



## **2018 periodic review final determination**

**Supplementary document –  
health and safety**

October 2018

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# About this document

The [2018 periodic review](#) (PR18) is the process through which we determine what Network Rail<sup>1</sup> should deliver in respect of its role in operating, maintaining and renewing its network in control period 6 (CP6)<sup>2</sup> and how the funding available should best be used to support this. This feeds through into:

- the service that passengers and freight customers receive and, together with taxpayers, ultimately pay for; and
- the charges that Network Rail's customers, including passenger, freight and charter train operators, will pay for access to its track and stations during CP6.

In June 2018, we consulted on our [PR18 draft determination](#)<sup>3</sup>, setting out our proposed decisions in all of the main areas of PR18. Following receipt of consultation responses, we have reviewed stakeholders' comments and these have helped to inform the final decisions set out in our final determination. We are grateful to all those who responded to the consultation.

Accordingly, the [final determination](#) sets out our overall decisions on PR18. Among the documents that we have published is an [overview document](#), setting out:

- our decisions in all the main areas of PR18;
- a summary of how we will regulate Network Rail's delivery in CP6; and
- next steps in PR18.

In addition, there are high-level summaries of our main decisions for each of [England & Wales](#) and [Scotland](#).

We have also published a [document](#) summarising stakeholders' comments on the PR18 draft determination and our response to these.

The full set of documents that form the final determination is set out in the box overleaf<sup>4</sup>.

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<sup>1</sup> All references to Network Rail in this document are to Network Rail Infrastructure Limited.

<sup>2</sup> CP6 will run from 1 April 2019 to 31 March 2024.

<sup>3</sup> The full suite of PR18 draft determination documents are available from this [webpage](#). To access earlier consultation and conclusions documents that led up to the PR18 draft determination, please see the map of these documents [here](#).

<sup>4</sup> Our policy on managing change will be published in November 2018. Some documents, such as the consultancy and reporter studies, will be published shortly after the final determination.

## Our final determination documents (includes weblinks)

<b>PR18 final determination overview document</b>		
<b>England &amp; Wales summary</b>	PR18 draft determination consultation – summary of comments and our response	
<b>Scotland summary (and settlement details)</b>	<b>Supplementary documents</b>	
<b>Settlement documents</b>	<b>SBP assessment</b>	
FNPO route		
System Operator		
<b>England &amp; Wales</b>		Scorecards and requirements
		Health & safety
	Review of NR's proposed costs	
	Other single till income	
	Stakeholder engagement	
Anglia route	<b>Policy</b>	
LNE & EM route		
LNW route		
South East route		
Wales route		
Wessex route		
Western route		
<b>Other documents</b>		
Glossary	Managing Change Policy	
Consultancy & reporter studies	Grading of Network Rail's route and System Operator strategic plans for CP6	

# 1. Our assessment of health and safety

## Overview

This chapter sets out the findings of our review of health and safety issues in Network Rail's SBPs, and its response to our draft determination, which have fed into our final determination.

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## Introduction – our expectations for health and safety

- 1.1 In our SBP guidance to Network Rail<sup>5</sup>, we set out our expectations regarding health and safety management. We stated that it needed to explain how it would:
- (a) implement its health and safety strategy – ‘Transforming Safety and Wellbeing’ finding more effective ways to achieve commitments given around culture, rules and competence, innovation and assurance;
  - (b) focus on ensuring it can achieve its maintenance, renewals and operational output to support a safe infrastructure, addressing precursors to catastrophic risk;
  - (c) ensure compliance with all its relevant legal obligations under health and safety legislation over CP6; and
  - (d) where full legal compliance is difficult due to legacy infrastructure characteristics, describe the trajectory to improved compliance and explain how risk will be managed in the interim.

## Background and context

### Legal framework

- 1.2 Network Rail has duties under the Health and Safety at Work etc. Act 1974 (and subsequent regulations) to ensure the safety of employees and others affected by its undertaking. Network Rail must assess the risks arising from its activities, identify, and implement controls to eliminate them or prevent them. These general duties are made specific to the railway environment by the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS), which set out what must be included in a duty holder's Safety Management System (SMS) and introduce Safety Authorisations and Certificates.

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<sup>5</sup> [Guidance on Network Rail's strategic business plans](#), ORR, February 2017.

- 1.3 Most health and safety legal duties are required to be carried out ‘so far as is reasonably practicable’ (SFAIRP). This test requires a control measure to be implemented unless an employer can demonstrate that the cost and effort required to do so is grossly disproportionate to the risk being addressed. This test is sometimes referred to as ‘ALARP’, meaning the risks have been reduced to ‘as low as reasonably practicable’. Affordability is not part of the test of reasonable practicability – it is whether the amount of time, trouble, cost, disruption and physical effort to achieve a control is proportionate to the risk or not.

## Legal status

- 1.4 During CP5<sup>6</sup>, Network Rail has had the challenge of balancing centralised legal accountability with implementing a devolved route structure. We asked that the CP6 plans outlined how Network Rail proposes to achieve this balance, allowing for the devolved management of risk at route level, whilst maintaining the overall health and safety responsibilities and accountability of the company. Network Rail is still a single duty holder under law, holding one ROGS Safety Authorisation for the whole network. Further, we asked Network Rail to ensure that its plans were consistent with the whole industry Health and Safety Strategy – ‘Leading Health and Safety on Britain’s Railway’.

## Funding and HLOS requirements

- 1.5 Within the devolved legal framework for periodic reviews, the Secretary of State retains responsibility for safety for Great Britain as a whole. His high-level output specification<sup>7</sup> (HLOS) for CP6 said:

“The Secretary of State considers the continued safe operation of the railway to be vital. He recognises the good standard of safety achieved by the control of risk across the rail industry and seeks for this to continue...He is not specifying any particular safety initiatives and would expect risk control to be attained through existing processes and funding.”

- 1.6 So, while for CP5 there were specific requirements and ring-fenced funding relating to safety that we had to take account of in our 2013 periodic review (PR13) determination (such as in respect of level crossings), in PR18 our review of the SBPs has focused on legal compliance: delivering what is reasonably practicable.

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<sup>6</sup> Control period 5 covers 1 April 2014 to 31 March 2019.

<sup>7</sup> [Railways Act 2005 statement: high level output specification](#), Department for Transport, July 2017.

# Our review of the SBPs

## Our approach to the assessment

- 1.7 Our assessment of the SBPs built on the work of our safety inspectors during CP5. Our review itself included a range of meetings with Network Rail, including those on specific assets, which ORR safety and engineering staff attended together as part of a joined up safety and economic approach.

## Overall observations

### Strategy for health and safety

- 1.8 In PR13, we set Network Rail the challenge of articulating its long-term vision for health and safety. It did this through its 'Transforming Safety and Wellbeing' – a strategic plan stretching over two control periods. Network Rail has matured in its vision to deliver its health and safety strategy and the 'Home Safe' plan is well established as its means to deliver the strategy for workforce health and safety. It is a rolling, prioritised programme to implement the main themes and targets of Network Rail's strategy and is actively monitored at the centre.
- 1.9 Asset safety and better management of precursors to catastrophic risk is addressed by Network Rail's Train Accident Risk Reduction Programme. This is monitored every period through metrics on the corporate risk scorecard – and elements of the programme are reflected in the route scorecards for CP6.
- 1.10 In the CP6 route strategic plans (RSPs), every route has committed itself to fulfil the demands of the Home Safe and Train Accident Risk Reduction plans. These programmes are the culmination of a lot of analysis, discussion and challenge. They are targeted, prioritised, and resourced; Network Rail needs to ensure that the routes are held accountable for delivery.
- 1.11 It is a particularly notable sign of Network Rail's improving quality of safety leadership that its SBPs contain commitments to implement its Electrical Safety Delivery Plan. This funding is significant, and has had to compete with many other demands for asset expenditure. The programme has been the subject of constructive challenge and dialogue. It has had to demonstrate that it will bring a range of benefits and is good value for money. It is testament to the increasingly effective leadership of Network Rail's engineering and safety professionals that electrical safety is a priority for CP6.
- 1.12 We welcome the inclusion of RM3 (Risk Management Maturity Model) ratings as an item in the route scorecards. This will enable route teams to identify areas to target to bring about improved safety leadership and will encourage constructive dialogue

between Network Rail's routes and its central Safety, Technical and Engineering Directorate (STE) about accountability for implementing the Home Safe Plan, Train Accident risk reduction measures and all aspects of Network Rail's strategy for health and safety in CP6.

## Accountability

1.13 We considered that the business plans (whether route or central) described the matrix framework between themselves and other parts of Network Rail well. There are clear lines of accountability, and a distinction between those areas that must comply with a single 'company way' of doing things and those areas where innovation and distinctiveness at route-level are encouraged. We persistently challenged this interface during the periodic review process, as we were keen to understand what powers and sanctions the centre had to ensure that a route was fulfilling its legal obligations. We will be paying close attention to the practical implementation of matrix management throughout CP6.

## New relationships

1.14 The matrix framework embraces some of the newer parts of Network Rail and we scrutinised the content of these plans carefully. The most important were the strategic plans of the System Operator and Route Services. When we reviewed the December 2017 draft versions of their plans<sup>8</sup>, we found that both lacked maturity in articulating the role of the organisation in ensuring system safety for the whole network. In both cases, though, it was clear from our subsequent discussions that there was good understanding of and commitment to accepting the opportunities to lead and improve network-wide risk control. Both plans articulate this vision and the System Operator plan gives an undertaking to report on this aspect of its activities annually.

## Assurance

1.15 Network Rail's STE is continuing to work on achieving the optimal balance in its assurance activities, as these are central to maintaining an appropriate level of supervision over the routes. We saw evidence of the evolution of this relationship between parties in the matrix framework during our review. After an early iteration of the RSPs, STE intervened to challenge some of the health and safety targets in the Route Scorecards. This intervention arose directly from STE's assurance activities; it led to the February 2018 RSPs containing more ambitious Lost Time Injury Frequency Rate (LTIFR) targets.

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<sup>8</sup> Network Rail postponed the publication of its SBPs until February 2018. To enable us to begin our review ahead of February 2018, it provided us with developed drafts of the strategic plans in December 2017.



1.16 Our discussions have helped to clarify the role and importance of assurance, but it will continue to be an area to develop and consolidate during CP6. In particular, there is scope for routes to improve their own frontline supervisory assurance, reducing reliance on corporate, central audit activities. Inclusion of RM3 in route scorecards will help focus and target efforts where most benefit will be derived.

## **Reasonable practicability**

1.17 We found that there was varying ambition, maturity and understanding of health and safety in the individual RSPs and those of the central functions. Some revealed confusion about what SFAIRP means in law – and appeared to rule out reasonably practicable spend based on affordability, with no further explanation. We asked how Network Rail has determined what is reasonably practicable – as required by health and safety legislation – and how this had been communicated to routes. Network Rail stated that its basic approach aligns with the Rail Safety & Standards Board’s guidance ‘Taking Safe Decisions’<sup>9</sup>.

1.18 STE acknowledged that not every route had reflected this in earlier versions of RSPs, with some appearing to say there were things it would have done, had additional funding been available. However, affordability is not part of the legal test of reasonable practicability – it is whether what would be required to implement a control measure would be grossly disproportionate to the risk being managed. Not every route plan articulated this. Nonetheless, it is positive that this confusion did not survive Network Rail’s own progressive assurance processes and, in the formal February 2018 submission, we saw evidence of internal challenge and adjustment.

1.19 In our draft determination we challenged Network Rail to review some items of expenditure that had been ruled out on grounds of affordability. We believed they might be reasonably practicable. We describe these in detail later in this chapter. Network Rail agreed with us that these items should be treated as core spend, rather than optional. This decision is welcome. It does not mean that every question of what might be reasonably practicable has been resolved – but it shows that Network Rail is growing its capability to provide an appropriate framework within which to make such decisions.

## **Maintenance and renewals**

### **Asset management**

1.20 The main area of concern arising from our health and safety review of CP6 was that of asset management. Effective asset management is key to controlling many of the

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<sup>9</sup> [Taking safe decisions](#), RSSB, 2014.

precursors to catastrophic risk on infrastructure. We probed understanding of this issue, and the calibre of responses, in many challenge meetings with both route and centre. The answers given described a hierarchy of controls. In many cases constrained funding meant that the volumes of renewals proposed were not what the modelled outcomes suggested would be needed to maintain asset condition. Our challenge to Network Rail was whether they could maintain risk control with this level of asset renewal.

## Renewals

### Volumes

- 1.21 Network Rail described to us during our PR18 meetings how it has targeted its constrained funding at those assets prioritised by risk, so that renewal brings the greatest risk control benefit. It is confident that its decision-making methodology is appropriate. It has been informed by the experience of delivery in CP5 and this intelligence is reflected in its revised asset policies that have guided routes in their bottom-up investment decision making.
- 1.22 The only asset group where Network Rail acknowledged residual concerns regarding the effectiveness of planned renewals volumes is in the Civils portfolio. It is a welcome sign of Network Rail's growing effectiveness and maturity that its own assurance activities had identified similar issues to our scrutiny.
- 1.23 We challenged the sufficiency of planned CP6 renewals volumes for earthworks, structures and related drainage. This was based on originally planned works in the CP5 Civils Adjustment Mechanism (CAM), which had been deferred, and on the particular susceptibility of these assets to rapid failure during adverse and extreme weather events. Network Rail responded that it had a better understanding of its assets, and of the effectiveness of its interventions, than at the time of the CAM. Risk control did not depend on simply catching up CP5 volumes and doing prioritised CP6 volumes.
- 1.24 STE had advised the Network Rail Board at the time it submitted its SBPs that it expected that it would be necessary to deploy approximately £300m worth of additional targeted activity on earthworks during CP6 to resolve emerging failures that might arise. This would need to be targeted where the risk emerges, which would likely be driven by locations of extreme weather. In our draft determination, we pressed Network Rail to reconsider the timing and distribution of this amount of money. We acknowledged the need to have true contingencies for events arising (such as Dawlish and Dover sea wall during CP5), but challenged Network Rail to consider whether funds could be directed proactively at those renewals that would have been undertaken in a less constrained funding scenario, or other preventive

interventions. We describe Network Rail's response to our challenge later in this chapter.

## Earthworks

1.25 Network Rail did concede that its own assurance found that some routes (London North East & East Midlands (LNE&EM), London North West (LNW) and Wales) were not delivering the minimum benchmark earthworks renewal activities indicated by its Corporate Risk Assessment Matrix (CRAM) model. The planned renewal volumes in the SBP submission were below the minimum considered necessary to manage the asset portfolio at current levels of risk exposure. In our draft determination, we expressed the view that alternative mitigations such as heavy maintenance or additional inspection activity are not demonstrably effective in controlling risk in every case— especially the risk arising from sudden failure of assets during extreme weather. For this reason, in our draft determination we asked Network Rail, during its wider review of asset renewal to achieve better sustainability, to prioritise geotechnical assets whose renewal had been deferred and where the consequences of failure would be most serious.

## Structures

1.26 We identified in our draft determination that, in some routes, structures requiring major interventions had been omitted from CP6 plans due to funding constraints. This was a particular issue in Anglia and South East routes and could have led to a bow wave of work in future control periods. Safety mitigations at these structures were limited to some smaller scale repairs, additional examinations and operational restrictions. Even considering these actions, we were concerned at the ongoing risk of failure at these structures with associated impacts on safety and performance. In our draft determination we looked to Network Rail to address this issue in response to the process we required it to undertake to review its planned volumes of renewals. From a safety point of view, we sought clarification about how risk would be controlled within the stated funding, or whether more funds needed to be devoted to this area of asset management.

## Refurbishment, partial renewals and maintenance

1.27 Network Rail's SBPs proposed changing the balance of activities so that it undertakes more refurbishment, partial renewals and maintenance work. By not focusing exclusively on full-scale conventional renewals, Network Rail believes it can intervene in more of its assets and still maintain safety levels. We challenged Network Rail during our review to demonstrate the effectiveness of this approach and to show that it had the necessary capability to deliver its proposed re-balanced work bank. Network Rail said that it was incorporating the experiences of CP5, where

necessity has prompted an enhanced emphasis on refurbishment activities due to the deferral of many planned renewals. In some assets, this is now well established – for example partial renewal of switches and crossings (S&C).

1.28 Network Rail acknowledged that in other assets, such as signalling, there was greater uncertainty about the effectiveness of life-extending works. During the remainder of 2018 it is drawing up an improved strategy for prioritised corrective actions, incorporating lessons learned from CP5. Effectiveness of refurbishment and life-extending works is an area where Network Rail will have to target its assurance efforts throughout CP6 – monitoring and revising plans as necessary. Network Rail must focus on effective implementation of its risk control framework, as necessary mitigation where constrained funding prevents wider asset renewal. The importance of securing this improvement becomes amplified in subsequent control periods, if sub-optimal renewal activity volumes continue to challenge the sustainability both of asset condition and risk control.

### **Prioritising constrained resources**

1.29 Network Rail manages risk at its assets by means of a suite of company-wide standards and procedures. Constraints – not just funds, but also access, competent staff and supply chain capability – mean that in some respects Network Rail will not be fully compliant with its own standards in CP6. It has plans going into the following control periods, for example, in respect of vegetation management. This is also true with regard to some of Network Rail’s statutory obligations: there are long term plans to achieve better compliance with requirements for working at height, electrical safety and managing asbestos risk. We have accepted that what is proposed appears to be reasonably practicable, but it is important that Network Rail maintains focus on achieving its plans and does not defer undeliverable volumes of work into the future.

1.30 We also acknowledge that ambitious programmes to deliver improved vegetation management and electrical safety have been included in CP6 plans, when there were many competing claims on those resources. In both cases, Network Rail has prioritised securing better control of risks, even though full delivery of plans goes beyond the next control period.

### **Inspection and maintenance**

1.31 The various plans in the SBP refer to increased reliance on maintenance and inspection activities. We asked questions about these areas – how Network Rail could demonstrate their effectiveness in controlling risk and how it could show it had all the required resources and capability to deliver. Network Rail pointed to the opex (operating expenditure) sums within RSPs as evidence that increased funding has

been made available. It conceded that much of this activity is targeted at dealing with anticipated failure of assets, rather than preventing failure.

- 1.32 There is an opportunity to make inspection a more effective preventive tool, but only if it is allied with triggering appropriate maintenance and remediation mitigations. Further, Network Rail routes must be vigilant in ensuring that they do not achieve currently unidentified future efficiencies at the expense of the optimal capability of their maintenance function.

### **Remote monitoring, Intelligent Infrastructure and weather arrangements**

- 1.33 We asked for evidence of a consistent strategic approach to remote monitoring and to adverse weather arrangements. Both of these had been included in RSPs as being significant mitigations of risk. We had struggled to get routes to give a convincing account of the rationale for their deployment decisions. These are vital controls 'of last resort' when assets may have failed and ORR is keen to see the best deployment possible. With respect to remote monitoring, Network Rail acknowledged that there was variable maturity in routes' understanding of this topic, and some over-optimism about what it can achieve, especially in relation to monitoring earthwork condition and failure. Network Rail described its 'Intelligent Infrastructure'<sup>10</sup> programme and Weather Resilience and Climate Change Adaptation Strategy<sup>11</sup> to us. Detailed development of some aspects of these tools still progresses and it is vital that Network Rail ensures there is an effective strategy to optimise the benefits of remote monitoring at those assets whose failure would have the greatest consequences. This must include a clear framework for analysis of data and criteria for real-time decision-making. It is important that STE provides every assistance to routes to enable suitable and sufficient implementation of such a strategy. This will be a focus of ORR scrutiny in CP6.

### **Supply chain competence and capability**

- 1.34 Network Rail STE relied on the deliverability assessments carried out by Infrastructure Projects (IP) to demonstrate that it had the capability to deliver its re-balanced work bank as far as supply chain and access were concerned. Our challenge meetings did not give us total confidence that IP's scrutiny had been at such a level of granularity that routes could be certain of the conclusions. This is also

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<sup>10</sup> Intelligent Infrastructure is an ambitious programme to optimise Network Rail's safe and efficient management of its assets. It employs enhanced asset condition and fault data to tailor maintenance regimes for existing assets and inform improved design of new assets.

<sup>11</sup> This lays out the key principles and actions necessary to get to the position where weather and climate risk management is embedded in decision making processes across the business.

true of the assessments for additional volumes included in Network Rail's response to our draft determination.

1.35 STE described its initiatives around staff competency and the introduction of a new single competency framework as contributing to greater certainty that its own staff could deliver these activities. It will need to assure its capability to deliver consistently and comprehensively. We also note that there are challenges about how well positioned the supply chain is to begin planned work effectively at the beginning of the control period and to cope with delivering some of the peaks in planned work, such as signalling volumes in mid-CP6.

### **Adverse weather contingency measures**

1.36 Allied to effective monitoring is the need for Network Rail to have effective contingency arrangements in the event of adverse and extreme weather, when assets, particularly earthworks, are vulnerable to rapid, catastrophic failure. We challenged Network Rail to show that it has learned lessons and optimised these arrangements.

1.37 It explained that it had reviewed and rationalised various instructions in this area and brought them together into one company standard. It has a clear framework for invoking operational controls in adverse weather. It recognises that its ability to predict such events when they are highly localised is limited – but part of its proposed research and development funding is to explore enhanced capabilities in this area and to investigate increased asset resilience by intervening on specific components. Failure of assets is presently inevitable, and the contingency funding in the Group Portfolio Fund<sup>12</sup> exists to cover the consequences of such eventualities. Even when Network Rail included additional renewal volumes in response to our draft determination advice, it retained £188 million for anticipated activity in response to assets failing in extreme weather. Network Rail must, throughout CP6, monitor, review and revise its contingency arrangements in the event of adverse and extreme weather to optimise their effectiveness in controlling risk.

### **Electrical infrastructure**

1.38 Within the funding available to Network Rail, STE had guarded provision within the business plans to improve control of risk at its legacy electrical infrastructure and bring it into better legal compliance. This is a sign of maturity. The proposed Electrical Safety Delivery Plan spend is targeted at areas of greatest risk (securing isolations) but also those that will bring the greatest performance benefits by

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<sup>12</sup> See chapter 8 of our [draft determination overview](#) document for further information on the Group Portfolio Fund.

shortening the time needed to take a possession and thus increasing 'time on tools'. This approach is a blueprint for sensible decision taking. The fund is overseen from the centre, but allocated to routes. This is a pragmatic decision, reflecting the variable maturity of the routes. Network Rail's aim is to migrate greater investment decision making to routes as their maturity grows.

## Level crossings

- 1.39 Network Rail's strategy on level crossings has been rewritten to reflect that there is currently no additional specific funding for reducing safety risk for CP6 and to provide a clear steer on what routes are expected to deliver in this context. Network Rail's Board has not yet formally signed off the strategy. STE is developing guidance about a suite of factors that can influence decisions regarding what is grossly disproportionate at different types of level crossing. More work needs to be done to refine information about how these factors and cost-benefit analysis can inform decision-making.
- 1.40 Network Rail has stated that decisions to invest in level crossing safety must also be balanced against other safety risks, such as from embankments, structures, track, signalling, trespass and stations. We have reminded Network Rail that all risk must be minimised SFAIRP, irrespective of other funding pressures. Because of our intervention, Network Rail assesses that this may lead to profiling spend over the whole control period to achieve the necessary safety improvements. Network Rail stated that there is an intent to have a clear plan for each level crossing asset, identifying what changes would be reasonably practicable to reduce safety risk.
- 1.41 We advised that, where level crossing proposals are determined to be reasonably practicable, it might be an appropriate use of reallocated funds to plan such works. We know from our STE challenge meetings during our review that at least two routes, Wales and LNW, had been challenged by STE to show why 'optional' level crossing spend in Appendix D of route plans was not reasonably practicable. In our draft determination, we stated that we considered that a further £25m should be spent in LNW and £8m in Wales.
- 1.42 Further, we were concerned that the re-writing of Network Rail's Level Crossing Strategy had removed some of the stretching targets for routes to achieve improvements at passive crossings and those with the least reliable methods of warning crossing users. STE has been overseeing the development of value-for-money solutions at crossings that currently have the least reliable controls. We stated in our draft determination that we believe this has made some technical improvements reasonably practicable, and that there should be a targeted application of them. We suggested that £25 million to upgrade the highest priority user-worked

crossings (UWCs) with overlay warning systems, instead of relying on telephones, was a reasonably practicable measure and should be funded from the outset. This applied to both England & Wales and Scotland, with it being for Network Rail to consider how and where it should best be targeted.

- 1.43 In its response to our draft determination Network Rail agreed with our challenges relating to level crossings. It has moved £25 million and £8 million, respectively, into core expenditure for LNW and Wales routes; it has allocated £25 million to the prioritised introduction of overlay warning systems at UWCs. All routes now have plans to improve safety at UWCs. Further, as part of the wider challenge in our draft determination to consider additional renewals for increased asset sustainability, some routes have decided to include level crossings. Western route, for example, has allocated an additional £10 million for crossing interventions (as well as £4.16 million as its share of the spend on upgrading to overlay warning system at UWCs).

### **Recommended increased work volumes**

- 1.44 It is not ORR's role to dictate or prescribe what is reasonably practicable or to decide Network Rail's priorities. It is, though, our role to judge whether the CP6 SBPs can deliver a safe, legally compliant railway. In determining this, we challenged Network Rail in a number of areas where it appeared to be ruling out expenditure that might be reasonably practicable. This included the earthworks and level crossing items described above and basic health and safety provisions in the Freight & National Passenger Operator's (FNPO's) plan (described later). Further items include volumes for tunnels in LNW and drainage in Anglia.
- 1.45 In all cases, in our draft determination we recommended that Network Rail include them as items to consider for prioritisation in its wider review of renewal volumes to improve asset sustainability. These volumes were identified in the bottom-up plans from the routes but had been ruled out on the grounds of affordability. The response from Network Rail to our draft determination challenges was positive, accepting the points we made.

## **Worker Safety and Occupational Health**

### **Compatibility of solutions**

- 1.46 We were pleased to note that Network Rail's plans and solutions are compatible with cross-industry strategies and align with RDG's 'Leading Health and Safety on Britain's railways'. In some cases, Network Rail is providing strong leadership on behalf of all the industry, for example, on suicide prevention and the Rail Technical Strategy Capability Delivery Plan.



1.47 We note and welcome Network Rail's intention to continue its support for, and positive participation in, RSSB-led safety initiatives such as 'Health and Wellbeing' plans.

### **Worker safety and the 'Home Safe' plan**

1.48 Network Rail's 'Home Safe' plan is well established. It is a rolling, prioritised programme to implement the main themes and targets of Network Rail's strategy and is actively monitored at the centre. Every route has committed itself in its plan to fulfil the demands of the programme. Many of the themes within the plan for CP6 will deliver improved occupational health. Revised fatigue management arrangements are one example. With regard to worker safety, STE has made strenuous efforts to provide guidance to routes – and to develop affordable solutions that will enable them not merely to maintain present levels of risk control but to deliver improved safety. Each technological innovation has a route champion, which will prove the business case for its solution so that other routes can take advantage of the benefits. The plan looks sensible, risk-based and should be given every opportunity to succeed.

### **Lost Time Injury Frequency Rate (LTIFR) and Risk Management Maturity Model (RM3)**

1.49 Through their dialogue with Network Rail STE, each route is now committed to a more challenging LTIFR<sup>13</sup> target and each route has agreed to employ RM3<sup>14</sup> to analyse its own effectiveness. The route scorecards provide a useful means of comparison. They will be one of the sources of information about health and safety performance in CP6 – but we will continue to use the full range of means of investigating how well Network Rail is doing to control risks to the health and safety of all those affected by its undertaking.

### **Workforce safety FNPO**

1.50 We challenged items relating to basic health and safety legal compliance matters, such as providing level walkways in good condition within depots. These were originally in the 'optional' spend scenario in the FNPO RSP and in our draft

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<sup>13</sup> The Lost Time Injury Frequency Rate is the number of lost time injuries occurring in a workplace. The Network Rail measure is the number of lost time injuries per 100,000 hours worked, although many other industries calculate it per one million hours worked. At period 6 in 2018-19, the LTIFR was projected to be 0.32 at the end of CP5. This is an overall figure, with substantial variations between routes and Infrastructure Projects. All routes have a target of 0.17 for end of CP6. Network Rail maintains its way of calculating LTIFR so that it has a consistent means of measuring trends – but it means comparison with other sectors is not straightforward.

<sup>14</sup> RM3 describes what excellent management capability would look like for the key elements of an organisation's health and safety management system as measured against five maturity levels.

determination we suggested they should move into the core spend at a cost of £22m. Network Rail accepted these points in its response to our draft determination.

## Research and development

- 1.51 In the SBPs, Network Rail set out plans for a research and development (R&D) programme for the control period costing £440m. We are clear that R&D has an important role to play in enabling a sustainable railway in the control periods beyond CP6.
- 1.52 As set out elsewhere in our draft determination<sup>15</sup>, given the more immediate challenges faced on asset condition in particular, we said in our draft determination that the R&D fund should be set at a minimum of £100m, and embedded within the industry's governance structure for R&D.
- 1.53 In its response to our draft determination Network Rail presented a substantially revised and re-focused bid for R&D funds. The re-scoped proposal is for £245 million investment, which will be matched with £112 million of third party provision to make a total R&D fund of £357 million. Network Rail described a simpler, more effective governance structure for the fund.
- 1.54 The largest part of the R&D programme relates to efficient asset management and this contributes to asset sustainability and has benefits in terms of managing safety risks. We think that it is reasonable that this is the major focus of R&D activities under the statements of funds available (SoFAs). Effective innovation, flowing from targeted R&D, is a means of securing improved asset sustainability, which could reduce future renewals as discussed further in our [supplementary document](#) on our review of Network Rail's proposed costs.

## Responses to our draft determination

- 1.55 Network Rail accepted our challenges about spend that was originally classed as optional but we believed should be considered reasonably practicable core spend. Consequently, the SBPs now include: £22 million in FNPO route plan expenditure on safety improvements, including walking routes; £25 million in LNW route and £8 million in Wales route expenditure on level crossing interventions; £25 million, which Network Rail has prioritised and allocated to routes in England & Wales and Scotland to upgrade the highest priority user-worked crossings with overlay warning systems.
- 1.56 We included safety as one of the factors to consider when responding to our draft determination suggestion that Network Rail should consider additional asset renewal

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<sup>15</sup> See chapter 6 of our [draft determination overview](#) for our decision on R&D funding and governance.

volumes in order to achieve improved asset sustainability. We suggested that some of the 'gaps' identified by Network Rail's own assurance activities should be a priority. Network Rail has done this – using STE analysis as a starting point for its planning of additional volumes.

- 1.57 This has resulted in allocation of funds to routes that will broadly ensure that routes will achieve minimum volumes in significant areas. These include significant additional funds for track in Wessex and for earthworks in LNW, LNE&EM and Wales, and a modest increase for drainage in Anglia.
- 1.58 Once this 'top-down' allocation of priority spend had been derived, the routes were asked to sense-check proposals and then suggest their own items for consideration to be included in agreed additional expenditure. In thinking about increasing asset sustainability, the routes were guided by our draft determination observations, including specific proposals to mitigate safety risks for earthworks, drainage, track and structures on the relevant parts of the network. This led, in some cases, to proposals which directly addressed ORR concerns, such as the additional spend in South East route which will help to remediate metallic structure sustainability.
- 1.59 We recognise that routes only had a short time to develop plans following our draft determination findings. The resulting proposals are a good start and clearly try to target the adjustments we suggested. Network Rail has demonstrated that the revised plans will deliver greater impact on asset sustainability than the SBP average. We acknowledge that the rolling nature of Network Rail's forecasting means that the plans will continue to be developed and refined. We also acknowledge that we asked Network Rail to re-plan its work to try to achieve a number of priorities within asset sustainability, not just safety ones. It was not always clear to us, when studying the detail of route plans, to what degree they had been ranked by safety risk. It is an area where we will continue to scrutinise and challenge throughout the CP6.
- 1.60 Whilst each route believes it can make a strong case for the packages of work it has identified, a number of routes submitted additional packages of work over and above their target allocations. Network Rail judged that there is not yet sufficient justification for these items, but these would provide further options in the event that substantial additional funding were to become available. There is the potential for this in relation to risk funding from Network Rail's 'group portfolio fund' (GPF – discussed further in Chapter 8 of our final determination [overview document](#)). Network Rail accepted ORR's suggestion in the draft determination that approximately £900 million of centrally-held risk contingency fund should be allocated to the routes. Should risk not materialise, routes would be free to devote the funds to the sort of additional schemes already developed but not yet funded.

- 1.61 The process of re-planning for asset sustainability has set a useful benchmark for continuing development of Network Rail's SBP. It has prioritised the areas where assurance had shown the greatest gaps and has allocated remaining funds in proportion to where those gaps are – so Anglia route, for example, receives proportionately less than other routes, because its asset condition is not projected to deteriorate to the same degree. Neither has the process been rigidly inflexible; Scotland route, for example, was not a route where we had identified significant asset sustainability concerns – but Network Rail's own processes have led to additional funds to address safety risk and asset sustainability concerns at high alumina cement bridges.
- 1.62 In our draft determination we suggested to Network Rail that it should consider additional renewals to the value of around £1 billion more than had been included in the SBPs. We thought this could be achieved through a combination of increased efficiency, reduced expenditure on research & development and increased property income.
- 1.63 In its response to our draft determination Network Rail agreed that it should spend more on renewals; it has described a programme of work some way short of our suggested total. It has justified this in several ways. One relates to the means by which its model calculates asset sustainability; this is considered elsewhere in our final determination. We do note, though, the point that enhancement activity outside the scope of the periodic review is not reflected in the discussions we have been having – and can be significant, such as the £250 million that will be spent on track and earthworks during Transpennine upgrade works.
- 1.64 Part of Network Rail's rationale for its suggested level of renewals increase is that it envisages that its proposed increased R&D investment will yield benefits in asset management such that fewer renewals will be required in the future to deliver long-term sustainability. Whilst we note and encourage any innovation to make asset management more effective and better value for money, we also note that this is a dependency; the amount is contingent on additional R&D spend and on that spend achieving its desired results. There will be implications for volumes of renewal required to achieve sustainable assets should this innovation not be delivered successfully.
- 1.65 Successful delivery of Intelligent Infrastructure and other R&D asset items is particularly crucial for managing risk at earthworks. Despite the additional renewals volumes proposed earthworks is still the asset group most susceptible to failure in extreme weather events – a fact reflected in the £188 million that Network Rail had set aside in the GPF for reactive earthworks interventions. More sophisticated

monitoring and reaction frameworks will not prevent failures, but will predict them and alert staff to them so that they can introduce optimal mitigation measures.

- 1.66 Finally, we note that Network Rail's final figure for additional renewal activity is further dependent on achieving its revised efficiency targets – much of which is unidentified or in an immature state of development.
- 1.67 In summary – we are satisfied that Network Rail has, broadly, committed itself to additional expenditure on asset renewals that align with the priorities described in our draft determination. In the short time available since we published our draft determination Network Rail STE and routes have developed plans addressing the principal gaps we (and Network Rail's own assurance activity) had identified. The revised plans have the potential to improve asset sustainability and better manage precursors to catastrophic risk. We note that the expenditure offered by Network Rail is contingent, to a degree, on it achieving the benefits of its R&D programme and on delivering currently unidentified efficiencies. However – we also note the flexible, rolling nature of budget forecasting which will allow further refinement and appropriate response to developments. It is also possible that route-controlled contingency funding could be allocated to additional outputs in the event that risk does not materialise.
- 1.68 We will continue to pay close attention to this area throughout CP6 – inspecting to assure ourselves that Network Rail is delivering appropriate volumes and types of intervention at its assets to control risk.

## Conclusions

- 1.69 Our scrutiny of Network Rail's proposed plans for CP6 has shown that there is evidence of growing maturity in its management of health and safety. It has targeted efforts at priority areas in order to improve its health and safety strategy: the Home Safe Plan and Train Accident Reduction Plan. In doing so, it has ensured its efforts are focused and routes are committed to their delivery. It has a challenging LTIFR target for CP6 and is promoting the use of RM3 as a tool for securing excellence.
- 1.70 Network Rail's own assurance activities have been robust – resulting in progressive challenge to route proposals and securing improved arrangements. This is a positive development. The routes show varying degrees of ambition and maturity – but the matrix framework has the potential to drive the required improvements. In particular – there needs to be an evolution in routes' understanding of what 'so far as is reasonably practicable' means for their investment decision-making.

1.71 Regarding safe asset management, Network Rail should aspire to unceasing improvement across all asset classes to assure continued safety over the network and greater sustainability over time. Our draft determination asked Network Rail to make targeted adjustments to its plans over the summer to reflect our decisions that funding should be put into improving asset condition and ensuring that minimum safety requirements are met. We received a positive response to our observations, resulting in:

- movement of the FNPO's 'optional' spend of £22 million for basic depot safety improvements into 'core' spend;
- for LNW and Wales routes, the 'optional' level crossing spend of £25 million and £8 million has become 'core' spend;
- allocation of £25 million across the routes in England & Wales and Scotland for priority user-worked crossings with telephones in long sections to become upgraded to overlay warning systems;
- recognition that more needed to be spent on asset renewals to achieve improved asset sustainability. Network Rail has proposed additional works including many of the asset groups we wished to see prioritised on safety grounds – earthworks, structures, track and drainage. There is also the potential for routes to deliver further work if risk funds are not required by contingencies.

1.72 We highlight that Network Rail's revisions to its plans are still being developed. We note that the scale and scope of additional renewals is contingent on delivery of R&D proposals and realisation of some as-yet unidentified efficiencies. This means they are still vulnerable. We are not yet universally convinced that Network Rail routes have made the most appropriate risk-based prioritisations or that they have identified all SFAIRP improvements – but these are matters for continued scrutiny as part of our normal safety regulation.

1.73 We will maintain our focus on the safe management of earthworks and other assets susceptible to rapid failure in extreme weather. We will promote the refinement of strategic, consistently effective monitoring and warning arrangements to mitigate safely the consequences of failure of this group of assets.

1.74 Network Rail's SBP, along with the updates included in its response to our draft determination, has the potential to control safety risk and fulfil its statutory obligations – so long as it keeps its asset renewal plans under review to identify any additional reasonably practicable work that will deliver safe management of the network. Further – the success of this plan is dependent on:

- continued monitoring, review and revision by Network Rail of the arrangements described in its SBP – strengthening assurance activities, as necessary, to achieve this;
- in particular, it must assure itself that the routes are delivering the Home Safe Plan and catastrophic risk reduction programmes, and that they continue to demonstrate the effectiveness of the balance between renewal, refurbishment and maintenance activities;
- safeguarding the required resources and capability to deliver effective maintenance;
- it must continue to improve its inspection and condition monitoring strategy to deliver optimal risk control;
- it must continue to focus on achieving clarity of roles and accountabilities in its matrix management framework; and
- improved, effective delivery of Network Rail’s risk control framework is fundamental not only to risk control in CP6, but to continued sustainable, safe asset management in subsequent control periods.



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