusing on time to fix, time to recover and contingency planning for major incidents;

- ***Blockers*** to industry collaboration;

- ***CP6 performance risks*** – highlighting the common performance risks in CP6 and the steps being taken to improve industry management of these risks;

- ***Overall programme and next steps*** – identifying how the delivery of the strategy and plans outlined in this report will be monitored during CP6.

3 Context – common underlying issues

3.1 Recent performance trends

Since reaching a peak of 91.7% PPM in late 2012, punctuality at a national level has been in steady decline. As illustrated in Figure 1 below the industry has failed to deliver its performance improvement plans in every one of the last nine years. Since the start of CP5, PPM MAA has declined from 89.9% to 85.7% (period 10 2018/19), with a particularly sharp drop over the last year, falling well short of the original CP5 target of 92%.
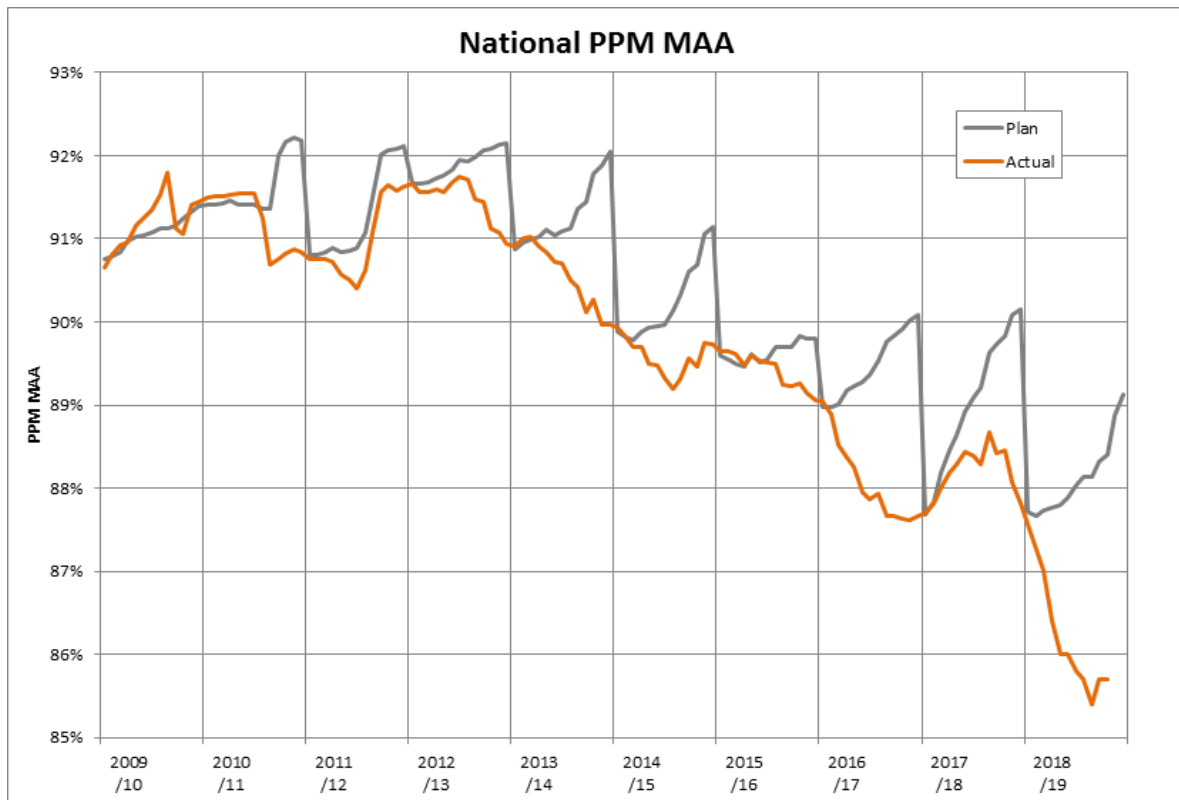
Figure 1: National PPM MAA against plan

It is important to note that the trend shown above is not uniform across all Routes and Operators. For example:

- operators using the LNE Route have had fairly steady levels of performance in CP5 until the last 12-18 months when there has been a sharp deterioration, the Route being particularly affected by the May 2018 timetable change issues in the North and South; and
- operators using South East Route – GTR and Southeastern – had declining performance which was at a low point around the end of 2016/17. Since then when ongoing collaborative action plans have started to deliver an improving trend overall, and valuable learning to apply elsewhere.

However, it remains the case that not one operator has seen improved punctuality during CP5.

Figures 2 and 3 below demonstrate that the decline in PPM over CP5 is common across most of the headline delay categories with NR, TOC and external causes all contributing significantly to the total performance loss. Network management (including unexplained delays), track, train crew, fleet and external factors (including trespass and suicide) all show significant increases.
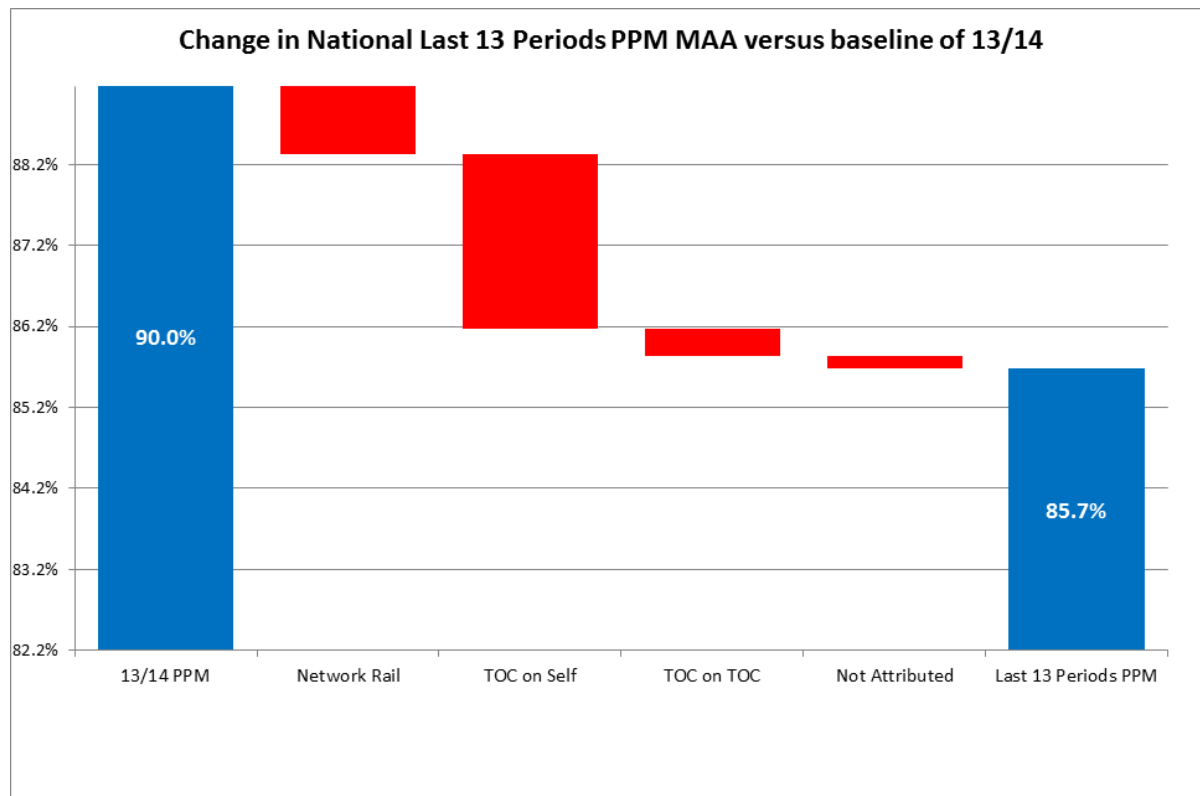
Figure 2: Change in national PPM loss by owner
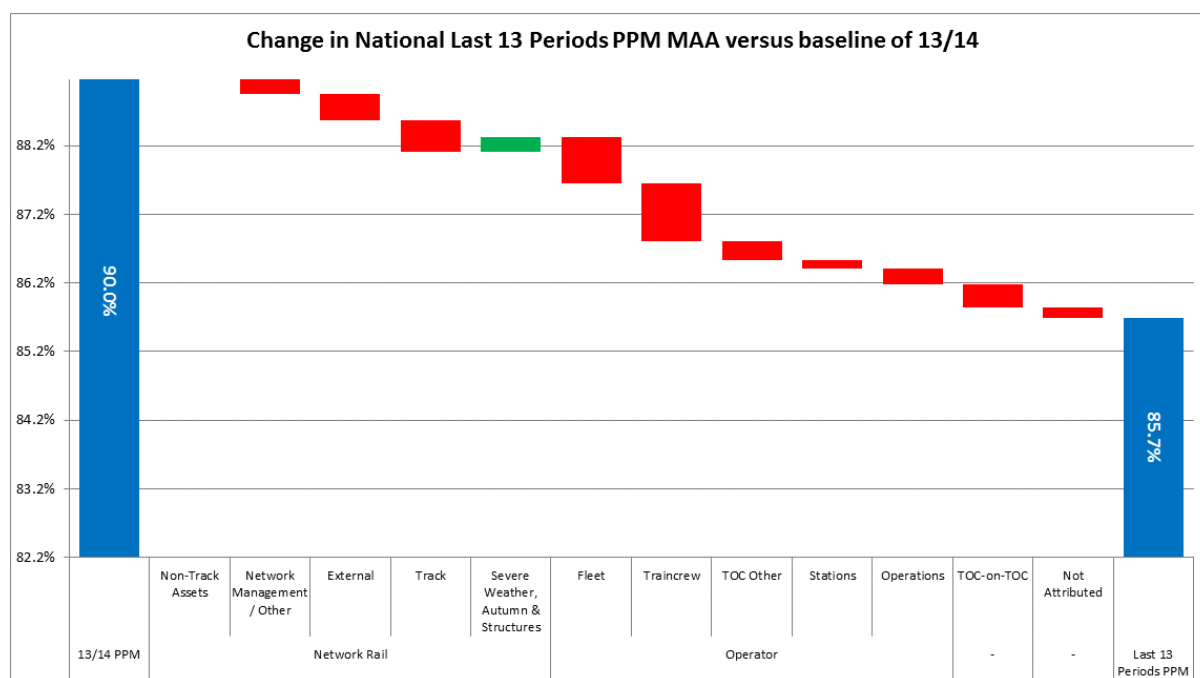
Figure 3: Change in national PPM loss by delay category

The PPM attrition analysis in Fig 4 gives further insight into the nature of the overall reduction in PPM over the last few years, showing that:

- reactionary delay, due to congestion and resource displacement following an incident, has increased more significantly than primary delay and now accounts for over 70% of all delay minutes;
- specification or 'system' loss, which is the level of delay experienced on the best 5% of days when there are generally no major incidents, has also increased significantly, accounting for an overall PPM loss of 5.4% over the last 13 periods.
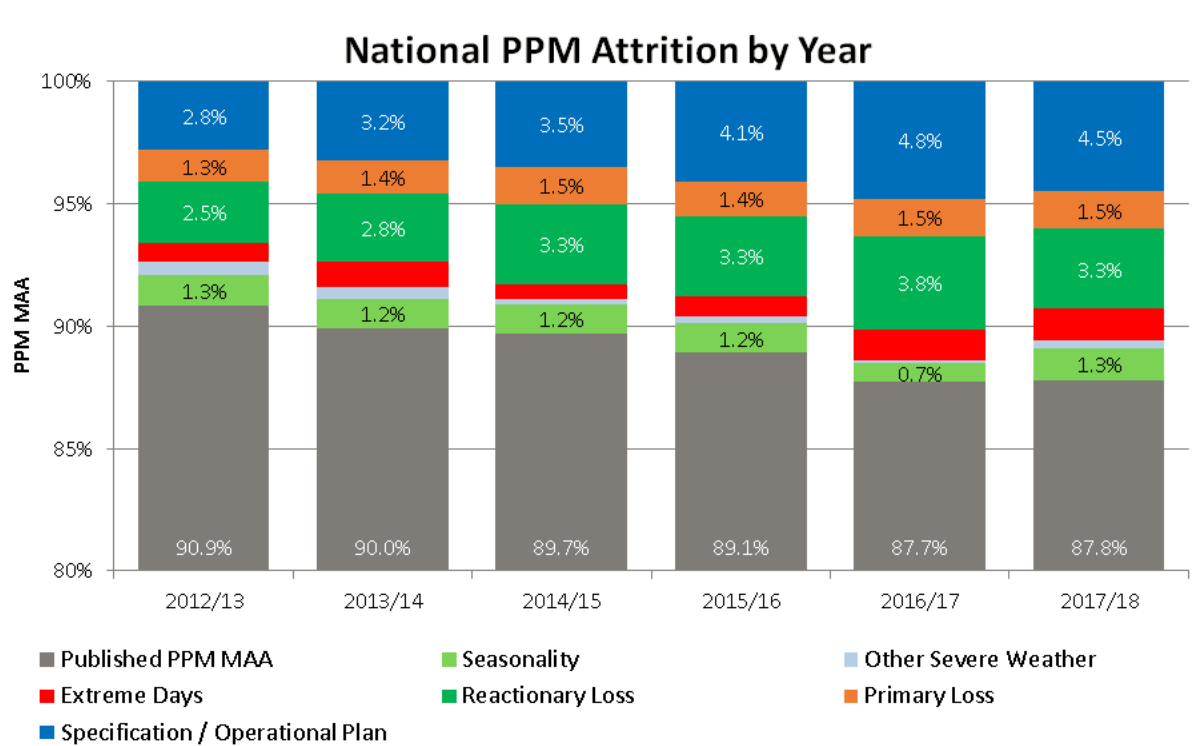
Fig 4: National PPM attrition: 2012/13 to 2017/18

3.2   Understanding of underlying causes

Industry analysis and observation have identified a number of common factors contributing to the overall decline. The independent reviews referenced in ORR's Order and briefly described in section 3.3 have provided further detailed insight. There is extensive analysis of changes in delay by cause category, but the process of attributing delay to a primary cause can distract attention from a range of issues that affect the overall performance impact of a primary incident. The rise in reactionary delay requires broader insight into the underlying reasons, which are inherently difficult to quantify but critical to tackle.

It is important to emphasise that the issues are not uniform across the network, and different Routes and TOCs face different challenges and will therefore have different priorities in their performance action plans. However, we have identified a number of common underlying themes, including:

- a gradual decline in the overall resilience of the timetable;
- insufficient focus on operational capability and competence to deliver the timetable; and

- under-estimation of the challenges of delivering the timetable during major enhancements programmes for infrastructure and fleet.

Timetable resilience

There has been a progressive decline in the overall resilience of the timetable, affecting both the reliability of the base plan and the ability to recover from any perturbation. The introduction of additional services and new trains has generated major passenger benefits and accommodated growing demand but has not always been implemented with a full understanding of the performance impact, especially upon reactionary delay and delays per incident, or with the necessary mitigations to maintain performance. A range of factors have contributed to this situation, including:

- increased use of capacity with more trains on the network and less spare capacity in the timetable;
- more people using these trains which can impact on station dwell times at key locations;
- longer trains affecting acceleration characteristics, time to clear junctions, and signal sections, access to sidings and more;
- franchise agreements placing contractual requirements on operators to increase the quantum of services, sometimes with a dependence on infrastructure improvements that NR was not committed to delivering;
- changes in driving techniques with more cautious braking and approaches to signals and platforms.

The individual impacts of these factors may only be a matter of seconds in the timetable, but the cumulative impact on the capacity of busy parts of the network can be substantial. A robust operational plan requires the timetable to be built on accurate parameters for sectional running times, station dwell times, headways, junction margins and turnaround times and the reality is that these have not kept pace with all the changes in operation.

Industry capability and competence

Another underlying theme is the sufficiency and competence of people in operational roles. Several aspects have been highlighted, including;

- the centralisation of timetable planning resulted in a loss of local expertise, separating those planning the timetable from those responsible for operating it and affecting the quality and resilience of the timetable;
- a high level of turnover in some operational roles; our recent capability review identified a very high turnover of local operational managers (LOMs), and the central timetable planning function has also had to implement changes to encourage staff retention;
- the sufficiency and competence of operational control functions and the effectiveness of how they have been structured has been challenged in independent reviews;
- the sufficiency and competence of train crew complements, particularly in relation to having the necessary level of route and traction knowledge; and
- the focus on developing world class capability in safety, asset management and projects, has encouraged our best people to develop their careers away from operations.

Since the separation of train operation and infrastructure, the level of opportunity for people to develop their careers with a broad range of operational experience, and an understanding of the whole system nature of performance, has reduced. This has affected both the quality of real time operational decision-making, and decisions being made in other functional areas without a full appreciation of the consequences for operations and performance.

The pressure on NR and operators to improve efficiency, whether by having to justify costs in detail or through competing to win a franchise, has tended to reduce overall headcount, saving costs partly at the expense of resilience to deal with disruption to operations.

Scale of change

During CP5 there has been a huge programme of enhancements works, creating challenges around keeping the railway running through these major works. A number of major projects have involved temporary reductions in network availability during construction, reducing resilience of the timetable and the ability to recover at times of disruption. While performance impacts have been anticipated to some extent, the experience of London Bridge, Waterloo, Birmingham New Street, Great Western electrification and other projects is that the impact has been materially worse than predicted. This is partly because we lack the system modelling capability to evaluate the performance impact of changes to timetables, and of infrastructure capacity and capability. Once completed, the works at London Bridge, Birmingham New Street and Reading have all demonstrated reductions in congestion related reactionary delay (see section 7).

In addition to the direct impact of reduced availability, the volume of change over a sustained period in some areas has meant that there has not been a stable train plan, with high volumes of possessions driving a higher workload for signallers, planners and train-crew. This has increased the likelihood of errors or sub-optimal plans.

The reliability of the new infrastructure and new train fleets has been a further factor with new assets tending to follow a bath-tub curve with low levels of reliability in the early stages before the benefits of the new assets come through. GTR, for example, saw low levels of reliability in the new Thameslink fleet but is now seeing improvement. Improving the reliability of new assets, and managing the cascade of older fleets effectively are key focus areas for the industry.

Other issues

Other common factors during CP5 include:

- industrial relations challenges that have affected a number of operators and are a continuing issue for some;

- adverse trends in "external" causes, which can lead to major delays, with increasing levels of trespass and suicide being an issue across the network;

- infrastructure asset condition: while the overall level of asset failures has been reducing, the delay impact has not, and there are critical parts of the network where we rely on ageing assets, with planned renewals in CP5 having been squeezed by the pressures of enhancement delivery and inability to achieve efficiency targets;

- balancing additional services with access to maintain assets: the increased density of the timetable has reduced the time available to maintain both infrastructure and trains as well as increasing their usage. Poor punctuality can exacerbate this by further squeezing the planned maintenance time on the night. We have not properly assessed the trade-off to optimise the level of access.

2018 saw a sharper drop in performance for many operators for which two further common causes have been notable.

May 2018 Timetable change

The issues with the implementation of the May 2018 timetable were clearly a major cause of the significant drop in punctuality during 2018. The underlying causes have been reviewed in detail through ORR's Inquiry, which has published conclusions on the causes and recommendations for ensuring that future changes are managed effectively. We therefore do not repeat them here. However, it is important to reiterate that the problems were not just with the workability of the new timetable but also with the industry's readiness to deliver the many logistical changes needed to implement it. There were direct impacts on major operators in the south and the north at the same time, and the extent of network connectivity meant that the impact on punctuality spread far beyond these areas. There were unacceptably high levels of cancellations, with some customers experiencing very limited services as a consequence.

While the changes made in the December 2018 timetable appear to have delivered a significant improvement in key areas, the adverse impact on punctuality of the May 2018 changes has not yet been removed, and the industry has further challenges ahead with the implementation of other major timetable changes to ensure that major benefits of investments in capacity and connectivity are delivered without materially affecting reliability and punctuality.

Weather related impacts

While the overall impact of severe weather was lower in the early years of CP5 (see Figure 3), extreme weather-related factors have been a significant part of the performance drop during 2018; in particular:

- the 'Beast from the East' which, in addition to the immediate impact on services of the heavy snow, had consequences as damage sustained by some of the fleet affected fleet availability long after the snow had melted; and

- the long hot summer also had an impact, particularly on temporary speed restrictions (TSRs), as the desiccation of embankments and the need to defer planned maintenance to avoid the risk of buckles led to a significant increase in the number of TSRs, reversing the previously improving trend.

Overall understanding of causes

While many common issues have been identified, the reasons for the progressive decline in punctuality are not fully understood. In some areas, the industry is not able to identify what has materially changed since times when higher levels of punctuality were attained. Many of the issues noted above are difficult to quantify. Our plans set out in this report therefore include activities to develop high levels of performance management competence, and the analytical

tools and capability to drive a better understanding of all the causes of delay to enable the right actions to be identified.

3.3   Independent reviews

In response to the emerging performance challenges, several independent reviews of specific areas of the network have been commissioned by senior industry leaders to get a better understanding of the underlying causes and to make recommendations for improvements. These reports, referenced in ORR's Provisional Order, include:

- Gibb: Changes to improve the performance of the Southern network and train services, and restore passenger confidence review, December 2016;

- Donovan: Review of train service performance delivered by the Scotrail Alliance, March 2018; and

- Holden: South Western Railway Performance review, August 2018.

In addition, ORR has carried out reviews of Network Rail's performance delivery to Southeastern (July 2017) and SWR (July 2018).

During 2018, the National Task Force (NTF), recognising the consistent failure to deliver annual performance plans, commissioned an independent review by Steer of the effectiveness of the joint Route/Operator Performance Strategies which are a fundamental part of the process of driving performance improvement. This review concluded that the current strategies are not fit for purpose. The original intent remains valid, but the present implementation does not meet this intent. It is notable that there has been little industry dissent with this conclusion.

3.4   Identifying common learning from reviews

In response to this range of independent critiques, the NTF commissioned a further "review of reviews" by Nick Donovan to draw out the common learning from the reviews noted above (and other ongoing unpublished reviews). This recognised that issues identified in these reviews were not unique to those Routes and TOCs and the importance of sharing the learning and the consideration of appropriate responses. The report was presented to NTF in November 2018.

The key findings from the Donovan review were that:

- there is a failure by all industry parties (NR, TOCs and FOCs, specifiers and funders) to recognise that performance is the outcome of a complex and interdependent system, and to plan accordingly;
  - o the delay attribution process does not help this, with the identification of a single source of blame diverting attention from other contributors to the overall outcome;
  - o the industry's focus on reviewing lagging, rather than leading, indicators also exacerbates the problem, and tends to drive short-term thinking rather than robust long-term performance strategies.

- the industry has not united around a common vision for performance management, as the PPRP process intended:

- o the current leadership and governance arrangements are not driving the right outcomes on the ground; and
- o there is no clear line of sight through the value chain and the level of performance management assurance has been reduced.

The report made three key recommendations:

- adoption by industry of two models:
  - o a whole-system model linking infrastructure, fleet, people, the operational plan and recovery arrangements, with a plan-do-check-act loop covering performance management and change (see section 3.5 below);
  - o a model to focus attention on both planned performance losses (gap between capability and plan) and execution losses (gap between plan and actual delivery); and
  - o that these models should be supported by development of meaningful leading indicators and system process measures, at a level where individuals are able to control outcomes.

- refreshing industry leadership of a common performance improvement agenda, supported by the necessary resources for programme management, supporting industry partners, creating an industry compendium of best-practice, and implementing the necessary assurance arrangements; and

- establishing a programme of "go-look-see" activity for senior leaders to visit the front line, with the objective of understanding and removing blockers to local teams' delivery – not telling them what to do - and a better understanding of the reasons for planned and execution losses.

The report also concluded that "*It is necessary to express a view on the recoverability of the current situation. It is not an easy fix, and great dedication and resilience will be required from a committed team of capable industry professionals to address the root causes in a sustainable way*".

3.5 Responding to the performance improvement challenge

The whole system model put forward in the report above is shown in Figure 5 below. This structure has already been adopted by several Routes in framing the further development of their performance improvement plans, and for visualisation of plans in joint performance delivery rooms, ensuring attention is paid to each part of the performance system.
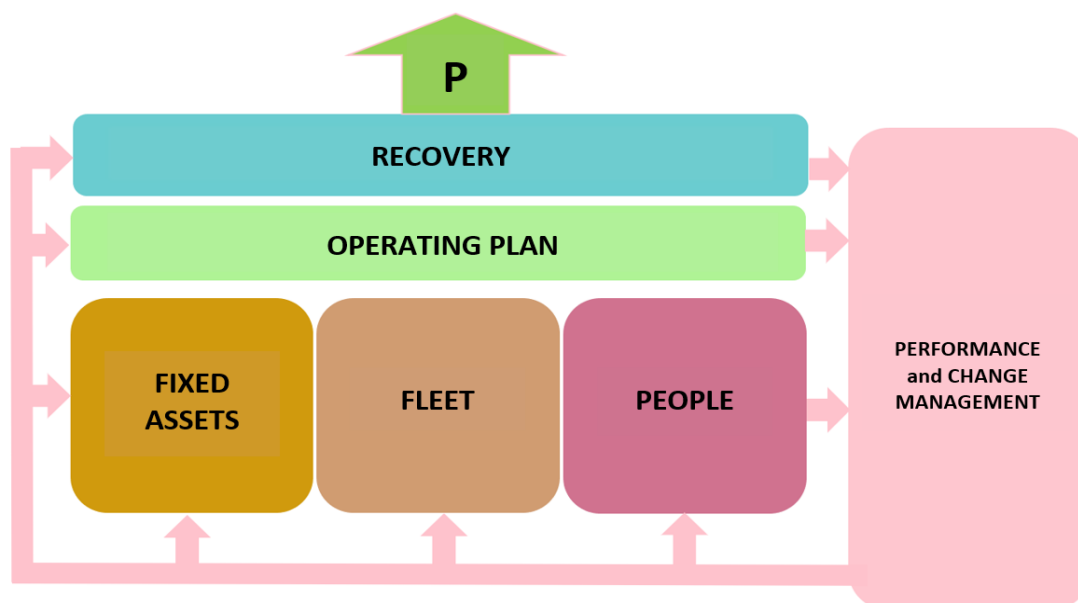
Figure 5 – Whole-system performance model

The table below uses the structure from Figure 5 to summarise the key issues identified in this section, and to map these to the various elements of our response:

Section 4 – sets out our approach to establishing a Performance Management System;

Section 5 – describes how our Routes are collaborating with TOCs and FOCs to address the issues and improvement plans set out in this report;

Section 6 – details some of the key improvement activities across the whole performance system, including actions already taken, work to deliver quick wins, and longer-term projects to embed sustainable improvements;

Section 7 – focuses specifically on work to improve incident management and service recovery, reflecting the focus in the Provisional Order (though there is some overlap between the sections).

In describing common areas of activity, this report provides illustrative examples from our Routes, including actions completed, trials in progress and developing plans. It is not intended to be a comprehensive summary of all Route performance improvement plans.

Table 1 – Tackling the performance challenge

Area	Issues identified	Section	Response
Performance management	Recognising performance as a system	4	Performance Management System
		6.2	Organisational change for performance improvement
	Industry commitment to performance strategies	4.3	Performance Strategies
		5	Industry engagement - Wessex/SWR collaboration - Other Routes
	Incomplete understanding of causes of delay	6.8	Improving operational analysis
Change management	Gradual reduction in resilience of timetable	6.3	Industry alignment on specification and franchising
	May 2018 timetable change	6.4	Managing timetable change
Operating plan	Gradual reduction in resilience	6.5	Timetable planning
People	Operational capability and competence	6.6	Developing operational capability
		6.7	Creating the performance culture
Assets – fixed and fleet	Overall asset condition	6.9	Improving asset reliability
	Access for maintenance		
Recovery	Increasing reactionary delay	7.5	Control organisation
		7.6	Reducing time to fix
		7.7	Operating services during failure
		7.8	Restoring service after failure
Other	Rise in external causes	6.10	Externals – trespass and suicide

4   Driving Excellence in Performance

4.1   Performance Management System (PMS) - Our Approach

After the consistent failure in Control Period 5 to meet industry's own performance targets, the approach to performance planning needs to change. The current set of policies, procedures and measures have developed piecemeal and needs to be brought together in a systematic way. To do this Network Rail, working with industry through NTF, is developing a Performance Management System (PMS) to deliver train performance excellence through the introduction of structured and consistent management. The PMS will be a framework of policies, processes and measures used by industry to ensure it meets its performance objectives for customers, funders and stakeholders.

The PMS design principles and approach have drawn on best practice from ISO 9001, ISO 55001, ISO 14001, EFQM and PDCA process models, and in particular have incorporated comparable and transferrable best practice from the ORR Risk Management Maturity Model (RM3). ORR developed RM3 in collaboration with the rail industry as a tool for assessing an organisation's ability to successfully manage health and safety risks, to help identify areas for improvement, and to provide a benchmark for year on year comparison. RM3 is helping guide the rail industry towards excellence in health and safety management.

We have adopted an approach labelled "PM3", based on RM3 principles for performance management, and will use this as part of an assurance mechanism to drive required performance for CP6 and beyond. We recognise that for this approach to be effective it must be supported by the whole industry. The concept has been tested and strongly endorsed by the NTF.

NTF is providing oversight of PMS development, and will continue to do so through detailed design, planning and implementation into business as usual. ORR are represented at NTF and will therefore receive regular structured updates on PMS progress, with the opportunity to support, challenge, advise and provide ultimate endorsement of the proposed approach.

4.2   PMS - Development Principles and progress

The performance management system design must consider the whole rail system in order to improve that system's outcome for the benefit of our customers. Every element of industry must play its part in enabling and delivering train performance improvement. The PMS design must provide a structure for highlighting and resolving considerable challenges in system trade-offs, interdependency, system operation alignment impacts of system change and clarity of accountabilities in the delivery of continuous improvement.

Industry performance metrics tend to focus on 'lagging' measures or outputs, with corresponding management focus weighted towards observed past performance outcomes and current performance events. Train performance outcomes require a consistent measurement framework, aligned to customer and stakeholder satisfaction, that drive the right behaviours in industry.
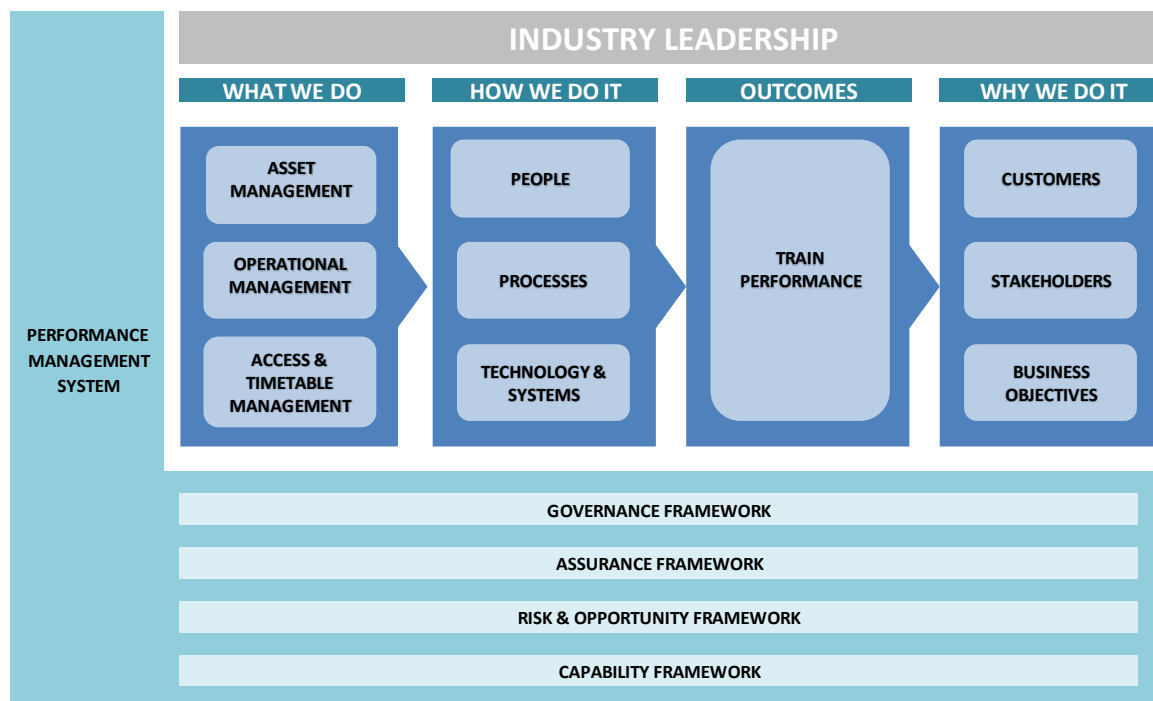
Figure 6: PMS Design Principle – Performance is an Outcome

The approach will be set out in policy documents that will provide a clear statement on how we will use the people, processes and technology to deliver performance outcomes for customers and funders.

The historic focus on outcomes (lagging indicators), has resulted in insufficient management and measurement of the drivers of the performance; the "what we do", and particularly, "how we do it" (leading indicators);

- an effective Performance Management System should deliver structured insights/measures, governance, assurance, risk and opportunity management across the plan / do / check / act cycle; and

- an effective performance management system should enable leadership to demonstrate line of sight to everyone contributing to performance improvement for customers – "why we do it".

The performance improvement deep dive exercise launched with the Wessex Route, South Western Railway (SWR) and support from the National Performance Team (see section 5.3), is undertaking a root and branch analytical deep dive into the issues preventing the delivery of good operational performance.

The deep dive is employing empirical and quantitative analytical focus, supplemented and challenged by conversations with frontline staff and subject matter experts, to test every avenue for performance improvement within a defined geography of railway operations.

The learnings from the deep dive are intended to support the Wessex/SWR performance improvement plans, provide direct input into the development of PMS leading measures, and provide a template and learning for future 'deep dives' as part of the PMS support and assurance processes.

As part of PMS development, the National Performance team, with support from NTF, are developing a suite of leading process measures for performance delivery to inform independent monitoring, tracking and assurance of performance improvement plans, aligned to the principles of RM3.

The core of the PMS will be an RM3 style maturity model, PM3, for driving management excellence. The PM3 maturity model as currently drafted sets out 30 defined key management elements, aligned with best practice Plan, Do, Check, Act cycles. The elements of the wheel are organised into five categories;

- governance, policy and leadership;
- organising for control and communication;
- securing the co-operation and competence of employees at all levels;
- planning and implementation; and
- monitoring, reviewing and auditing to provide effective governance and management.

The PM3 process will describe what excellent management capability looks like for each element with a clear set of procedures, supported by a five-point maturity scale ranging from ad-hoc through managed, standardised, and predictable up to excellence against each segment of the 'wheel'. The current draft is set out below.
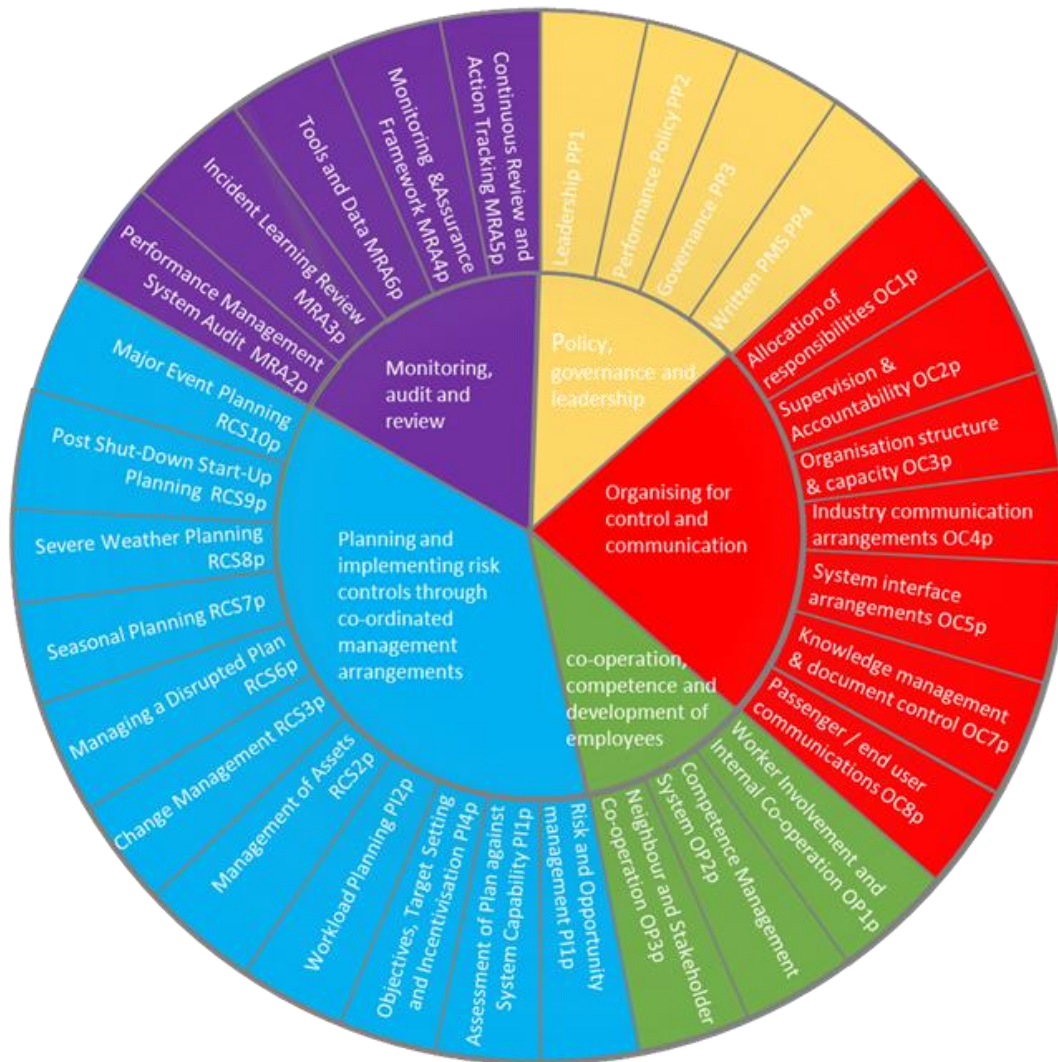
Figure 8: PMS Development – 'PM3' working draft performance model

The PMS development and implementation cannot be done as part of business as usual and we are creating a PMS project team to do this. We will continue to provide updates on all elements of PMS design, development and implementation though the NTF. Key dates, as shared at NTF in November 2018, are:

- PMS outline design by the end of February 2019;
- PMS core proposal, including the latest version of PM3, will be presented to the March NTF meeting;
- Implementation of initial elements of PMS (Policy, Governance and Leadership) by April 2019;
- fast track "Managing a Disrupted Plan" (RCS6p) in recognition of the concerns about service recovery, and drawing on RSSB best practice work;
- ongoing PMS and PM3 development including risk, opportunity and capability frameworks from Q1 2019/20 into business as usual.

4.3   PMS – Performance Management Capability

The capability of people is at the heart of successful processes. We will implement a performance management capability framework and will undertake a performance capability review across key functions and routes, including the National Performance team, and Route Performance Teams.

The Capability Framework is illustrated below.
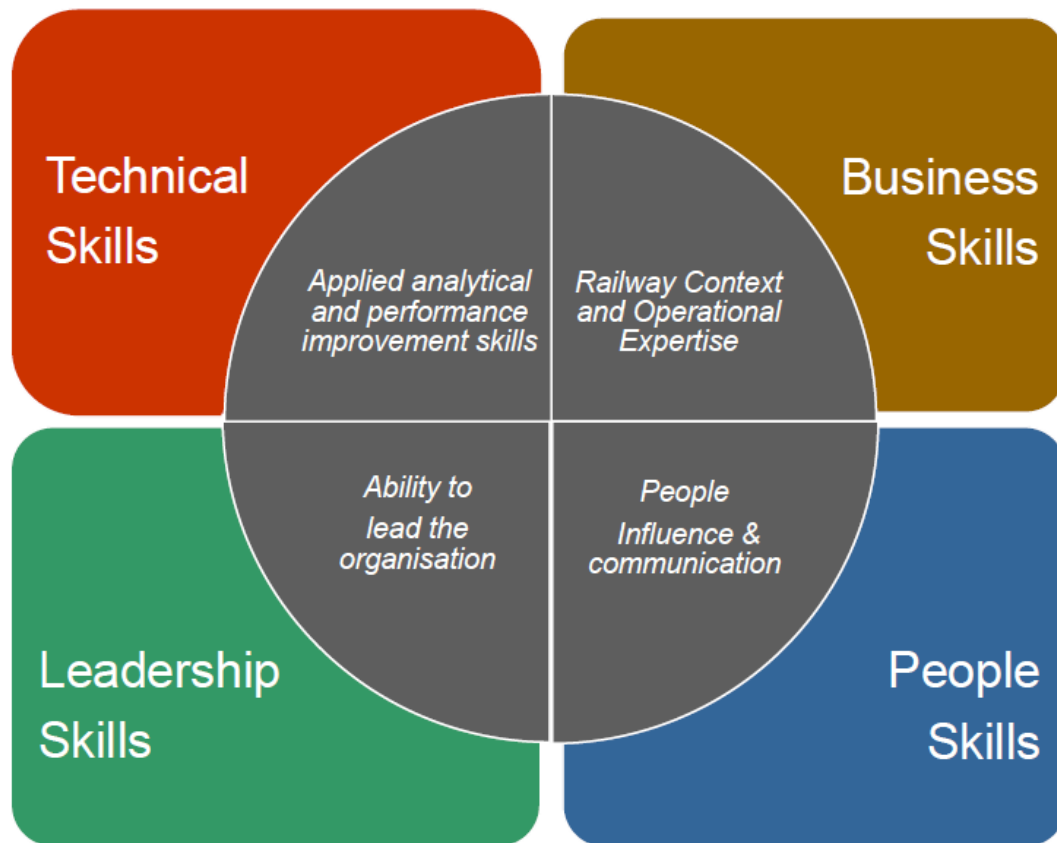
Figure 9: PMS Development – Capability Framework

Effective performance analysis and improvement requires a combination of skills and competencies. The provision of good analytical insight requires technical skills (applied analytical and performance improvement techniques) and business skills and knowledge (real operational understanding), but to drive performance improvement this insight must be combined with influence and leadership to drive change in the business.

Development and implementation of a mature capability framework will take time to embed and seeks to reverse the underdevelopment of core operational and train performance capability within NR and industry. The programme will align to our Putting Passengers First programme.

We are increasing our performance analysis capability in the short term. This involves:

- data science - two additional data scientist posts have been created to explore complex relationships between performance levers and outcomes where traditional performance analysis has been unable to deliver sufficient insight;

- sub-threshold delay and new technology: we are currently procuring expert analytical support, including tools, dedicated experts and trainers to work alongside the performance analyst community, both with the National Performance team (4 FTEs) and within each Route (1-2 FTEs), to develop deeper understanding of the causes of increased subthreshold delay and potential improvement measures, and to embed an approach as part of the analysis teams core skillset; and
- the PMS core team to develop, implement and manage business as usual 5 FTEs).

Route teams are also being supplemented. For example, in Scotland, a new Head of Performance has been appointed and the Alliance performance team resources are in the process of increasing from seven to thirteen, improving the capacity and capability to support performance improvement.

5   Industry Engagement

5.1   Introduction

It is Network Rail's role to lead performance management in the industry, and we are stepping up to do this in CP6. The overall level of punctuality is the outcome of delivery from all industry parties, so it is essential that all operators engage collaboratively with us to drive a step change in the approach to performance management and the outcomes that are delivered.

The NTF is the key industry body for performance improvement. The recent biennial review concluded that the need for cross-industry leadership on performance was stronger than ever, but that NTF had not been effective, particularly in resolving some of the blockers to improvement. One outcome is that the RDG Board meetings are being extended with a specific focus on performance, including the addition of senior ORR and DfT representatives, receiving reports from NTF and focusing on dealing with structural blockers. NTF, and its supporting practitioner groups, has a key role to play in the development of the PMS, defining good practice in each area, focusing much more on leading indicators, and ensuring that all industry players pull together.

This section sets out some of the actions already being taken by Routes and Operators to strengthen collaboration on performance. The development of the PMS will help focus all parties on a common view of what needs to be delivered, continuously, to drive good performance, and will provide the tools to monitor this and to enable mutual challenge to deliver.

5.2   Performance Strategies and Route Scorecards

The joint Performance Strategy process introduced through the Performance Planning Reform Programme (PPRP) at the start of CP5 will remain a key element of the overall system. The Steer review starkly demonstrated that the Strategies, in their current state, are not fit for purpose. This reflects a failure to deliver to the specification rather than a flawed specification. While the wider PMS is in development, the business is not waiting for new guidance, but we have reiterated the importance of the ongoing refresh of the Strategies, including a paper to the January NTF, with jointly signed Strategies to be completed before the start of CP6.

This further iteration of the Strategies is informed by the recommendations of the Steer review, which provided individual Route/TOC assessments as well as a national report. We expect the iteration to show some progress in addressing the recommendations, however, it is unrealistic to expect that all the challenges will be addressed for the start of CP6. This exercise is in parallel with the completion of the Route Scorecards for 2019/20 in which the performance targets will be a critical component. The Strategies and Scorecards will be complete by the end of March and will be shared with ORR.

Within the PMS development, we will review the assurance processes around the Strategies to ensure progressive improvements to align with the original concept, with rolling 5-year plans driving the Route and TOC actions, and a meaningful review and update process.

5.3   Joint Performance Reviews

We are in the process of setting up an initial round of joint performance improvement reviews to strengthen governance and assurance, involving NR and TOC Owning Group CEOs with Route and TOC Managing Directors. The first reviews will focus on TOCs/Routes with the lowest levels of customer satisfaction and performance and are being scheduled for March/April 2019. The Terms of Reference and approach to these reviews will be refined as the PMS develops, but will cover the Performance Strategy, supporting action plans and engagement.

In future it is intended that these sessions will increasingly focus on the use of PM3 as a maturity benchmarking tool setting out continuous improvement actions for future. The review process, including independent monitoring and analysis will be supported by the National Performance Team.

5.4   Wessex / SWR – Joint Performance Improvement Centre

A very high priority for performance improvement is SWR and Wessex Route. Since the beginning of 2016/17, PPM MAA for SWR has fallen sharply from around 90%, to 81.6% in period 10 2018/19, having been on a downward trend since 2011 despite a broadly stable timetable. Over the same period, the average delay per incident on the Route has increased by nearly 40%. In April 2018, an independent review led by Michael Holden was commissioned to examine the causes of the deterioration and make recommendations for improvement.

A new Joint Performance Improvement Centre (JPIC) was established at Waterloo in December 2018, bringing track and train teams together at the most critical location on the Route. The JPIC is focused on getting back to the basics of running a railway: starting the day on time, keeping on time and recovering from incidents quickly, while keeping passengers informed. The new centre is ensuring that lessons are learned and embedded and is providing greater accountability for all the processes in the performance system. The JPIC activity has received a very positive response from SWR and other stakeholders.

A new Service Delivery Transformation Director role has been created to lead the NR team, supported by a new Head of Performance. We have also approached Great Western Railway, Cross Country and GTR Southern to join the JPIC, with all operators expressing support.

The JPIC activity covers:

- Alliance visualisation
- areas of strategic focus
- Wessex deep dive
- tactical containment plans
- response to industry reviews

Alliance visualisation is a weekly drumbeat ensuring key measures are monitored, and emerging issues are managed across both organisations. The seven visualisation boards covered are headline summary of performance issues, fleet, fixed assets, train operations, NR operations, external factors and performance risks. Each has an executive owner and a series of KPIs and actions to contain performance issues in the short term, as we develop more leading indicators in line with the Donovan report recommendations.

*Areas of strategic focus***:** eight key areas have been agreed. Each one has an executive sponsor and involves experts from SWR and Wessex Route working together to find solutions to problems that are best solved collaboratively. Work is now underway with quick win deliverables expected in the first six to 12 weeks. The focus areas are shown below.

Start on time	1. Network Rail fixed assets, depot and fleet availability
Stay on time	2. Peak service management 3. Performance culture 4. Route performance group (focussing on station operations by line of route) 5. Shepperton services (a test bed for initiatives)
Recover well	6. Wessex Control 7. Train service recovery
Continuous improvement	8. Ability to identify and embed lessons learned

This focus will help us stabilise and contain existing and emerging issues, while helping us develop a data-led performance strategy for CP6. All initiatives undertaken in JPIC are process validated through a series of 'go-look-see' activities and data analysis.

*Wessex 'deep dive'***:** a data led analytical approach to identifying underlying causes of poor performance on the route. This is complementary to previous top down analytical work and the Holden review, bringing together analysts and operational managers to focus on a critical section of the service, the main suburban service group, and to study in-depth all aspects of performance delivery, enabling data-driven prioritisation of improvement actions.

The aims of this deep dive analysis are to:

- drive sustainable performance improvement on the Route;
- inform the development of the wider Performance Management System; and
- develop a template for further "deep dive" reviews for other parts of the network.

The initial analysis of performance data was carried out in January, from which a number of priority workstreams were established for more detailed assessment during February. The deep dive activity is planned to be completed by the end of March, with a report on the conclusions and learning to be shared with the industry.

*Tactical containment plans***:** To improve our ability to keep trains running on time through the day, we have appointed a train operations expert to work with frontline teams and undertake 'go-look-sees' across the business. The focus is on identifying and initiating actions to help signallers and train controllers keep services running to time. Actions taken can be observed in real-time and so we are able to assess their impact immediately. The train operations expert has a daily conference call with controllers and signallers to validate that the actions have been implemented correctly, and to seek opportunities for continuous improvement. Over the medium term our plan is for the train operations expert to continue to work with frontline teams to develop further actions that will help trains to stay on time, as well

as addressing the root causes of train delays. Early examples where a practical problem-solving approach has been taken to identify quick wins include:

- small delays leading to congestion at Berrylands Junction that translate into multiple late trains at Waterloo – addressed with change in regulation instructions at Woking;
- regular late running of a service with a tight turn-around at Guildford leading to multiple late trains at Waterloo - addressed with regulation instructions for Guildford; and
- revision of the contingency plan for one platform out of use at Waterloo, following experience of excess cancellations.

Response to industry reviews: The Holden review of SWR / Wessex Route performance made 28 recommendations for improvement which include short, medium and longer-term actions. Some of these recommendations relate to one party, while a number are joint. All the recommendations were accepted and have designated owners within the businesses and are tracked regularly at the JPIC. This is also the focal point for responding to the wider industry reviews, with the structure of the visualisation process reflecting the system model shown in section 3.5.

5.5   Increasing collaboration on other Routes

This section briefly summarises how each of our other Routes are engaging with operators in addressing the overall performance challenges and the specific issues from the independent reviews.

Anglia

Recognising the value of insights from recent independent reviews, Anglia Route has commissioned an independent performance review, to be undertaken by the same team that carried out the Holden Review of SWR/Wessex, during the first quarter of 2019. The remit covers:

- a review of the strategic and tactical approach to delivering operational performance on the route; and
- a review of operational deliverability of the train service.

An initial report is due in early March 2019, with the full report and recommendations due at the end of April 2019.

Following the Steer review of Performance Strategies, the Route has also co-funded and sponsored a joint review with Greater Anglia by Steer with a remit to review:

- how are we set for a proactive risk management approach to performance, and the prioritised approach taken to this;
- how we react and amend the work bank in response to customer complaints and poor service (NRPS/CEPM);
- how we dynamically allocate resources resiliently to deliver a robust train service and the extent does this enable us to react to incidents quickly to minimise reactionary delay; and

- how is accountability devolved to front line staff, do they understand the risks to performance and customers at a local level, and how they can manage it within their area of responsibility.

Anglia route has appointed a Performance Programme Director with the focus on driving accountability and delivery of actions whilst providing a robust governance and structure to sustain performance improvement in the long term.

The Performance Steering Group reviews our performance improvement plans fortnightly with executives from the Route and the TOCs. The Group reviews recent performance, identifying emerging issues and risks, and discusses performance collaboratively. All delay types are clearly assigned to accountable owners, who are responsible for generation, funding and delivery of performance improvement schemes.

Anglia is actively engaged with train operators to ensure full understanding of the plan in place to maintain and improve the reliability of existing fleets, and to facilitate the introduction of new trains. There is a joint Programme Board with Greater Anglia for the New East Anglia Trains project and Anglia is working with Greater Anglia, Arriva Trains London and MTR to facilitate testing and gauge clearing for new rolling stock.

Through the Route Scorecard engagement process, we have changed the performance metric used for two of our train operators. For ARL we have agreed to use the T-3 metric, which aligns with the performance regimes used in their concession agreement, and for MTR we have agreed to use Right Time, reflecting the future needs of the Elizabeth Line as a high frequency metro service. Following consultation, we have also agreed to include a measure for the Cross-Country franchise on our annual scorecard.

LNE & EM

LNE & EM Route is shifting the focus from risk and opportunity to assurance that robust plans are in place for each element of the performance system and on ensuring that senior managers focus on reviewing these plans rather than tactical reviews of previous incidents.

We engage collaboratively through the introduction of Joint Control Rooms (JCRs), where front-line management teams from the TOCs and NR meet every week to review current performance and progress against plans. These meetings follow a single team approach, with the chair chosen for suitability rather than employer, and a culture of constructive challenge irrespective of employer, with the focus on the progress of delivery of improvements against plan.

Whilst initially based on lagging indicators, these JCRs are changing to being focused on reviewing workstream progress and leading indicators. The JCRs will use visualisation based on the structure of the performance system model (see 3.5) for assurance of plans.

As the PM3 performance model is developed, it is expected that there will be a performance management capability workstream tracked in the JCR. LNER have carried out an assessment of their own performance management capability and are in the process of making RM3/PM3 Plus a foundation of their management capability.

We are also strengthening collaboration through:

- creation of a Joint Performance Team with EMT, with one Head of Performance, reporting to LNE's Head of Operations and EMT's Operations Director;
- appointment of a single Performance Programmes Manager to work jointly with the Route and LNER teams; and
- Right Time Railway Groups, which are now in place including at Kings Cross (jointly with LNER and GTR), Leeds (jointly with Northern, LNER and TPE), and at Leicester, St Pancras and Sheffield (with EMT) to help introduce a performance culture which embeds the need for right time departures and brings together our front-line teams: station dispatch staff, signallers, traincrew and planners.

LNW

LNW is developing a revised structured approach to performance strategy and management across the Route. We now have a detailed strategic plan owned by our wider executive team and supported by a detailed Performance Programme to make sure there are clear delivery plans with suitable leads taking full accountability for delivery. This plan will be a live document to ensure adapt as required. The programme will be reviewed and tracked via a newly introduced four-weekly senior LNW Performance Exec Meeting to ensure we are delivering our commitments.

We are taking the same approach to revising our Joint Performance Strategies with each of our lead operators, which will be signed off by the end of March. We also work closely with neighbouring routes to ensure we are involved with our non-lead operators.

In recent months we have held 'Performance Summits' with each of our lead operators. The agendas for these have differed slightly depending on priorities and issues, but they have all been well supported opportunities to work together on the identification of risks and opportunities to support overall performance improvement.

Following the very difficult periods for performance post May 2018 timetable change, we have identified Senior Points of Contacts for each operator. These key contacts are driving forward our positive working relationships to help support the ongoing development of joint improvement plans and identification of emerging risks. Maintaining great communications has been critical particularly during challenging times for performance.

We have Alliance agreements with our lead operators including a deeper Alliance with Chiltern. In recent weeks we have relaunched our previous Level One meetings with Virgin Trains as our Alliance Board to reflect the improved levels of collaboration and engagement.

In terms of sharing best practice, LNW works closely with other routes to share and learn. We see forums such as Route Performance Managers Group as vital opportunities to share learning and will continue to play an active part. We are also planning a peer review of our performance strategy and programme.

FNPO

FNPO and Caledonian Sleeper work closely on performance. The Freight Service Delivery Managers provide 'pre-flight checks' and monitoring of the services. This year we supported Caledonian Sleeper to move from below 75% right time performance to above their 80%

target. We have a session planned in March with the operator to review the performance strategy.

This has been a challenging year for Cross-Country performance, which has resulted in our delivery for them being placed on the regulatory escalator. Since being on the escalator we have worked in a more structured way with each route to establish initiatives which support a 'glidepath' to improve performance. These documents now make up a part of our quarterly meetings with each route and the operator. There are signs of improvement, with several Routes delivering to delay minute targets over the last three periods, and the PPM target being met in P11 for the first time since P6 last year. We are reviewing our performance strategy and processes with the operator.

Scotland

In December 2017, Nick Donovan was commissioned by the Scotrail Alliance to review performance and make recommendations on what needed to be done to meet the punctuality target of 92.5% PPM, at a time when it had dipped below 91%. The report was delivered in March 2018 and contained 20 recommendations, structured against a whole system approach to performance. These included short-term actions to stabilise delivery, as well as longer-term improvements.

The report recommendations were all accepted by the Alliance and plans have been developed to respond to these recommendations. Several of the plans have a number of supporting workstreams, and each has an executive sponsor and a project manager. Each recommendation has a 'team charter' setting out the problem statement, objectives, implementation milestones and success measures and progress is reviewed weekly.

In October 2018, ORR commissioned Nichols to review the implementation of the recommendations, in the context of a continuing decline in punctuality. This review also assessed progress in improving performance planning, taking account of the Steer review of performance strategies. The Nichols review, completed in December 2018, noted that the Donovan report had provided the framework for a whole system approach to performance, and that there was a *"can do, collaborative approach to performance improvement and evidence of innovation"*. They recommended improvements to the programme management structure, particularly in managing risk, and stressed the need to complete the updating of the overall Performance Strategy and to increase the focus on leading indicators.

In late 2018, following the December timetable change, ScotRail notified Transport Scotland that it had breached its franchise contract on performance. Following this notification, ScotRail was required to submit a remedial plan to Transport Scotland by 18th February, indicating what steps it was to take to bring performance of the franchise above breach levels within an appropriate timescale. Scotland Route are working closely with Alliance colleagues on this plan.

South East

The South East Route have delivered performance improvements as a result of the collaborative actions taken over the last 18 months. In the last quarter of 2018, we delivered the best ever Right Time punctuality for Southeastern and GTR since the respective franchises began.

We are continuing to work collaboratively with our train operators to demonstrate the ability to understand and target improvement in key areas causing train delay. This has resulted in the South East Route being removed from the regulatory escalator for GTR and Southeastern performance.

We have successfully implemented joint performance teams with both GTR and Southeastern, with a single dedicated Head of Performance aligned to each operator. We have a dedicated 'one performance problem, one plan' with an integrated governance structure to review and monitor performance.

- Alliance Board (GTR), Partnership Board (Southeastern) and ELL Level 1 meeting (ARL) to give executive oversight and provide a platform to enable joint decision making, escalation of issues, support, and celebration;
- Periodic Performance Boards with both GTR and Southeastern are supported at Director level. This allows us to hold each other to account using our joint performance plans, trends, and the actions driving improvements, whilst keeping a focus on any emerging areas of concern;
- Local right time performance improvement groups are attended by local operator and NR teams to focus on specific lines of route. These groups work under the direction of the Performance Boards and provide a periodic update on progress and any support required; and
- Level 1 visualisation sessions provide a weekly challenge to senior leaders on Safety, Assurance, Governance, Performance, Asset and Work Delivered by monitoring trends and weekly incidents. This is backed by a further joint visualisation session with Southeastern that provides a next level of detail and leads to targeted improvement actions.

Wales

The Wales Route has engaged early with its new customer Transport for Wales (TfW) on the development of both a performance strategy and a new way of working. The joint team has agreed a number of areas of mutual interest that will help deliver a better service to passengers through a Joint Partnership Framework Agreement. These include areas that will provide direct benefits to train performance and passengers such as: a programme to introduce new rolling stock, improvements in train crew/operational resource including joint response to incidents, technological improvements including GPS installation and Traffic Management extension on top of the initial NR investment.

We have identified project leads for workstreams including an Incident Officer dedicated to trespass and vandalism, in conjunction with the embedded BTP Officer in our Route Control, and a separate Incident Officer who has led on Right Time initiatives in conjunction with TfW. We are now looking to tailor our organisation to best reflect accountability for leading initiatives that will have the biggest positive impact to our performance.

The Framework Agreement is being intrinsically designed into the joint performance strategy, with workstreams that will be governed through the route's established Operations Governance Board and Route Supervisory Board, attended by all Operators, TfW Authority and Transport Focus.

Western

A Joint Operating Strategy with GWR, which has agreed strategies, goals and targets was introduced in Summer 2018, and is reviewed regularly by the Route's Chief Operating Officer and GWR's Operations Director. The Joint Operating Strategy is being shared with staff at all levels in Network Rail by the Chief Operating Officer to develop a wider understanding and support for the strategy.

A GWR Performance Director was appointed in November 2018 and a Network Rail Programme Director was appointed in December 2018. The two work together, putting aside the schedule 8 regime and the tensions it can bring, to focus solely on improving the delivery of the train service, through enhanced governance, tracking of joint performance schemes and a strong performance focus to support staff in both companies.

A performance campaign plan has been established and is in the process of being finalised, with detailed supporting performance plans and KPIs. We are establishing a joint GWR/NR operations visualisation room in Swindon, bringing our joint team together to review the delivery of the performance plans and KPIs and discuss real time performance issues without disturbing front line staff.

Since Christmas 2018, GWR has provided a member of staff to work in the Wessex Integrated Control Centre. This will help address the operation of GWR's North Downs and Cardiff-Portsmouth services, which ran poorly in 2018 for a variety of reasons.

We meet with MTR Crossrail every week at Thames Valley Signalling Centre to review live issues and the interventions necessary to uphold good train performance. This initiative began six months ago and is in addition to more routine meetings with their leadership team. This drives an absolute focus on running the daily train plan.

5.6   Performance innovation fund

As part of the Final Determination for CP6, a Performance Innovation Fund was established with £40m being made available. This presents an opportunity for Route and TOC teams to take forward ideas emerging from a more collaborative focus on driving operational improvement and secure funding.

Initial proposals for using the fund to enable performance improvement have been shared with NTF:

- funding available for NR, FOC and TOC schemes which demonstrate a performance benefit, but must be incremental to funded commitments (franchise or FD);
- oversight of the fund will be a multi-disciplinary industry panel reporting to NTF;
- schemes with industry benefit will be prioritised; and
- delivery of schemes and benefit realisation will be tracked and reported.

6   Performance improvement across the system

6.1   Overview

Delivering sustainable performance improvement in CP6 will require improvements in all aspects of the performance system. This includes identification of quick wins for immediate implementation and more fundamental longer-term changes that will only deliver benefits later in the control period.

The following sections outline some of the key areas where local activity driven by Route and TOC collaboration will be supported by more strategic national programmes. This is not intended to be a comprehensive list of all the performance improvement initiatives that will be owned at local level. But it does demonstrate the broad range of activity required to deliver sustainable improvements across the whole performance system and the time that this will take. This is not a short-term action plan with a defined end-date, but a journey of continuous improvement over CP6 and beyond.

Service recovery is addressed in Section 7, reflecting the specific focus in ORR's Provisional Order.

6.2   Organisational change for performance improvement

A number of organisational changes are being made as part of the Putting Passengers First programme, the outcome of the 100-day review. These will improve our capability to deliver the plans outlined in this report to improve performance. We recognise the risks that change brings and have worked hard in the consultation and design to mitigate these. The building blocks of the new structure are designed to allow monitoring of the Strategic Business Plan and Final Determination. The cultural elements of change are the most difficult and this is a key task for our Transition Director and team.

Our current operating model will not be able to support the turnaround we need to make in order to deliver the requirements of funders and the expectations of our customers in CP6.

Transferring power from the centre

We will form 13 Routes and five lean Regions and transfer accountability for decision making to them. This will move us from an organisation 'controlled' from the Centre, to an organisation that is managed through regional businesses. This will provide the regions with resources and capabilities required to better serve customers' needs.

At the heart of the operating model will be the creation of stronger operating business units. These will take the form of Alliances and Partnerships with the Routes and Regions and will be aligned to train operators, shifting the delivery of day to day commitments to the local level. This will enable the progressive integration of track and train, by aligning the operating business units with train operators to create emerging alliances and partnerships. The role of the regions is to enable the routes to deliver, supporting them and then holding them to account for delivery. The new operating model will enable us to meet the challenges ahead, starting with the recovery of train performance.

This focus on the operational business areas will allow us to improve train performance by better planning, better understanding of performance and improved operational capability to

respond to incidents. Key to this is the focus on maintenance and engineering that deliver assets for the system to operate. We will strengthen the engineering capability in the regions, so they can provide professional, senior level input into the Technical Authority and take accountability for devolved technical authority.

At the same time, we will build the operational capability that has diminished in the organisation over the past seven years. We will create a career path for this fundamental capability and reenergise and motivate the workforce on the frontline by moving the administrative burden and supporting them with HR, competency training and people management.

Technical Authority

In this new model, the role of Engineering will also be strengthened in the Regions. It will be led by a regional Engineering (and Asset Management) Director, who will provide professional, senior level challenge and support to the Technical Authority and deliver relevant assurance. The new model will strengthen regional safety and engineering capability to empower local decision making, agile development of good practice and innovation and act as an intelligent client for the delivery of services.

To enable the new model to operate effectively, we will create a governance framework that allows the Technical Authority and the Regions' safety and engineering experts to work together better in accordance with the safety management system.

System Operator

The System Operator will remain as the strong conscience of the system. It retains portfolio management for England and Wales and will provide expert advice to the Regions, including franchising. It will be accountable for providing strategic advice and choices to multiple funders on future outputs as well as coordinating long term strategies and plans across the industry and with funders.

The Regions will now lead on providing local knowledge, requirements and asset knowledge. They will become accountable for the franchise specification relevant to their region, the development and delivery of enhancements (aligned to devolving the IP function) and collaborating with train operator customers on timetable bids.

We are currently conducting timetable pilots across the network, piloting train planning systems into train operators and reviewing the timetabling process and the Network Code.

A new devolved operating model

The aspiration is for 13 strong operating Routes, supported by lean regionally-led businesses, that are further supported by a network framework with network-wide oversight. Routes and Regions will have the freedom to operate their businesses in line with customer requirements. We will maintain a small network function in the centre that will provide:

- Network Oversight: **p**rotecting our interests by setting appropriate policies in line with statutory, legal, regulatory and licence obligations and provides assurance that we are operating within these policies. Network Oversight includes responsibility for establishing our overall strategic direction, purpose and vision.

- Network integrity – providing industry leadership to co-ordinate network planning and timetable development.
- Technical Authority - setting high criticality technical policies and standards and providing assurance to Network Oversight.

For the new operating model to work effectively, we will develop an assurance framework that supports the new model.

New ways of working

As part of the transformation, we will be moving to new ways of working. This will see a shift to managing the business through leading indicators, allowing us to predict the future rather than react to the past. For example, the scorecard will be driven by leading indicators such as RM3 and PM3, instead of lagging indicators such as past train performance results. The scorecard will also move to one that is truly balanced and puts customer satisfaction at its heart.

Service Excellence

We know that a change in the operating model will not by itself deliver the transformation we need. We must also change our culture. The Putting Passengers First programme will enable us to move activity and resources to the right place to deliver the right outcome for passengers, customers, the public, taxpayers and stakeholders. We will therefore embark on a customer service programme aligned to the transformation programme.

Change is needed now

We are committed to reversing the decline in train punctuality that passengers have experienced and are committed to bringing the railway closer to the passengers, customers and stakeholders we serve. We believe deeper devolution is the right model to achieve this. We must take this opportunity and implement the change with pace to enable:

- improved train performance by bringing Network Rail closer to the operating business;
- improved capital delivery and reputation by shifting accountability to the Regions;
- clear accountabilities and roles;
- clear interfaces between the Group and the regional businesses;
- ability to predict the future not just react to the past; and
- better decision making based on the operational railway.

6.3   Industry alignment on specification and franchising

It is critical that decisions around service specification and network enhancement properly address the trade-off between capacity and performance. The current industry structure and processes have resulted in a number of challenges for performance delivery:

- the franchising process incentivises bidders to increase capacity and generate revenue growth, rather than delivering a specified level of performance;
- the process also encourages costs savings by minimising rolling stock units and crew diagrams to produce operating plans that are "efficient", but do not have sufficient cover for services to be resilient to perturbation;

- contracted increases in services have been agreed on a bilateral basis with a set of assumptions about other operators that can be different by the time the new services come into operation;
- infrastructure projects are focused on providing increased capacity but do not always take proper account of operability and likely overall performance; and
- performance targets set in franchises and through the regulatory review process have not always been aligned.

New arrangements between NR and the DfT Rail Passenger Services team were agreed in 2017 to improve collaboration on franchise competitions. The purpose of the new arrangements is to support DfT with advice and assessments on the deliverability of franchise specifications. This involves much closer working including the co-location of a member of NR staff in each DfT competition team. These arrangements have been in place for the South Eastern, West Coast and East Midlands competitions, as well as for the Cross Country and Great Western direct awards. There are already benefits in terms of the way NR provides timely advice to DfT about the deliverability of specifications, and this should result in tangible benefits for passengers when those competitions are awarded and subsequently mobilised.

However, there are a significant number of contracted increases in train service requirements in competitively bid Franchise Agreements or direct awards since 2014 that have not yet been fully enacted. These include Thameslink at 24 tph (originally due December 2018), Northern and TPE more timetables and new trains, SWR increasing services into Waterloo with a major fleet replacement, GA having a complete fleet replacement, WMT with more services and new trains. In addition, GWR and LNER are introducing new trains based on route upgrades, electrification and the new IEPs. Crossrail provides more services on key radial routes to the east and west of London taking advantage of the removal of terminal constraints.

Uncertainty around key infrastructure upgrades will continue to place pressure on these capacity increases. For example, Leeds and Kings Cross works are now scheduled as the new capacity is being introduced, and the TfL-funded works at Liverpool St and Crossrail itself are causing a concertina of new trains new services and infrastructure upgrade works. These issues are being worked through the Industry PMO on timetable assurance, the relevant routes and TOCs, and will feature more prominently in the timetable processes in the network code and its associated sale of access rights panel.

6.4   Managing timetable change

Effective management of changes to the timetable is another key aspect of good performance management. The reviews into the May 2018 timetable change that caused catastrophic service failures in GTR and Northern exposed weaknesses in the whole industry approach to major timetable change, and the risks with the interdependency between infrastructure, rolling stock and resourcing especially drivers.

There is separate monitoring of the outcomes and recommendations of the ORR Inquiry between ORR and Network Rail and it is not the remit of this report to comment on these.

In the immediate aftermath of the May 2018 timetable issues, we established a Project Management Office to assess industry readiness for timetable change, with a cross industry advisory Steering Group. Its aim was to ensure that there was no repeat of the issues experienced in May and to develop clear visibility and consistency for planned timetable

changes from December 2018. The assessment of readiness for December 2018 led to industry agreement to defer a number of major changes that were planned then to allow time to restore industry planning timescales and confidence in timetable changes. This meant the deferral of contracted service changes for some operators which will be delivered in the future.

The PMO approach has brought together Operators, Routes, Train Planning (SO) and Investment Projects to assess in a systematic way the risks of upcoming timetable change. These reviews are undertaken on a TOC by TOC basis and at the time of writing, the second wave of meetings, focusing on immediate risks for May 2019 and December 2019 are in process. Supporting this process is a risk matrix based on TOC and Route questionnaires, and risk assessments, and independent consultant reviews are produced for each meeting outlining key risks and issues with the process.

As the process matures, the PMO is beginning to take a wider view of performance risk and the trade-offs necessary between capacity and performance and to explicitly consider the likely performance impacts of proposed timetable changes. For May 2019 our National Performance Analysis Team has produced an assessment of the possible performance risks and benefits.

As noted earlier, there are significant increases in timetabled services and new trains planned for at least the next three years and possibly longer with three franchise competitions still to be concluded (South Eastern, East Midlands and West Coast).

The PMO approach is beginning to manage system performance risk and is now operating between D55 and D40 in the Timetable Process as this stabilises post May 2018. The next steps will be to bring forward the scoping of future timetable changes to pre D55. The organisational changes agreed by the NR Board will enable the Routes to have a greater engagement in this pre D40 process, giving them accountability for working with their TOCs to better understand their aspirations earlier, and for assessing the Route impact of all TOCs and for signing off the performance outcomes of the final timetable.

> *Wales: As part of our early engagement with TfW, we have challenged the traditional (very transactional approach to developing and accepting timetables). For December 19, we have dedicated route resource to manage the risks and opportunities that come with the Dec 19 change, along with vehicle introduction/cascade. In addition, the route and TfW have engaged with front line teams (signallers, traincrew etc) on ideas to improve timetable resilience – correcting some of the historical pinch points in the timetable. The TfW Dec 19 bid (to be received shortly) will incorporate some of this feedback into the working timetable proposed for validation.*

6.5 Timetable planning

It is critical for performance to start with a timetable that can be delivered, reflecting the capability of the infrastructure, trains, people and processes required. Timetable planning is at the heart of meeting the needs of funders and the expectations of customers. It determines the potential capability of the network and the quantum services and capacity provided. It also determines the likely levels of robustness in the timetable and is a key factor in train performance. It also allows the trade-offs, implicitly or explicitly, between capacity and robustness to take place.

This is also a highly collaborative area with requests and ultimately bids from train operators being matched with the needs of other operators, the outputs from infrastructure and train investment schemes as well as meeting the needs of stakeholders and other funders. Technology and competence are critical, and these matters are dealt with in the "Recovery of timetabling conditions in Network Rail's network licence" and in the plans that NR set out to ORR on the 17th September and its ongoing monitoring.

Investment in CP6 will ensure that the Train Planning System improvements are delivered and that the data improvements programme and better access planning are delivered, alongside the quantum and competence of the train planners themselves.

To ensure that a timetable is deliverable the Timetabling Planning Rules must be robust and reflect the current infrastructure capability and the operational performance of trains on the Network. There was a plan to improve these in CP5 under the TRIP programme. The programme had some significant successes, but in some cases exposed that "accurate" TPRs would compromise the capacity outputs of the network. An example is shown below.

TRIP - Coventry Corridor

In late 2016 and early 2017 the Timetable Rules Improvement Programme (TRIP) undertook an extensive analysis of the Timetable Planning Rules (TPRs) and Sectional Running Times (SRTs) in the West Midlands area. Following consultation, a list of TPR and SRT changes for December 2017 timetable were proposed.

A detailed study to assess the impact of those proposals on the December 2016 Working Timetable established that it was not possible to produce a timetable that was compliant with the evidenced headway while maintaining the existing level of service. After further engagement with affected operators and route, it was agreed not to make the change – accepting that there was a performance impact but making an industry decision to prioritise capacity.

The introduction of the new fleets of trains in CP6 offers an opportunity to update the TPRs and especially the SRTs to match the new trains. This data needs to be provided by operators well in advance of the train's introduction. With a greater focus on on-time and greater capacity use, being able to describe the network outputs accurately becomes ever more important.

The timetable planning rules are not configured to guarantee performance levels, especially with regard to reactionary delays or delays per incident. As parts of the network get closer to the maximum number of trains, the only recourse is to decline bids for trains or declare parts of the network as "congested infrastructure" and then not allow more trains.

We will consider whether this could be dealt with more efficiently by having TPRs that only permit up to 80% of the available capacity to be timetabled, and beyond this "special measures" would have to be put in place. This approach has the potential to give a structured and fair approach in capacity allocation when growth is nearing the maximum available capacity.

We will propose train planning rules should be developed to protect performance levels particularly at hotspot locations with increasing levels of reactionary delay. Systems development will allow greater automation of determining inadequate TPRs and as we move to more intelligent TPRs, we will ensure that changes focus on those that matter most.

The trade off with such reviews is always that alterations to rules to protect performance will often have a direct impact on TOC resource efficiency or service frequency that can be achieved or both.

The evolution taking place in organisational changes in routes will see the Routes take a leading role in the early planning and Event Steering Groups (ESGs), placing the accountability for agreeing the planned service specification change and the ultimate service delivery of that specification change in one place.

The development of the Train Planning System planned for CP6 will also focus on reducing the known number of TPR violations, whilst undertaking the planning process, rather than doing this later in a different system. With Traffic Management simulation it will be possible during CP6 to run scenarios of the timetable before implementation either to mitigate risk or help construct improved contingency plans

New data analytical tools will be developed during CP6 to enable issues with the train plan to be seen more clearly. A key focus is integration between train-based GPS and the current performance system to give greater accuracy and permit a dynamic approach to timetabling.

Alongside our response to ORR on "recovery of timetabling conditions" this technology shift will help make the most of scarce capacity. However, we need to be realistic that train performance may not improve as quickly as required if increasing parts of the network become more congested, creating more risk on reactionary delay, service recovery and delays per incident.

6.6   Developing operational capability

A programme has been established under the sponsorship of Mark Langman, Western RMD, with a remit to *"Restore operations and expert operational management as the core activity of Network Rail and build capability to lead across the industry".* It will build the knowledge, technical and leadership skills, and behaviours of those with railway operations accountabilities so that we produce highly qualified rail operators who are able to think critically about the issues involved in improving railway performance but also understand the railway as an integrated operational system.

Four working groups will be in place by the end of March 2019 that will address specific areas of people capability around: incident management, stations management, operations management, and people development (e.g. leadership programmes, apprentices and graduates). Our plans are ambitious, and range from quick wins, e.g. advancing station management and customer service training to a professional level including addressing station security, crowd safety etc., through to the introduction of new technologies for incident management (including experiential scenario-based development) and extending the level two infrastructure operator apprenticeship to other roles, e.g. Controllers and Mobile Operations Managers.

Specific activity is already underway including training of Rail Incident Commanders and Controllers in the South East, working alongside the BT Police in their Hydra training suite. The teams go through rail-related incident scenarios, understanding the railway as a system and the respective roles and accountabilities within the command structure, appreciating the

importance of decision making and how decisions cascade through the system, effective communications, consequence management etc.

We have also begun work across the business to create learning pathways for key operations roles on the frontline and in stations, and will seek to professionalise operations by offering development through the Institute of Railway Operator's range of programmes, up to Masters level.

We recognise the important role we can play in leading the industry, and will use our work around people capability to help shape an industry-wide leadership programme. The programme will address the need for greater understanding of the railway as a system, providing appropriate levels of coaching and mentoring for newly appointed leaders, and creating opportunities for cross-industry collaboration and the 'baking in' of the right skills, knowledge and behaviours within the sector. A significant part of our work will involve Investing in capital equipment, training technology and facilities; growing the capability of operations for the industry. The roadmap for phase 1 of the programme is illustrated below.

Developing people capability for rail operations – Phase 1 roadmap
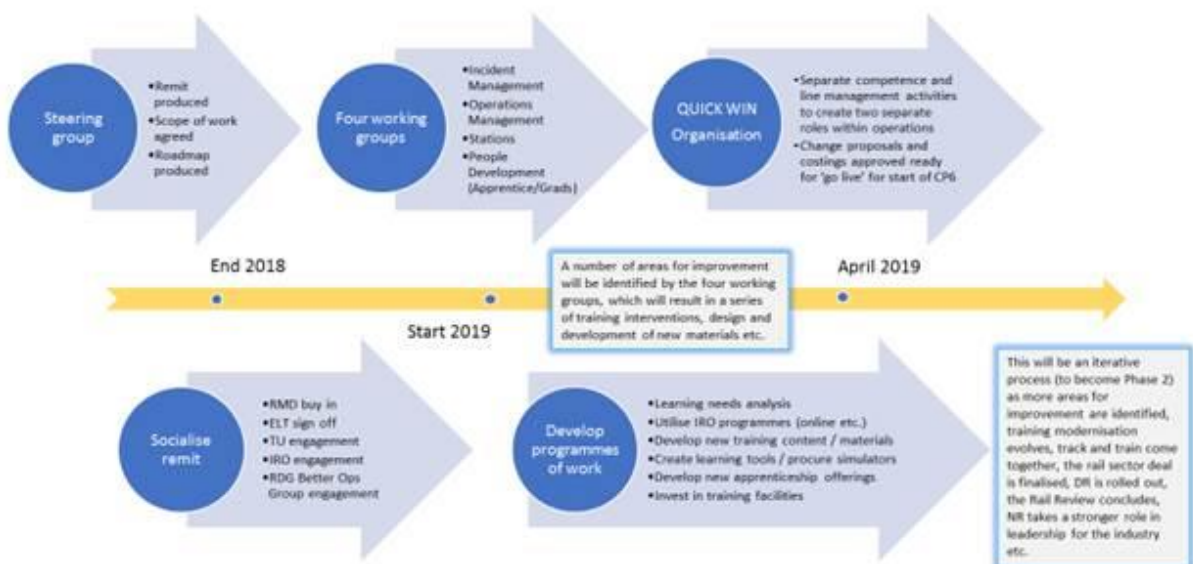
6.7 Creating the performance culture

Clear industry leadership on driving performance improvement is a critical enabler, but it is also essential to develop a performance-focused culture in which everyone cares about running every train on time, and everyone understands the part that they can play in achieving this. The Performance Management System will help to drive this behaviour, particularly with the development of meaningful leading indicators throughout the businesses, along with other initiatives.

The increasing use of the new performance metrics developed for CP6 will help to develop the culture. The greater focus on 'on time everywhere', rather than on PPM at destination, is starting to stimulate different behaviours, encouraging people to notice and think about how to tackle the causes of regular small delays at stations, depots or on sections of route.

The NTF has agreed to develop a national campaign approach to support performance improvement, focusing on critical areas of operational delivery with relevant measures and sharing 'golden rules' and good practice. The first agreed focus area, ahead of more formalised campaigns, is on right time starts at origin, which is now being reported at NTF each period. Members have been asked to report actions being taken to improve this at the February meeting with a view to sharing good practice. Analysis of the worst performing trains in the timetable has also commenced, with the aim of understanding the causes and making improvements, before moving on to the next worst.

This development of a national campaign will supplement a range of local campaign activities, examples of which include;

- Anglia – launched "Every Second Counts" in January, a performance improvement communications campaign focusing on eight areas where improvement is required and inviting suggestions from across the business to deliver improvements. The campaign includes £10m funding to take forward delivery of good ideas. The key themes are to celebrate success and to keep everyone focused and informed on train performance and route priorities.

- Scotland: since November 2018 a regular "Every Second Counts" performance bulletin has been issued to all employees in the ScotRail alliance, TOC and NR, including encouragement to make suggestions for performance improvement. A survey was also sent out to all staff members to identify regular drivers of performance loss. These suggestions are supplemented by an initial £250k fund to support the implementation of small performance improvements. This performance improvement cycle is closed by communications informing staff of where they have made a difference in Alliance-wide communications. This empowers staff to make a difference and bring ownership of performance to all within the ScotRail alliance.

- LNE & EM: Perfect Performance Weeks, where each NR and TOC team jointly monitor all the detailed elements of delivery for a week to identify where marginal gains can be achieved. These campaigns have been run successfully with EMT and LNER and are providing sustained improvements.

- LNE & EM: jointly agreed LNER "focus trains" - trains that regularly miss right time departures and arrivals and then export/import reactionary delay to other services, so causing a disproportionate amount of overall PPM loss, are monitored each day by Controls and crucially by signalling centres and stations. Progress is regularly reviewed issued throughout the day so immediate actions can be taken.

- LNE & EM: the introduction of a set of joint "Golden Rules" to be achieved each day as the basis of supporting the base plan – as shown in the figure below;

Performance Golden Rules	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	RAG	Reasons for failure
NetworkRail LNER							WEEK COMMENCING		06/01/2019
Always have a hot standby train available at start of service				1	1	1			1. Class 91 shortage
No train to enter service from a depot that is not capable of maintaining the timetable						1			1. 91111 on 3 traction motors
Resource to plan for all crew and resources including cover for expected levels of absence					1	1			1. Leeds Standby Train Manager turn uncovered
Has EWAT threshold been breached, and if so, has EWAT process been enacted?									
No reasonable advance access request to be rejected									
No LNER timetable schedule error									
No fault shifts uncovered from NR response availability, LNER Thunderbird and fitter resource									
Ensure that all fixed assets are available for the train plan and contingency working				1	1	1	1		1. See Weekly Infrastructure update
No TSR to be handed back below <80MPH									
No LNER served platforms out of use									
No fault affecting performance from day 1 allowed to continue into day 2				1	1,2	1	1		1. Cracked crossing Thirsk - replacement due 13/1/19 2. 50mph ESR due to hole in ballast at Bullpit Lane
No planned TSR's to exceed box times									

- **South East:** working jointly with Southeastern to deliver a number of successful performance focus weeks, including our 'Perfect PM' peak campaign. Each week involves leadership 'go look see' visits to help understand issues affecting front-line delivery teams and take action to resolve. For example, we received feedback at Gravesend on the delay caused to services from Victoria. We saw this as an opportunity to share the hard work done locally, which included the introduction of a new permanent member of platform staff per shift, which improved right time arrival at Gravesend.

- **Western:** continued focus on GWR train service groups with joint teams championing controlled infrastructure or TOC changes to groups of interlinked trains which are evidenced to be poorly performing. This started in 2018 and will be embedded in plans for 2019 and beyond.

6.8   Improving operational analysis

A notable feature of overall performance is the level of sub-threshold delay, delays of less than three minutes which are not attributed through the delay attribution process. As the network has become busier (trains and people) the relative significance of these small delays has been magnified; at network level the proportion of total delay minutes that are sub-threshold is around 35%, and on South East Route it is around 45%.

As an industry, significant effort has always been devoted to large incidents, covering attribution, understanding of root causes, learning lessons and developing future mitigations. However, not enough has been done to understand the reasons for, and impact of, the small delays that can rapidly accumulate on a busy network.

The increase in sub-threshold aligns with the increase in "system" or "specification" delay shown in the PPM attrition tool (see figure 4 earlier). This identifies the level of performance loss experienced on the best 5% of days, when there are no significant delay causing incidents

and punctuality drops when "nothing happened". For some operators this "system" loss is as high as 9% PPM loss.

During the last year, new analytical tools have been developed that are enabling a much greater focus on understanding sub-threshold delay. The Quartz and Cosmo tools developed for South East Route allow a detailed focus on sectional running times and station dwell times, comparing plan and actuals to identify key locations where these key timetabling parameters are consistently not being met.   The reasons for these small but potentially significant discrepancies can then be assessed with a view to finding operational mitigations to make them work, or changing the timetable planning rules for future iterations of the timetable.

- Quartz is a station dashboard that utilises to-the-second train movement data to present the performance of individual stations in detail, enabling performance teams and station managers to identify problem platforms and/or times of day and generate a variety of improvement plans. The success of these plans can also then be monitored using Quartz. The tool allows for better long-term strategic decision making and day to day support of operational excellence.

- Cosmo is a runtimes dashboard that gives information on how effectively trains meet their scheduled times in the timetable. This allows us to focus on areas where times are regularly missed to enable us to attempt to fix the base plan to make it more robust. It can also help us to understand the exact impact that temporary speed restrictions (TSRs) are causing to each train and will help us to plan better to reduce the impact of upcoming TSRs.

The use of these tools has already informed a number of interventions in South East Route, including additional staffing and better operational and dispatch plans at East Croydon, London Bridge and Clapham Junction. A further 20 key stations have been identified for a focus on dwell time improvements this year.

Following successful implementation in South East Route, the new tools are being progressively rolled out across all our Routes, and the learning on how to use them effectively and the mitigation actions that are effective are being shared. For example, LNE & EM are now analysing commuter services into London, and in and around Leeds, where most time loss appears to occur. The analysis will drive 'go-look-see' process at the identified locations to understand what physical issues are causing the time loss and address these through our Right Time Railway Groups.

While this is intended to improve our operational understanding of performance and facilitate a fast feedback loop on where issues are occurring, this approach will be supported by a new data warehouse of historic train running data. The Industry Train Event Database (ITED) is planned to go live in Summer 2019 and will provide data to facilitate more granular analysis of performance, including sub-threshold delay. The system is being developed as a data warehouse of performance data to which other data sources can be added over time and will allow GPS data to be reported alongside detailed, to the second, timings of berth level movements. The system is being designed to allow data to be shared across the industry alongside modern reporting and visualisation tools.

ITED will bring several data sources together for the first time, including PSS data on incidents and delays, planned and actual train consist information, planned and actual crew information,

the timetable (base and VSTP), on-train GPS data, planned sectional running times, TSRs and TRUST movement data. A new suite of analysis tools and methodologies will be developed alongside this new system to provide insights which are not consistently available today.

Other detailed operational analysis

A continuous focus on detailed operational analysis is key to identifying causes of poor performance and finding solutions. The Wessex Route analyses described in Section 5.3 are one example of this, and others are noted below. The "go-look-see" leadership activity advocated earlier is the catalyst for some of this analysis.

> *South East: have commissioned further detailed analysis:*
> *- a deep dive on the 0-8 mile area from London to further understand sub-threshold delay, as well as analysing junction margins to identify areas that need more refinement in the way we set up the timetable; and*
> *- a detailed study of train movements between London Bridge and Hither Green with a particular focus on the four parallel moves an hour across North Kent East Junction.*

> *LNW: Our Head of Operations undertakes regular line of route signal box visits, to speak to front line staff and gather their ideas and input. This recently resulted in a signaller from Stockport spending time with Train Planning colleagues to review the busy section between Slade Lane and Manchester. The visits have also led to the recent establishment of a Better Operations Working Group, an internal group of front-line experts looking at how to tackle wrong routings and signaller irregularities, and the implementation of improvements to platform management and dispatch on the congested platforms 13 & 14 at Manchester Piccadilly.*

> *Western: With Freightliner Heavy Haul we have been working since the Autumn 2018 award of the Mendip Rail haulage contract for the aggregates business (36 freight trains a day through the busy Thames Valley Corridor). The work is focused on right time starts from the Somerset quarries and involves Freightliner; Network Rail and the Somerset Quarry Operators (Hanson and Aggregate Industries) with regular meetings and follow up of actions to attain right time starts from the quarries. The focus is on an absolute right time operation by the time a full Crossrail timetable and enhanced GWR timetable is in operation, December 2019.*

6.9   Improving asset reliability

This report does not focus on the asset reliability influence on performance in detail, as this was not identified as a key concern in the Provisional Order. However, improving asset reliability and driving down service affecting failures obviously remains a critical element of all the Route plans, not least because the factors driving increased reactionary delay have led to an increase in the impact of any given number of asset incidents.

Some of the key themes for asset reliability improvement are noted briefly here:

- Overall M&R funding: the CP6 determination provides for an increase in the funding for infrastructure assets, reflecting the under-delivery of planned renewals in CP5. This

will enable overall asset condition and sustainability to be improved, and will be accurately targeted to deliver the best long-term benefit for performance.

- TSRs: the increase in TSRs during CP5 was identified as a key performance concern and a national programme put in place to develop plans and processes for a sustainable reduction. The extreme hot weather last summer reversed the improving trend and TSRs were a significant factor in the overall decline in performance. Tackling this increase is a high priority for our Routes and some good progress has been made in reducing the number again with a significant performance impact. The TSR programme continues to focus on further improvements to engineering decision support tools to enable proactive intervention to avoid TSRs, and improving analysis of the time loss caused by individual TSRs so that removal can be prioritised on performance impact.

- Intelligent infrastructure: during CP5 a substantial volume of equipment was fitted to many key assets, but the measurement does not of itself drive improved reliability. The next phase of the intelligent infrastructure programme is to progressively improve the analytics to support a predict and prevent approach wherever possible, identifying rates of degradation and the appropriate points for planned intervention before problems arise, rather than reacting to alerts or asset failures. We are also increasing collaboration with operators to capture useful asset information from equipment fitted to service trains.

- Engineering access: the adequacy of time available for maintenance has been raised as an issue for both infrastructure and fleet assets. During CP5 there was cross industry work under the Industry Access Programme to develop processes and tools to support collaboration on optimising access for overall industry benefit. The application of these processes has been fairly limited to date, though there have been successful applications of extended mid-week night maintenance (through the replacement of late services) and collaboration with TOCs to enable better access to tackle asset reliability has been a factor in the recent performance improvement in South East route. More extensive application of the IAP concepts will be necessary to maintain asset reliability with increasing network utilisation.

6.10 Tackling externals causes of delay

National industry programmes have already been established to tackle suicide and trespass to reduce incidents, with a focus on trying to reduce the number of incidents and the associated harm and distress to all involved. As this work continues there will be a stronger industry focus on minimising the performance impact of trespass and suicide, rather than the number of incidents, concentrating more effort on critical locations and improving the response processes when incidents do occur to restore services as quickly as possible.

The National Suicide Prevention programme continues to work with the Samaritans and Local Authorities, in tackling prevention and targeting high risk locations. The "Small talk saves lives" campaign has already produced a significant increase in life-saving interventions by members of the public and will continue to reach more people. LNE & EM Route and East Midlands Trains have lobbied the Derbyshire Health Authority to collaborate on reducing railway suicides at key locations. This is a test case for wider engagement with Local Authorities to tackle local issues and is supported by the British Transport Police.

The cross-industry Trespass Improvement Programme (TIP) was established in January 2018 to tackle the continuing worsening trend. The programme is providing a framework of assistance, tools, techniques and expertise so that trespass can be tackled more effectively at a local level. The programme includes "You vs Train", the national public behavioural campaign to raise awareness of the dangers of trespass. The campaign's video was viewed over 2.3 million times last year across traditional and new social media, and there were local campaigns targeted at trespass hotspots. This campaign will continue alongside more co-ordination of visits to schools and clubs and partnerships with other organisations to get the message to many more young people.

Other areas of activity include trials of new technology, including CCTV and drones, to support prevention, and development of a tool kit and training to help front line staff implement trespass prevention measures. More physical prevention measures will also be implemented, for example:

- the introduction of motion sensitive cameras at Raynes Park station on Wessex Route that, once activated by activity on the end of platforms, triggers a localised tannoy announcement challenging those in that area;

- lineside fencing: LNE & EM Route are delivering over 70km of fencing along key sections of route as part of the Thameslink resilience programme;

- fitment of platform-end gates: South East Route will complete fitment at selected high-risk locations in March 2019; and

- physical deterrents have been fitted to Stockport viaduct on LNE & EM Route to prevent people climbing on to the parapet.

Operation Peel, a joint initiative between Network Rail and BTP has been launched to enhance front-line capacity and capability to respond to Route crime-related disruption and safety issues and to complement the existing suicide and trespass programmes. It involves introducing Enhanced Police Service Agreements (EPSAs) for additional Police Officers on Routes to form tasking teams, in conjunction with existing NR, BTP and TOC security resources, which will be dedicated to Route crime related disruption, including fatalities and trespass. These teams will provide the additional capability to use the data and guidelines available to help prevent incidents from occurring and to reduce the impact when they do. This will build on the progress made in CP5 with BTP Inspectors embedded in our Routes, co-ordinating industry resources to tackle Route crime.

To date, business cases for Operation Peel tasking team models have been approved on LNE/EM and South East Routes, with other Routes currently in the process of reviewing and developing their options. In the South East this additional resource will build on what has already been achieved with suicide and trespass prevention teams, jointly funded with GTR and Southeastern, at 14 'high performance impact' locations across the route resulting in a significant reduction of incidents and a high number of proactive interventions.

The national programmes will ensure that learning from all these activities is shared across the industry and encourage the adoption of demonstrated good practice.

7 Service recovery

7.1 Overview

To run a railway well we need to have a good plan, to deliver on time as much as possible, to fix things quickly when they go wrong, to manage the services around failures effectively, and to restore normal working as quickly as possible.

Minimising the impact of incidents and recovering service effectively requires attention to many factors including:

- effective reporting of faults
- time to site: location of fault teams, transport
- time to fix: training and competence, availability of tools and spares
- incident control management structure with clarity of accountability
- effective procedures for managing degraded operations, and competent operators able to implement them flexibly
- robust service recovery plans with clear objectives
- systems and technology to support replanning of services
- system design to facilitate recovery
- effective and consistent communication with stakeholders throughout.

Driving continuous improvement in service recovery and reducing reactionary delays will affect people, processes and systems, and involves immediate localised tactical actions and longer-term national system developments.

There is also a need to address improvements in the response to major incidents, such as the stranding of trains during last winter, as well as minor ones.

The following sections summarise key aspects of our improvement plans, covering:

- data on trends in reactionary delay and delay per incident
- common issues on service recovery from independent reviews
- planning to improve service recovery
- Control Centre organisation and communication
- reducing time to fix operating services during failure (Primary Phase), and
- restoring the service after the failure: service recovery plans (Reactionary Phase)

It is an ORR requirement in PR18 that we should report on reactionary delay. We will provide greater visibility on data and action plans with a regular report being developed for NTF.

7.2 Data

An increase in reactionary delay and rising delay per incident have been features of recent years as more trains on the network has increased the potential impact of every incident, increasing the importance of every facet of incident management. The independent reviews noted previously have highlighted issues around incident response and service recovery with common themes on the underlying causes.

A significant change over CP5 has been the increased volume on the network with passenger journeys up 17.1% from 2011/12 to 2017/18 and passenger train kilometres up 2% in that time

period. When there are incidents service recovery becomes more challenging as the network becomes busier as there are more trains and more passengers affected.

> *LNE: Reactionary delay has increased significantly post the May 2018 timetable. Both the Northern Trains and Transpennine Express timetables were affected by the late delivery of project works meaning a late alteration to the May 2018 plan. This resulted in a timetable which wasn't fully validated or resourced. One of the consequences of this was the reduced ability to adequately respond to incidents which meant reactionary delays throughout the route increased significantly. Reactionary delay more than doubled from 0.5 to 1.2 for a short period of time post May 18 before dropping to 0.9 post December 18 Timetable change. It remains well above historical level despite PPM recovering.*

Figure 10 illustrates the steady increase in reactionary delay relative to primary delay since 2011 with a sharper increase over the last year.
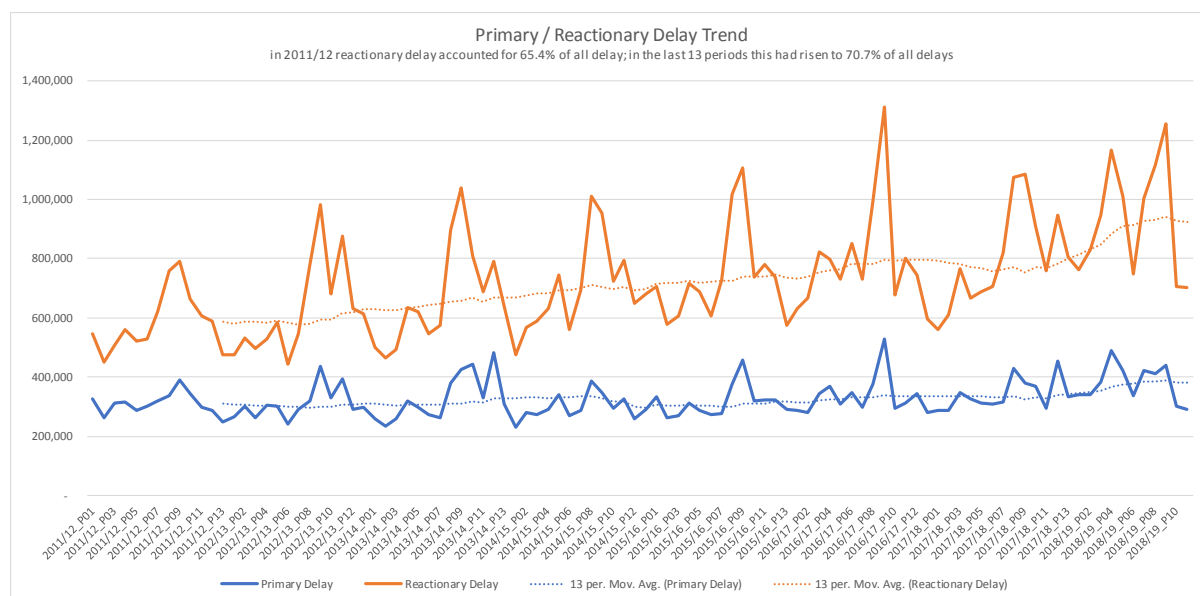
Figure 10: Primary and reactionary delay trends

This trend indicates that with primary delay fairly static until 2017/18, reactionary delay was being amplified during autumn and winter. In 2017/18 there was a significant shift in the relationship with a larger amplification of primary delay all year round. After the May 2018 timetable change, reactionary delay levels were higher than those seen in autumn and winter in previous years.

We have looked at the specific geographic impact of reactionary delay and created hotspot maps, see figure 11 below, demonstrating that the biggest increases are linked to key nodal locations on the network. This supports a local focused approach discussed in section 6.5 earlier.

Figure 11: Reactionary delay hotspots

This analysis shows turnaround reactionary delay growing in London, Bristol, Cardiff, Liverpool, Manchester, Leeds, Glasgow, Edinburgh, along east coast stations and in East Anglia and along the Brighton Main line. Birmingham and London Bridge have shown reductions linked to more through services. The locations with the highest delay in the past 13 periods are set out in the table below.

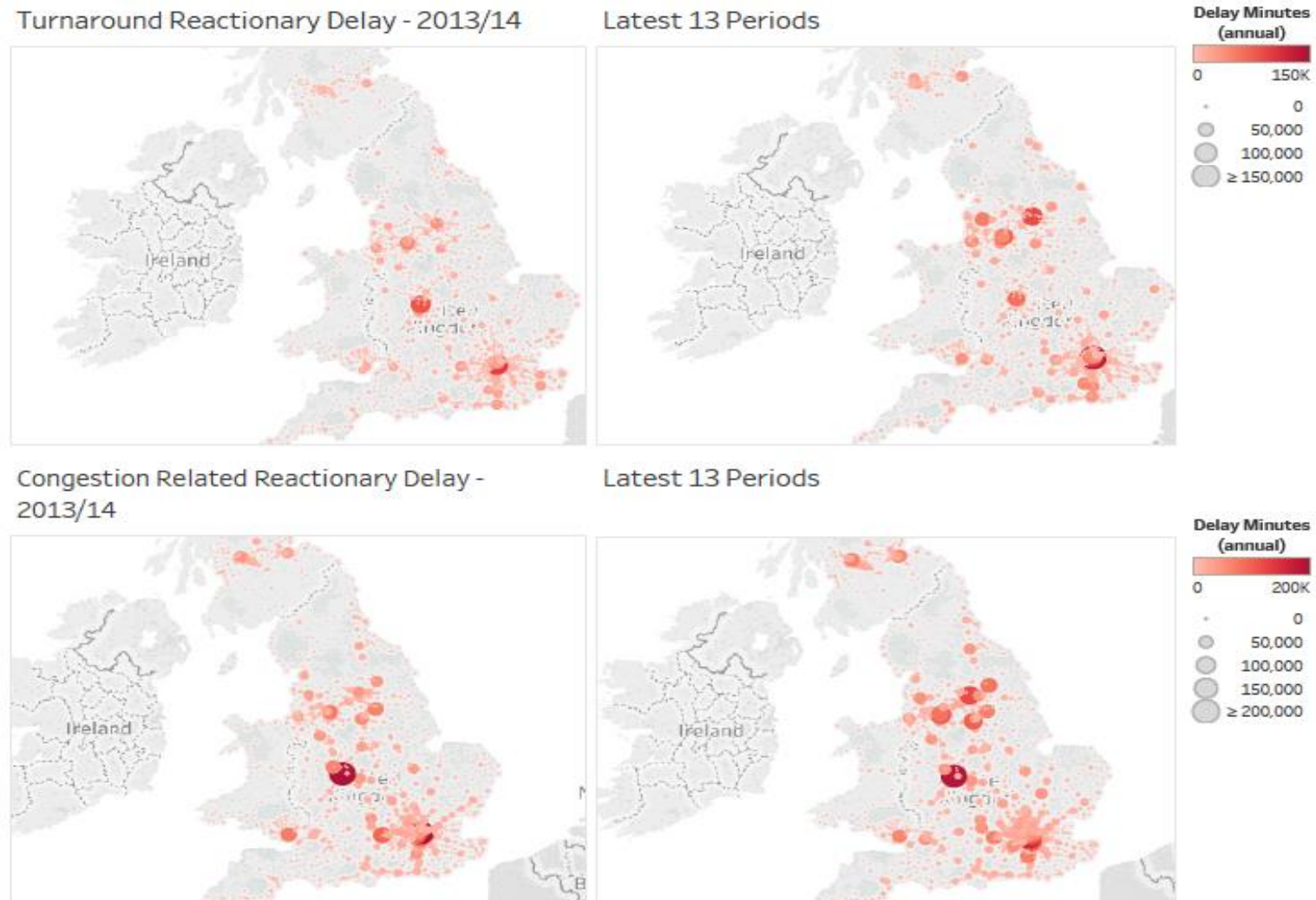| Station	Turnround Reactionary Delay (mins)		
	2013/14	Last 13 pds	Change
London Waterloo	57,154	180,213	123,059
London Victoria	103,327	111,085	7,758
Leeds	34,988	90,751	55,763
Manchester Picadilly	47,559	74,540	26,981
Birmingham New Street	83,814	64,110	-19,704
London Euston	36,343	62,512	26,169
London Charing Cross	49,904	60,986	11,082
London Paddington	43,663	57,549	13,886
Preston	15,064	53,338	38,274
London Kings Cross	28,844	44,072	15,228
Horsham	21,644	43,518	21,874
Manchester Victoria	22,696	43,188	20,492
London Bridge	59,922	42,708	-17,214
London Liverpool Street	29,780	41,299	11,519
Liverpool Lime Street	25,111	39,712	14,601
London Cannon Street	31,701	38,602	6,901
Cardiff Cental	14,748	35,377	20,629
Manchester Airport	9,716	34,162	24,446
National total	2,359,988	3,529,053	1,169,065

Congestion related reactionary delay has grown generally but is most noticeable in cross Pennine routes. Birmingham, London Bridge and Reading have all improved following the completion of major enhancement works.

Location	Congestion Related Reactionary Delay (mins)		
	2013/14	Last 13 pds	Change
Birmingham New Street	281,115	192,298	-88,817
Clapham Junction	91,268	164,789	73,521
London Bridge	199,714	122,659	-77,055
Leeds	42,404	121,143	78,739
Manchester Picadilly	72,001	116,559	44,558
Waterloo	44,790	110,146	65,356
East Croydon	75,800	105,404	29,604
Sheffield	52,724	102,001	49,277
Manchester Deansgate	29,541	99,037	69,496
Manchester Victoria	9,085	82,798	73,713
York	42,179	79,620	37,441
Wimbledon	31,107	78,330	47,223
Whitehall Junction	23,822	71,091	47,269
Gatwick Airport	42,516	70,935	28,419
London Victoria	46,476	70,744	24,268
Doncaster	67,824	68,207	383
Reading	94,753	67,755	-26,998
Hyndland	44,178	67,614	23,436
National total	6,363,879	8,540,114	2,176,235

The next stage of this work will feed into the deep dives and target the highest locations with strategies to fix in conjunction with TOCs.

In 2017, we established a national DPI reduction programme aimed at driving a substantial improvement in recovery from incidents. The programme in CP5 generated some concerns about the value of DPI as a measure, but helped focus more attention and measurement on all the factors contributing to the impact of an incident and how these can best be mitigated. This activity is now an integral part of each Route's performance management plans. The table below sets out the change in DPI by Route over CP5.

Route	Delay Per Incident (mins)		
	2013/14	Last 13 pds	% Change
Anglia	25.3	28.5	13%
LNE/EM	24.1	27.5	14%
LNW	20.1	23.8	18%
Scotland	14.6	21.5	47%
SE	29.9	25.3	-15%
Wales	21.8	19.2	-12%
Wessex	33.0	39.3	19%
Western	27.0	25.0	-7%

Each Route has different performance levels with South East, Wales and Western having improved during CP5, while Wessex and Scotland have got significantly worse. This is reflected in the performance of TOCs when analysing primary and reactionary delay ratios. Here SWR were very good but reactionary delay has doubled over the control period, and the Northern and TPE services now more closely reassemble London and South East operations. This emphasises why we have selected Wessex for the first deep dive to really understand what is happening.

TOC	Average Delay Minutes Per Period					
	2013/14			Last 13 Periods		
	Primary	Reactionary	P:R	Primary	Reactionary	P:R
Gtr Anglia	15,100	34,300	2.27	18,600	44,900	2.41
c2c	1,700	2,400	1.41	2,700	3,700	1.37
Chiltern	4,100	9,400	2.29	6,900	14,200	2.06
CrossCountry	18,600	44,600	2.40	20,600	47,900	2.33
GTR	35,900	109,300	3.04	47,700	141,200	2.96
GWR	31,400	70,400	2.24	36,200	88,100	2.43
LNER	13,500	13,900	1.03	14,300	19,600	1.37
London Over	4,300	10,900	2.53	7,000	17,100	2.44
Merseyrail	3,100	3,900	1.26	4,300	4,600	1.07
Northern	44,400	75,900	1.71	49,800	139,560	2.80
ScotRail	19,400	42,900	2.21	26,100	60,100	2.30
SE	19,900	54,800	2.75	22,600	69,900	3.09
SWR	35,300	36,900	1.05	34,600	82,400	2.38
TfL	1,000	3,600	3.60	1,500	5,500	3.67
TfW	16,400	30,900	1.88	18,300	32,900	1.80
TPE	9,200	19,400	2.11	13,100	45,200	3.45
VTWC	21,100	28,100	1.33	21,400	29,300	1.37
WMT	16,800	49,800	2.96	19,000	46,300	2.44
National	328,900	668,700	2.03	385,200	927,600	2.41

7.3   Common issues with service recovery from the reviews

Common issues contributing to the increase in reactionary delay and DPI identified in the relevant reviews include:

- contingency plans not being up to date, and/or not being applied when appropriate to do so;
- the effectiveness of control arrangements, including level of resource, competence, location
- the lack of effective decision support tools to support controllers;
- tight operational plans without sufficient resources, or flexibility in infrastructure to deal with perturbation;
- location and availability of critical spare parts to allow quick repairs; and
- the effectiveness of incident learning reviews in addressing the right incidents in the right way and ensuring actions were completed.

> *Wessex: The incident review of a major incident affecting services between Vauxhall and Waterloo on 19 June 2018, illustrates the many factors that can contribute to the overall impact of an incident, the value of incident learning reviews, and the risk that the focus on attributing delay to a single cause can divert attention from other factors that need to be addressed.*
>
> *A relatively simple train fault that brought a train to a stand, led to major delays and passengers self-evacuating onto the tracks. The incident review exposed weaknesses in a range of factors that led to the overall delay being so large:*
> - *driver/signaller communication*
> - *understanding of authority to take a line block*
> - *availability of tools to detect and fix the problem*
> - *control decisions to focus on other trains rather than enabling the fault to be fixed*
> - *clarity of the command and control structure*
> - *the effectiveness of contingency plans*
> - *the availability of information for control to make good decisions*
> - *the communication with passengers*
> - *compatibility of the crew and stock plan*
> - *route knowledge for contingency plans*

7.4   Planning to improve service recovery

As the network becomes busier, service recovery becomes more challenging with more trains and passengers to be managed around the disruption. This requires an increasingly disciplined approach that benefits from clear objectives, a framework to operate in, and a continuous improvement culture.

It is important to emphasise that there is no one perfect solution. Service recovery needs to be tailored to the needs of passengers and freight customers, on the specific part of the network affected. Therefore, service recovery plans need to reflect these needs and recognise that whilst much can be planned there is also a reliance on the competence of the operators to match and adapt the plan to the actual circumstances they find on the network at that moment.

It is likely that the larger complex mixed traffic networks will have more decentralised decision making with multiple TOCs / FOCs and one infrastructure manager and simpler networks more centralised with fewer participants. This complexity also influences how much can be influenced by advance planning. For example, a simple metro line can have plans for most circumstances whereas large complex networks require a strategy and capacity allocation between the parties, but details of each disruption need to be worked out by controllers depending on the problems actually faced. The latter scenario should have higher levels of training and practice than the former, as outcomes are dependent on the individual's reaction.

So good service recovery requires;

- good communication of the problem to control centres,
- reducing time to fix to the minimum possible (primary phase),
- operating plans for the time to fix phase focused on moving passengers already on the network and minimising delay, and
- service restoration plans once the fix is completed with targets to restore normal operation (reactionary phase).

Using the PM3 approach to this requires;

- a plan that sets out the objectives and goals, the level of predetermined interventions, and the responsibilities of the controllers,
- briefing and training for controllers,
- an implementation plan and customer communication package,
- defined measures that allow the success of the service recovery plan to be judged
- a review process that looks at the implementation and outcomes, and
- implementation of improvements identified.

This is required by all the TOCs / FOCs and NR involved. Our governance processes and use of PM3 will ensure that this requirement set out in the Railway Operational Code is developed using the structure in 1-6 above.

Working with NTF, we will set out a draft of section RCS6P "Managing a disrupted plan" of the PM3 structure in March 2019 for industry consultation. We will then benchmark the existing plans against RCS6P and use this as a tool to begin the continuous improvement of the December 2019 plans.

7.5   Control Centre Organisation, communication and support tools

Incident Management Organisation

During CP5, we introduced the Senior Incident Officer and Incident Officer roles, to strengthen the management of incidents and improve service recovery. Routes are refining their organisational structures with the common aim of addressing some early issues with the clarity of accountability for incident management. Some examples are noted below.

> *LNE: Has strengthened Route Controls to give operational staff the time to manage incidents more effectively, introducing 24/7 Incident Officers at York and a day shift incident officer at Derby. These Officers are able to deal with the strategic elements of live incidents and have the final say on decisions relating to service management and recovery. This gives controllers the time to manage the real-time activity on the rest of the network to minimise the impact of the ongoing incident.*
>
> *The Route has also created additional train running controller positions, responsible for the tactical deployment of the train service management strategy. The areas of control have been amended to ensure the necessary focus is on those that require the most management time, principally the GTR Network in the South and the TPE core route in the North.*

> *Cross Route boundary focus*
>
> *LNW/LNE: In response to the issues in the North following the May 18 timetable change, a cross-Route border train running controller was put in place who can review service recovery decisions to protect performance across both LNW & LNE.*
>
> *Western/Wessex: From February a GWR representative will be based in the Wessex ROC at Basingstoke with Route staff to provide a focus on GWR trains running across Wessex route.*

> *Western: reorganised Route Control with additional staff from Summer 2018 to provide an additional focus on incident management and train service recovery. New Incident Officers are in place, allowing existing control posts headroom to deal with other facets of incident management and train running. The Route has also recruited an additional Operations Manager and signallers at Thames Valley Signalling Centre as the train services increase.*

Traffic Management

Traffic Management (TM) is an operational control and management information system, capable of providing real-time information to customers. It allows prediction of timetable conflicts and enables real-time timetabling and re-planning as required following any disruption. There are three variants of TM:

- Isolated: advises the operator of changes to be made to the timetable, informing actions then taken by the signallers;
- Interfaced: automatically requests routes to be set where conflicts are identified; and
- Integrated: directly interfaced with signal interlockings and can automatically set routes for all trains.

TM systems can also be integrated with Connected Driver Advisory Systems (C-DAS) which help optimise driving behaviour to manage performance. TM systems are now 'live' in several Routes, with progress summarised below.

South East: Traffic Management (TM) will be introduced in the Summer of 2019. This will allow a prediction of conflicts and enable real-time timetabling and re-planning as required following any disruption. We have worked in collaboration with Southeastern and GTR to interlay an Operational Control System and MOSES that will add traincrew and rolling stock information and create for a more cohesive system to managing punctual performance delivery.

Western**:** A one-year trial of Resonate, an integrated TM and C-DAS system, began in summer 2018, covering the area controlled by the Thames Valley Signalling Centre, where NR, GWR, MTR Crossrail and Hitachi control functions are all co-located. Use of the system is increasing with the appointment of a user champion and it is being used to re-plan train services during perturbation. In June 2019 the traffic management trial will be evaluated, and decisions made about its future application.

Wales**:** The Route has commissioned Operational Decision Support Tools (ODST) to supplement decision making by controllers around train running. This will particularly help to identify conflicts during perturbation, and help make interventions to aid service recovery. Whilst the system is at a basic level of Traffic Management, it will form the foundation for future development through the joint working with TfW Rail Services, who are contractually committed to investing further in Traffic Management to include stock and crew information and other data on train movements that will further aid decision making on train running.

All of these trials will be closely monitored to learn lessons and track the benefits. Our Route Strategic Business Plans for CP6 identified a range of potential options for expanding the deployment of TM systems, linked to resignalling and re-control plans, that are currently unfunded.   The emerging experience and realisation of benefits from the early TM deployments will help establish where there is a clear business case for reprioritising expenditure plans.

The overall capability and value of Traffic Management systems will be much greater if they are successfully integrated with Stock and Crew systems used by operators, and we will engage through RDG to try and optimise the system benefits.

7.6   Reducing Time to Fix

We will ensure a continued focus on reducing the time to fix incidents. In addition to reviewing the level and location of our incident response resources, we are investing in new technologies, the Incident Management system and Airwave radio, to ensure we can provide the best support to our first response teams that we rely upon, the Mobile Operations Managers (MOMs) and fault teams.

Incident Management System (IMS)

The IMS, used successfully by ProRail in the Netherlands to improve incident management, brings together information from a range of systems, eliminating duplication and administrative tasks, and providing a 'Common Operational Picture' to all stakeholders. The efficient processing of data and consistent provision of information will enable control and incident response staff to focus on key decisions. This will enable quicker resolution of incidents through quicker response and fix. The first deployment is planned for Q2 this year on the Thameslink route (South East and LNE & EM) and is being funded through the Thameslink Resilience Fund.

This first deployment will bring together input information from sources including NR asset systems and train running data from TOPS/TRUST systems and provide automatic links to the Control Centre Incident Logs, Tyrell messaging, and the Fault Management System (FMS), as well as providing the common operational picture.

Airwave Radio

South East Route are preparing for the first deployment of Airwave Radio, a secure system originally developed for the emergency services and already used by BTP and Southeastern. Use of Airwave has the potential to improve response times and recovery from incidents by improving the ability for Control to locate MOMs more quickly, contact them safely while they are travelling to site, and to improve mass communication to enable more effective management of incidents. If the deployment is successful, the system will be rolled out to other Routes.

People – MOMs and Fault Teams

Our Route teams are all reviewing response capability, the number of people and their locations to get people to site more quickly with the right tools and processes to do the job. Some examples of recent and proposed changes are set out below.

Anglia: are increasing the provision of operational response resource and increasing the efficiency of the current response teams through reduced time to site. The implementation of 24/7 coverage of MOMs based at Romford is the first step in this wider enhancement, which will also include Body Cameras for all response staff and the increased use of trains to attend site wherever possible. To improve the resilience of coverage at critical locations at key times, a route-wide review of MOMs is in progress, and a 'MOM Standard' is being developed.

LNE: are increasing the number of MOMs by 38 posts to enable quicker response times to performance affecting events and providing Mobile Incident Officers as part of the continued use of the Emergency Incident Unit with the British Transport Police to improve response to certain incidents including trespass and fatality events. The Route are also separating management of signallers from incident response by providing dedicated managers for MOMs.

LNW: are reviewing Operations and Infrastructure team cover to ensure they are best placed to respond in the most efficient way. Changes to MOM cover have been agreed:
- *Manchester Piccadilly MOM will be now based at Manchester ROC in the morning peak, providing faster response times for incidents on their area.*
- *a trial of Preston MOMs on night turns has been agreed, from now to the end of March. Data will be used form this trial to understand if permanent 24/7 cover at Preston is required.*

7.7 Operating services during failure (Primary Phase)

The industry has collaborated on changes to operational rules and processes that have the potential to improve operations whilst the failure is ongoing.

Emergency special working

New rules for managing degraded operation during signal failures went live in December, replacing temporary block working, though network-wide implementation awaits the completion of the necessary briefing of drivers and signallers. This new process will reduce the overall performance impact of signal failures.

> *Wales: On 1 February, a multiple axle counter failure at Patchway caused disruption to the train service. The Route implemented Emergency Special Working (ESW) to get trains moving quickly, limiting disruption for the morning peak prior to fixing the fault (reset of axle counter evaluator). This incident was contained to 341 minutes of delay, whereas it had the potential to have a greater impact under previous methods of working (talking past signals).*

Management of ill passengers

The handling of incidents where passengers are taken ill on trains has been variable, and decisions on whether to take the train to the ambulance or the ambulance to the train can have significant consequences for performance, and for the health of the passenger. Following a review of individual TOC policies, a good practice guide has been issued to improve consistency and clarity of decisions.

These processes now need to be embedded and monitored, to remove any blockers to delivery, and ensure the benefits are realised.

7.8 Restoring the service after the failure (Reactionary Phase)

It is vital for effective service recovery to have clear contingency plans in place, that are agreed with the key players, are understood by those who have to apply them, are updated when circumstances change (e.g. new infrastructure or revised timetable), and that they are reviewed and updated with learning from incidents when they are applied. Given the diversity of the network, there is no simple one-size-fits-all approach to be followed. In some scenarios, aggressive cancellations to get back to the timetable are appropriate, in others it is more important to maintain capacity to ensure that everyone gets where they want to go. What is important is clear objectives for the Network being operated.

The development of the PM3 process will provide a clear definition of what constitutes a good contingency plan and how it should be managed. This will be informed by the work under the RSSB PERFORM research portfolio on managing disruption, which has recently delivered:

- decision-making tool for operation during disruption: a new model and training package has been produced for industry use, and the new tool will be piloted in LNE Route with EMT and the benefits assessed;

- enabling better contingency plans: a draft report including a toolkit with a framework for contingency plan operation. This is underpinned by a matrix of 4 levels of disruption, 5 phases of disruption, and practical guidance concerning the activities and timescales for each level. The toolkit also includes guidance for inputs, outputs, dependencies,

governance and management procedures. The report also includes the development and testing of a contingency plan effectiveness metric. This toolkit will be available for industry use and will be trialled by three TOCs (GA, GTR and Scotrail) during the May 2019 timetable changes, and benefits will be assessed.

LNW: Contingency plans

Operation Firebreak was introduced following the May 2018 timetable change. It is an aggressive recovery plan that was agreed with train operators to support improved containment of delay in the congested Central Manchester area and speed up our ability to return to right time running.

The Route are working with operators on contingency plans ahead of the May 2019 timetable change, notably the loss of platforms 17&18 at Euston. We have developed a detailed joint plan for Euston which we will support with desktop rehearsed and agreed off the shelf contingency plans. We will undertake an exercise in readiness for May 2019 on a joint contingency plan for Birmingham New Street and improvements around train dispatch and coupling/uncoupling arrangements.

8   The role of Schedule 8

We believe that the role of incentives and penalty payments should be fundamentally reviewed. The current architecture is essentially that which was put in place some 25 years ago for a much less congested network and franchises which were far less highly geared. Network Rail recognises the value and protection that incentive regimes can provide, and the Schedule 8 mechanism can provide a very compelling business case for investment in improvement in the railway. Without such an incentive it could be argued that performance levels might be materially worse.

At the same time, we consider that there are circumstances in which Schedule 8 acts as a disincentive to operators to invest in excellent service recovery. This is by no means universal but there would certainly appear to be a correlation between train service improvements and the introduction of concessions where the Schedule 8 benefit is not retained by the operator. This document is not the appropriate place to develop these points, but we will make representations to the ORR as part of its consultation on delay attribution.

9 Risks to performance improvement in CP6

9.1 Performance risk management

Implementing the Performance Management System and the actions described in this report will enable performance improvement in CP6. However, there are significant risks to performance in CP6 that will need to be managed well for the industry to stand still. Some of these have been described to some extent in earlier sections; this section briefly highlights the critical areas of risk to national performance.

Risk management for performance is a key element of the overall PMS. In accordance with our Enterprise Risk Management Framework, delivering performance is a level 0 risk, with the key sources of national risk and the associated controls recorded and tracked. The national risk record is informed by each Route's performance risk log.

We will work with industry, through the NTF, to develop an industry performance risk management process, building on the existing processes.

9.2 Risks to these plans

The key areas of risk to the delivery of our improvement plans are:

- Embedding the Performance Management System proposals: cross-industry support is needed to deliver the step change in performance planning. Industry, through NTF, has been strongly supportive of the approach and we will continue to collaborate closely;

- Organisational change: As noted in section 6.2, the organisational changes set out in the Putting Passengers First programme (following the 100-day review) are critical to the delivery of our plans. We recognise the risks that change brings and have worked hard in the consultation and design to mitigate these. The cultural elements of change are the most difficult and this is a key task for our Transition Director and team.

9.3 National performance risks

Capacity and Performance

There are major timetable changes planned in CP6, notably those associated with Crossrail, and other service changes already built in to franchise requirements that carry potential performance risks. The Industry Timetable Readiness process described in section 6.4 is progressively improving the identification of risks to delivery at an earlier stage in the process. It is critical that all industry parties continue to engage collaboratively in this activity with a willingness to tackle difficult decisions on trade-offs between performance and capacity.

Major projects

Delivering good operational performance during the construction of major enhancement works has been a major challenge in CP5 and this will continue in CP6. The works associated with the construction of HS2, notably at Euston and Old Oak Common, have been identified as a key risk area.

New trains

CP6 will see a huge volume of new fleet introductions, with over 7,000 new vehicles already planned to be delivered and another 600 refurbished, together with the associated cascade of fleets being replaced. This presents a very significant short-term performance risk to the industry, though in the medium-term the customer benefits of the new trains will be substantial.

The recent experience of introduction of new fleets has not been good, with poor levels of reliability having had a significant impact on the performance of some operators. There have also been issues with the readiness of infrastructure, including gauge clearances, the provision of sufficient depot and stabling capacity, and with the compatibility of the track / train interface with new electric trains causing interference with signalling systems.

Industry collaboration is vital for this risk to be mitigated successfully. The Industry Timetable Readiness PMO has highlighted the risks and increased the focus on fully understanding plans for new and cascaded fleets and the industry dependencies involved. The RDG has recently appointed a National Fleet Introduction Risk Manager to pull together the national picture, identifying dependencies, developing monitoring processes and learning lessons and sharing good practice.

10 High-level programme and next steps

10.1 High-level programme

The table in Appendix 2 provides a very high-level overview and timeline of the activities described in this report. As the report has made clear, the challenge to deliver sustainable performance improvement does not form a single work programme with fully defined deliverables, resourcing and dependencies. The work embraces:

- long-term national programmes of activity, some of which are in the early stages of development,
- trials of processes or technology that may lead to a wider roll-out, or may be found not to be effective,
- local action plans owned by Routes and operators, including the tracking or implementation of specific independent reviews; and
- a 'back to basics' approach to business as usual activities to drive a relentless focus on delivering the timetable promise.

We will report the outcome of trials and share more detailed programmes as they are developed.

10.2 Monitoring

It is clearly important that ORR monitors the delivery of the activities set out in the report to maintain the confidence that real and sustainable change is being delivered. We expect to discuss, following this submission, how further engagement should be arranged.

The Wessex / SWR Joint Performance Improvement Centre at Waterloo has transformed collaboration and the focus on performance and, in addition to driving improvement for SWR, is a testbed for methods and learning that may be transferrable to other Routes. We propose that ORR should visit the JPIC soon to observe the new process in operation.

Other key deliverables and review points in the next few months include:

- progressive development of the PM3 framework will be shared and consulted regularly with the NTF (at which ORR is represented) and its supporting groups, who have a key role to play on developing some aspects of the maturity definition and associated good practice;

  - proposals on leading indicators will be an early deliverable

- the next iteration of Performance Strategies will be completed and signed off by the end of March, together with completed Route Scorecards, and can be shared at that stage – ORR feedback will be useful input to the further continuous development of these Strategies;

- a report on the deep-dive in Wessex will be provided when the activity is completed in April;

- the creation of the procedures for Contingency Planning (RCS6p in the PM3 structure) for industry consultation during April, recognising its importance to improving performance as highlighted by the Reviews.

This report also describes a number of activities that have been recently completed or are in progress around the network. We are happy to provide further detail on these, and to arrange relevant meetings to discuss, when ORR have had an opportunity to digest the content of this report and identify priorities.

Appendices

1 – Mapping of this report to ORR's order and response to reviews

2 – High-level programme

Appendix 1 – ORR's Order

ORR's Order	This report
1.　　In respect of the contravention, pursuant to section 55 of the Act, ORR requires Network Rail, including its Route Managing Directors, to:	
a)　　Engage and work with Train Operating Companies (TOCs) to further review and develop actions to address the underlying causes that have led to the findings identified in the relevant reviews;	Section 5 summarises actions being taken by the Routes on engagement with operators in developing joint action plans – particularly how engagement is changing to drive performance improvement.
b)　　Deliver a report to ORR by 15 February 2019 detailing the following:	
i.　　how it is identifying the common underlying issues relating to performance planning and its capability to recover service from incidents on its network. In doing this, Network Rail must take into account of the findings of all the relevant reviews and their application across the whole of its business, whether or not the relevant review was limited to a single Route;	Section 3 summarises our understanding of the underlying causes and areas of learning from the various reviews. See further table below on tracking specific reviews. The Donovan review of common learning was commissioned to facilitate the sharing of key messages. The system model proposed in that report is being widely use by Routes in visualising and framing their plans.
ii.　　how it is addressing and implementing the conclusions of its report going forward into CP6, ensuring that the conclusions are agreed and being embedded throughout each of the Routes and share best practice between all of its Route businesses;	Sections 4-7 describe our approach to driving sustainable performance improvement – with the development of the Performance Management System and a range of activities across this system – from early specification of the timetable to processes for managing service recovery.
c)　　Provide ORR with regular updates on progress in delivering its report. These updates may include any interim findings and representations regarding the extent to which it considers it is doing everything reasonable practicable to meet its obligations in condition 1 in relation to its performance management capability.	Series of meetings held with ORR team between the issue of the Provisional Order and this submission. Overall approach and emerging drafts were discussed.

Responding to relevant reviews

The table below summarises where the report addresses the relevant reviews.   More detail on the processes for how the specific review recommendations are being implemented and monitored can be provided.

Review	Where in this report
All	Section 3. The Donovan review of common learning was commissioned by NTF to draw out and share the common learning from the more specific local reviews and has been widely shared.
Donovan – Common learning from reviews	Section 4 - The PMS addresses the key challenges around a common industry approach to managing performance as a system, including development of leading indicators. The 'system model' is already being widely used by Routes with TOCs to frame their performance management and identify gaps in their plans. The report includes some examples of 'go-look-see' leadership activity being undertaken.
Steer: Independent review of performance strategies	Sections 4 and 5. Steer produced individual reports for each Route/TOC. Performance Strategies are being refreshed by the end of March. They will form a key part of the overall PMS. The Steer recommendations are informing this development.
Donovan – Scotrail Alliance	Section 5 summarises how the Scotrail Alliance is implemented and tracking recommendations. A further review has recently been completed by Nichols for ORR.
Holden: South Western Railway Performance review	Section 5 summarises how Wessex/SWR are jointly managing the ongoing implementation of the recommendations in the new JPIC.
Gibb: Changes to improve the performance of the Southern network and train services, and restore passenger confidence	Section 5 summarises how South East Route and TOCs are dealing with the recommendations – many of which were highly specific to operations in the South East.

Appendix 2 - Table of national actions

The table provides a very high-level overview and timeline of the activities described in this report. As the report has made clear, the challenge to deliver sustainable performance improvement does not form a single work programme with fully defined deliverables, resourcing and dependencies. The work embraces:

- long-term national programmes of activity, some of which are still in early stages of development,
- trials of processes or technology that may lead to a wider roll-out or may be found not to be effective,
- local action plans owned by Routes and operators, including the tracking or implementation of specific independent reviews;
- a 'back to basics' approach to business as usual activities to drive a relentless focus on delivering the timetable promise.

We will report the outcome of these and can share more detailed programmes changes to the focus of business as usual:

Action	Start date	Milestone	End date	Milestone comment
We will progressively implement a **Performance Management System** and a supporting **Performance Management Maturity** system (PM3)	Nov-18	Mar-19	Mar-24	Policy statement issued
National Performance Team and NTF develop leading process measures	Nov-18	Mar-19		Paper to NTF
Senior leaders front line support visits	Apr-19		Mar-24	Ongoing activity
NR implement PMS and PM3 to drive performance excellence				
PMS core proposal, including the latest version of PM3, will be presented to March NTF			Mar-19	Paper to NTF
Implement initial elements of PMS (Policy, Governance and Leadership) by April 2019			Apr-19	
Fast track "Managing a Disrupted Plan" RCS6p in recognition of the concerns re service recovery drawing on RSSB best practice described in PERFORM	Feb-19	Apr-19	Jun-19	Industry Consultation

Ongoing PMS and PM3 development including risk, opportunity and capability frameworks from Q1 2019/20 into business as usual	Apr-19		Mar-24	
NR will use PM3 as a **benchmarking tool** to drive continuous improvement	Jun-19	Jun-20	Mar-24	annual assessment
Performance analysis capability review	Apr-19	Apr-20		Annual Review process
Route Scorecards and Performance Strategies				
Route scorecards agreed and signed off	Nov-18		Mar-19	
Performance Strategies complete and jointly signed off	Nov-18		Mar-19	
Wessex Deep Dive: Joint TOC/ Route/ NPAT review of detailed data to inform improvement actions	Jan-19	Feb-19	Mar-19	Report on deep dive outcomes and learning wider application.
NR develop a template for further "deep dive" reviews for other parts of the network.	Apr-19		Jun-19	Informed by Wessex report
Anglia review - independent performance review.	Jan-19		Jun-19	
Operational capability development				
Expert groups formed to consider best practice re: incidents, stations, operations and people development	Apr-19	Jul- 19		1st report
NTF campaigns				
Support NTF national campaigns and report at each meeting: first activity is "right time starts at origin"	Feb-19	Mar-19	Jan-20	Monthly reporting

New analytical technology / operational analysis				
Quartz roll out to all routes.	Mar- 19	Jun-19	Sep-19	Physically available
Cosmo roll out to all routes.	Mar- 19	Jun-19	Sep-19	Physically available
South East deep dive on the 0-8 mile area from London to understand sub-threshold delay and analyse junction margins.		TBC		
Detailed study between London Bridge and Hither Green with particular focus on the four parallel moves an hour across North Kent East Junction.		TBC		
Traffic Management				
South East: Introducing Traffic Management (TM) in the Summer of 2019.	Aug-19	Aug-20	Nov-20	Annual review
Western: One-year trial of Resonate system began in summer 2018. In June 2019 the trial will be evaluated, and decisions made about future application.	Jun-18	Jun-19	Sep-19	Report on evaluation of trial and next steps.
Wales: Trial of Operational Decision Support Tools (ODST).	Feb-19	Feb-20	May-20	Review of trial and next steps.
Incident Management System (IMS)				
The first deployment is planned for Q2 this year on the Thameslink route (South East and LNE & EM).	Sep-19	Sep-20	Dec-20	Annual review
Airwave Radio				
South East: are preparing for the first deployment of Airwave Radio			Sep-19	