# Network Rail Scotland Monitor

*Periods 8-13 of Year 5 of CP5*
*14 October 2018 to 31 March 2019*

18 July 2019

# Contents

# 1. Overview

## Health and safety

1.1. Our review of Network Rail Scotland's performance against the risk management maturity model (RM3) suggests that overall maturity is at the 'standardised' level[1]. Sadly 2018-19 saw a fatal accident to a contractor in June 2018 at Bearsden station. This year we found good leadership in some areas such as track worker safety, but in other areas such as vegetation control, the route has struggled to meet Network Rail's risk control standards.  In common with the rest of the network in Great Britain, control of track risks in Scotland has improved substantially, but as with the rest of the network in Great Britain, we have concerns over the effectiveness of front-line assurance, lack of rigour and an inconsistent approach.  We also have the same concerns over the effectiveness of front-line assurance, lack of rigour and an inconsistent approach. The route is taking steps to improve in this important area and we plan further inspections in 2019-20 to assess improvements.

## Train service performance

### Passenger

1.2. Passengers in Scotland have suffered a decline in train service performance during CP5. They rely on both Network Rail and train operators working together to deliver punctual and reliable train services. ORR's remit is to ensure that Network Rail is doing everything reasonably practicable to deliver its contribution.

1.3. The CP5 framework comprised national targets set in October 2013. These targets are system-wide and do not differentiate between Network Rail and train operator contributions. Where targets are missed, we may investigate further to determine the extent of Network Rail's accountability and whether it has done or is doing everything reasonably practicable to deliver its contribution.

1.4. Currently passenger train performance in Scotland is significantly worse than the target set for Network Rail by the Scottish Ministers. At the end of 2018-19, the Public Performance Measure (PPM) Moving Annual Average (MAA) for the franchises let by the Scottish Government was 87.4%, 5.1 percentage points (pp) below the year end regulatory target of 92.5%.

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[1] RM3 describes what excellent management capability looks like by means of a five-point maturity scale, ranging from ad-hoc through managed, standardised, predictable and up to excellence. The standardised maturity level implies that there are sets of defined and documented standard processes established and subject to some degree of improvement over time. These standard processes are in place and used to establish consistency of process performance across the organisation.

1.5. In the last year, Network Rail has been implementing the recommendations from the independent review of performance by Nick Donovan. This review was commissioned by the ScotRail Alliance (a partnership between Abellio ScotRail and Network Rail Scotland). Subsequently ORR commissioned the independent reporter Nichols, to provide assurance on progress. While Nichols identified positive intent by the Alliance, its report in December 2018 highlighted the need for further improvement particularly around planning, reporting and project management.

1.6. Failings in Network Rail's underlying performance management capability were evident from a series of industry reviews and our own "deep dives" undertaken in the last two years. Collectively, the outcome of these reviews identified concerns with Network Rail's approach and commitment to performance planning and its capability to recover services following incidents on the network, working with train operators. In response, in November 2018, ORR issued a Provisional Order, requiring Network Rail to address the issues identified.

1.7. This intervention has generated a positive reaction and a thorough response by Network Rail that aims to understand and tackle systemic issues impacting on performance, including examples of specific activities in Network Rail. We are holding Network Rail to account for the implementation of plans and the commitments set out in its response.

1.8. We have finalised a framework to hold Network Rail to account to meet the reasonable requirements of its customers and funders in CP6. Our CP6 holding Network Rail to account policy was published in March 2019 and is effective from the beginning of CP6.

## Freight

1.9. Network Rail's performance for the freight sector was strong. The performance of freight in Scotland remains at a high level. At the end of period 13, the Freight Delivery Metric (FDM) for the Scotland strategic freight route was 96.7%, the same as at the start of the year.

## Asset management

1.10. Network Rail Scotland's asset performance was good in periods 8-13 of 2018-19 as they saw the number of delay incidents at an average low for the control period.

1.11. We monitor the actual volumes of work completed by Network Rail Scotland and hold it to account for achieving its plan. Network Rail Scotland reports against the 'Six Key Volumes' on its route scorecards. This is in amalgamation of six physical volumes of asset renewals deemed most likely to impact passenger and freight customers if they

fail. Network Rail Scotland achieved 100% of the 'Six Key Volumes' set out in its Delivery Plan.

1.12. The Composite Sustainability Index (CSI) is a measure used to understand network sustainability. It was developed by Network Rail and is run annually, producing a percentage change in residual value of the assets. Network Rail Scotland exited CP5 with a positive increase of 3.59% against its CP4 exit position. The route's CP6 forecast was set in line with the Final Determination, and will be updated via the change control process to reflect CP5 actuals and the RF11 Delivery Plan. Network Rail is working to update its model for calculation of asset remaining value and asset condition score.

# Developing the network

1.13.  Network Rail's has made good progress with recent delivery of the Scotland enhancements portfolio. Particular highlights include:

- Shotts Line electrification;

- Stirling, Dunblane, Alloa electrification; and

- Glasgow Queen Street redevelopment

1.14. Scotland has also out-performed the rest of the rail network, with 58% of milestones delivered on-time. Key achievements include the Borders Railway and Highland Mainline projects.

1.15. The completion date for the Aberdeen to Inverness improvements works was delayed (from March 2019 to December 2019) earlier in the control period, but Network Rail is on plan to deliver the revised milestone.

1.16. Network Rail's System Operator team in Scotland is starting work on business cases for several new schemes, as part of the new process for specifying, funding and committing to Scotland enhancement in CP6. Network Rail has engaged well with Transport Scotland on this new process and this close working will need to continue to allow new schemes to progress in a timely manner through the new governance arrangements.

# Expenditure and finance

1.17. Network Rail Scotland financially outperformed its internal budget by £32m in 2018- 19. Financial performance is measured using the Financial Performance Measure (FPM). This provides a better understanding of Network Rail's financial performance than simple income and expenditure variances. Financial performance

was worse than its internal budget across CP5 as a whole and was significantly worse (£0.8bn) compared to our PR13 determination for CP5.

1.18. We monitor the efficiency of Network Rail's core business activities. These are operations, support, maintenance and renewals. Expenditure in Scotland increased by 11% on these activities in 2018-19 compared to 2017-18. Network Rail has largely attributed this increased expenditure to planned activities to make use of available funds including enhanced maintenance. We will report further on this in our annual efficiency and finance assessment.

## Monitoring efficiency

1.19. At the end of March 2019 we published an update letter, detailing our increased concerns about efficiency plans. Routes, including Scotland, have not made the progress we expected with leading indicators since we last reported in November. Network Rail has put an action plan in place and we have seen some progress. We have commissioned the independent reporter, Nichols, to review routes' efficiency and renewals workbank preparations.

# 2. Health and Safety

## Performance against key indicators

2.1. Network Rail Scotland's lost time injury frequency rate (LTIFR) was appreciably higher than target – 0.497 vs a target of 0.362. The fatalities and weighted injuries measure (FWI), a measure of accident severity, was steady, although reflective of the sad death of a contractor at Bearsden station in June 2018.

2.2. Over CP5 our assessment of Network Rail Scotland's risk management maturity suggests little overall change in attainment, with maturity around the 'standardised' level, and a reasonable degree of consistency across the control period. Whilst there is room to improve, Network Rail Scotland has shown sustained management maturity over the period.

## Scotland Year Comparison Year 1 & Year 5



## Inspection and investigation findings

## Track

2.3. Network Rail Scotland's management of track improved over CP5. New twist faults reduced but repeat faults stayed constant. Our limited analysis suggests that some of this may have been due to work being targeted to address symptoms of problems

rather than addressing root causes, something we have previously brought to Network Rail's attention. Numbers of broken rails rose in 2017-18 and failed to recover in 2018-19, giving Scotland the third highest number of rail breaks across Great Britain. In relation to the management of track derailment risks, we found some non-compliance with standards for inspection of longitudinal timber beams on bridges. The fact that our inspections found this non-compliance links to our wider concerns about the failure of Network Rail Scotland's assurance processes to identify this issue. Overall, our assurance concerns reflect those in all routes; a great deal of reliance is placed on managers carrying out basic self-assurance checks without ensuring that risk controls are effectively implemented.

## Civils and Structures

2.4. Numbers of wrong-side failures (WSF's) hazard ranked at 50+ were steady in 2018-19, peaking around periods 7-8 and showing the vulnerability of some assets to weather-related events (leaf-fall and storm damage to overhead line equipment (OLE)). Network Rail Scotland continued to explore ways to deal with third party risks from earthworks following a number of slope failures in recent years. We found that Network Rail Scotland struggled to meet mandated timescales for evaluating structures examination reports, but generally in response to this difficulty sensibly prioritised higher risk structures and made appropriate interim maintenance arrangements where renewals were delayed. We also found problems with non-functioning remote river level detectors intended to detect scour risk. This is something that Network Rail needs to improve if it is to fulfil its CP6 commitments in relation to increasing resilience of its network.

## Electrical Safety

2.5. Network Rail Scotland has increased its maintenance resources but is still working under temporary variations against maintenance standards regarding OLE. Failure of electrical assets featured in wrong side hazard failures ranked 20+, possibly reflecting bedding-in and lack of a mature OLE maintenance organisation.

## Off-track

2.6. Numbers of animal incursions were unchanged, with these relating to changed land use, or poorly maintained fencing on land not known to contain livestock. There were too many incidents of trains striking trees and branches, one of which caused a derailment at Culloden Moor in September 2018. These incidents are the consequence of neglecting vegetation in previous years. However, we found better progress than expected on planned vegetation clearance, and although the route has a plan to clear backlogs and reach compliance with Network Rail vegetation

standards, it does not predict compliance until CP7. Network Rail Scotland needs to sustain efforts on vegetation control.

## Level Crossings

2.7.	There was a steady, modest decline in modelled level crossing risk in Scotland over CP5, although with little improvement in 2018-19.  There were no accidental fatalities on level crossings in Scotland in 2018-19.  Numbers of significant level crossing events rose, mostly related to pedestrians, perhaps reflecting more, faster trains and population growth. It is positive to see the route exploring innovative and bespoke solutions to risks at particular locations such as new types of crossings at Dingwall and Ardrossan. Network Rail Scotland needs to continue to provide technological solutions, particularly at footpath and user-worked crossings, and progress agreed level crossings closures where possible.

## Operations

2.8.	Numbers of signals passed at danger (SPAD's) continued to increase. SPAD's not associated with driver error were mostly (85%) due to technical problems rather than signaller error.

2.9.	There were three derailments. One as referred to above relating to vegetation at Culloden Moor in September 2018, with two others at Dunkeld & Birnham (rolling stock-related) and Stonehaven (signal/points interlocking), both in October 2018. Numbers of operational close calls (reported near-misses) were down significantly, in particular those related to track worker protection.

## Occupational health and safety

2.10.	2018-19 sadly saw a fatal accident to a contractor working at Bearsden station which we continue to investigate.  Many of the other accidents were caused by slips, trips or falls, which aligns with other routes.  Network Rail Scotland's long-standing commitment to avoid red zone working (doing track work between trains on open lines using look-outs for warning), and a positive safety culture contribute to good safety performance.  However we continue to see near-misses involving compromised line blockages and possessions due to human error.  In line with our wider concerns across all routes and in many safety-critical areas about the effectiveness of assurance, an effective monitoring system would do much to promote closer adherence to safe systems of work.  More positively, Network Rail Scotland proposes to adopt technological solutions to reduce the risks of human error.  Improvements in control of risks from hand-arm vibration (HAVS) and asbestos made good progress in line with improvements in other routes.

# 3. Train service performance in Scotland

3.1. Network Rail entered CP5 at lower levels of performance than anticipated in our 2013 Periodic Review (PR13), and performance has continued to decline throughout the control period with a sharp drop in the 12 months to December 2018. In fact, the industry has failed to deliver its planned levels of performance in each of the last nine years.

3.2. Throughout CP5, Network Rail in Scotland did not achieve the levels of performance mandated by Scottish Ministers (92% PPM for each year of CP5 and CP5 exit of 92.5%)[2]. Network Rail Scotland exited CP5 with a PPM of 87.4%.

3.3. There have been several plans put in place to drive improvements in performance. In 2016, following a sustained decline in performance, the ScotRail Alliance published its performance improvement plan which set out actions to improve the reliability of rolling stock and to ensure the railway infrastructure was operating to its optimum efficiency[3]. Despite embedding this plan, after a period of improvement, performance started to decline following the autumn of 2017. This decline continued after significant weather events including snow and sub-zero temperatures in late February and early March 2018 which caused severe disruption across Scotland and resulted in the closure of the entire rail network in Scotland.

3.4. In response to this decline, in March 2018, the Alliance commissioned Nick Donovan, a railway expert with more than 30 years in the industry, to undertake a review of performance. The Donovan review concluded with 20 recommendations covering asset and fleet management, creating a better operating plan and improved service recovery arrangements.

3.5. Despite these interventions, over the past year, performance has continued to decline. This decline is the result of a combination of Network Rail attributed delay (driven predominantly by weather and an increase in the time taken to recover from incidents) and the well-publicised issues experienced by Abellio ScotRail around late delivery of its new Class 385 rolling stock and upgraded high-speed InterCity trains.

3.6. Our approach to monitoring and enforcement of train performance in CP5 was influenced accordingly. In the first two years of CP5 we took an 'input' based approach, focusing on the actions Network Rail was taking to improve performance.

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[2] The Scottish Ministers High Level Output Specification for CP5 is available here.

3 Transport Scotland asked the ScotRail Alliance to produce a Performance Improvement Plan following a drop in train service performance from the expected 90.3% to 89.6%.

3.7. In response to Network Rail's ongoing poor delivery of performance to passenger train operators, we made several specific interventions:-

■ In 2015, [we found Network Rail to have breached Licence Condition 1 of its Network Licence in relation to Scotland](#). We did not impose a penalty given the actions that Network Rail undertook to address the issues identified; and

■ In November 2018 we made a Provisional Order in respect of Network Rail's performance management capability and weaknesses identified through several independent industry reviews including the Donovan Review. The Provisional Order was made in response to evidence of issues with performance management capability across the company. It was not specific to Scotland. Network Rail provided us with an assessment of the underlying causes of deterioration together with an acceptable plan to address these which satisfied the obligations of the Provisional Order.

3.8. In the final months of CP5, Abellio ScotRail breached performance levels required in its Franchise Agreement with Scottish Ministers[4]. In response, in December 2018 Transport Scotland issued a Remedial Plan Notice to Abellio ScotRail, requiring it to set out how it planned to address these performance issues.

## Passenger train service performance in 2018-19

3.9. The PPM MAA for the franchises let by the Scottish Government (Abellio ScotRail and Caledonian Sleeper) at the end of 2018-19 was 87.4%, 5.1 percentage points (pp) below the year-end regulatory target of 92.5% and 2.1pp worse than at the same time last year.

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[4] Specifically in relation to cancellation benchmarks for the Suburban East Sector and Express Sector Other and PPM benchmarks for the Suburban East Sector during November and December (Period 9).

**Scotland PPM (MAA)**

PPM (MAA)

Year End Target

● Regulatory Target

92.5%

87.4%

2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19

Source: Network Rail

Financial Year

PPM is the proportion of trains arriving at their final destination on time. On time is within five minutes (or ten minutes for the long distance sector).



**PPM MAA 2018-19 Period 13**

Variance to End of Year Performance Strategy Target (pp)

ScotRail — 87.4% — -3.1 pp

Caledonian Sleeper — 89.7% — 0.4 pp

PPM MAA

Source: Network Rail

3.10. Over the last year, 58% of delay minutes affecting Abellio ScotRail and 41% of delay minutes affecting Caledonian Sleeper were attributed to Network Rail. The remaining delay minutes were attributed to the operators themselves and other operators.



**Proportion of Total Delay Minutes by Responsible Category: 2018-19**

| | Network Rail on TOC Delays | TOC on Self Delays | Delays to TOC caused by another operator | PPM MAA | CaSL MAA | Trains Planned (Rounded) |
|---|---|---|---|---|---|---|
| ScotRail | 58% | 33% | 9% | 87.4% | 3.7% | 770,100 |
| Caledonian Sleeper | 41% | 47% | 12% | 89.7% | 7.3% | 2,200 |

■ Network Rail on TOC Delays
□ TOC on Self Delays
■ Delays to TOC caused by another operator

Source: Network Rail

3.11. The 58% attributable to Network Rail for Abellio ScotRail performance is comprised of 22% network management[5], 20% infrastructure failures (both track (5%) and non-track assets (15%)), 9% severe weather[6] and autumn and 7% external events[7].

3.12. For Caledonian Sleeper, Network Rail's share of delay was 41%, which included 15% network management, 14% infrastructure failures (both track (3%) and non-track assets (11%)), 5% severe weather and autumn and 7% external events.

3.13. As with the rest of Great Britain, in 2018-19, Scotland had an extended period of hot and dry weather. Typically, the railway performs better with more benign spring/summer weather, however higher than normal temperatures in Scotland during June and July 2018 impeded any recovery of performance and it was necessary for Network Rail Scotland to impose speed restrictions to minimise the risk associated with rails buckling. For example, 20mph limits in July 2018 between Edinburgh and Glasgow. The hot weather also impeded Network Rail Scotland's ability to safely undertake asset maintenance.

3.14. In September 2018 'Storm Ali' hit Scotland's rail infrastructure hard with heavy rain and high winds resulting in major line blockages due to trees on the line and damage to overhead wires.

3.15. Even when presented with challenging weather conditions, Network Rail must ensure it is doing everything reasonably practicable to ensure it is managing its infrastructure. In response to performance issues experienced during the hot weather of June and July 2018, Network Rail's management of critical rail temperatures was independently reviewed in 2018-19 and Network Rail has undertaken its own review. We will continue to engage with the route to ensure it has embedded any lessons learned.

3.16. Whilst the number of incident causing delays has fallen, the delay per incident (DPI) has increased indicating that service recovery remains an issue. Throughout 2018- 19, the number of track and non-track asset failures was stable or decreasing. However, the time to recover from those incidents categories continued to increase.

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[5] Network management includes issues with Network Rail operations and timetable problems.

[6] Severe weather includes weather related delays and issues with structures (i.e. embankment slippages).

[7] External factors include areas such as vandalism, trespass, police activity and fatalities.

**Delay minutes per track/non-track incident (MAA)**

2018-19 Period 13

2013-14 Period 13

Scotland, 101
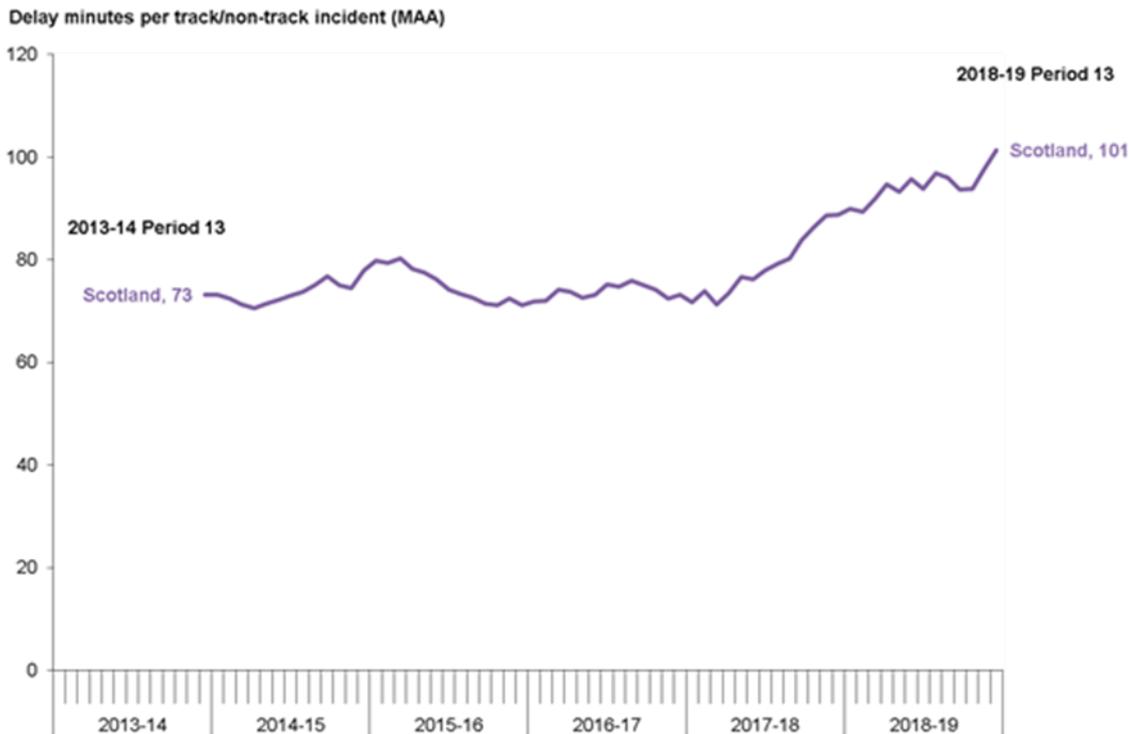
Scotland, 73

3.17. We remain concerned about the increase in DPI in Scotland, given the impact this trend may have on Network Rail's ability to meet its CP6 performance targets.

3.18. We are encouraged by Network Rail Scotland's increasing use of intelligent infrastructure, a key focus of both Network Rail's delivery plan for CP6 and recommendation four of the Donovan review. Intelligent infrastructure incorporates monitoring equipment designed to provide early warning of potential asset failure. It can be used to aid asset performance analysis and to shape maintenance regimes. By the end of 2018-19, Network Rail Scotland had made 726 successful interventions through the use of remote condition monitoring (RCM), particularly on points and track circuits. The average interventions per period was 56. One of the recommendations in the Donovan review in relation to the use of RCM technology baselined interventions at 20 per period. Continued deployment and use of intelligent infrastructure, combined with Network Rail Scotland's CP6 plans to put in place further RCM systems (including fibre optic rock fall detection, slope stability monitoring and flood telemetry) should help drive improvements in the resilience of the network in Scotland.

3.19. When incidents do occur, Network Rail Scotland must ensure that it can respond quickly to identify the cause and how it can be remedied. The route understands this and has committed to a review of its remote response units resource (also known as mobile operations managers) and the strategic placement of that resource. The issue of DPI is discussed further in the Asset Management Chapter.

3.20. Throughout 2018-19 Network Rail Scotland reported performance problems related to the implementation of the May 2018 timetable change. It reported that performance had been affected in particular by late presentation of cross border services, which in turn affected services in Scotland. More recently, improving cross border performance is impacting positively on performance in Scotland. We have already taken action in response to Network Rail's failings in relation to the implementation May 2018 timetable[8].

3.21. The ScotRail Alliance commissioned an independent review of performance by Nick Donovan. It accepted and committed to implement the 20 recommendations in the review that were published in March 2018. To provide assurance on progress post Donovan review, we commissioned the Independent Reporter (Nichols) to assess how effectively the Donovan recommendations were being managed and implemented. In December 2018, Nichols reported a collaborative approach to performance improvement with evidence of innovation, however it highlighted the need for further improvement particularly around planning, reporting and project management.

3.22. The ScotRail Alliance accepted all of the recommendations made by Nichols, and committed to improving these areas. In recent months we have seen the Alliance strengthen its project management office (PMO) resource. With this resource in place, we are now seeing the PMO making changes to the approach taken to risk management and benefits realisation. There is also now reporting of the risks associated with delivery of each of the recommendations through a dedicated project register – which is regularly updated and shared with ORR and Transport Scotland.

3.23. More recently, Network Rail attributed delay is showing a sustained improvement, falling below 50%. Network Rail was contributing to a relatively large share of delay in the first eight periods of the year. However, Period 10, 11 and 12 were below the share recorded in the previous four years.

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[8] ORR's final order requiring Network Rail to take a series of actions to improve the effectiveness and efficiency of the timetable process and improve transparency for stakeholders (30 January 2019) is available here.

NR Periodic Share of Delay - Scotland Route
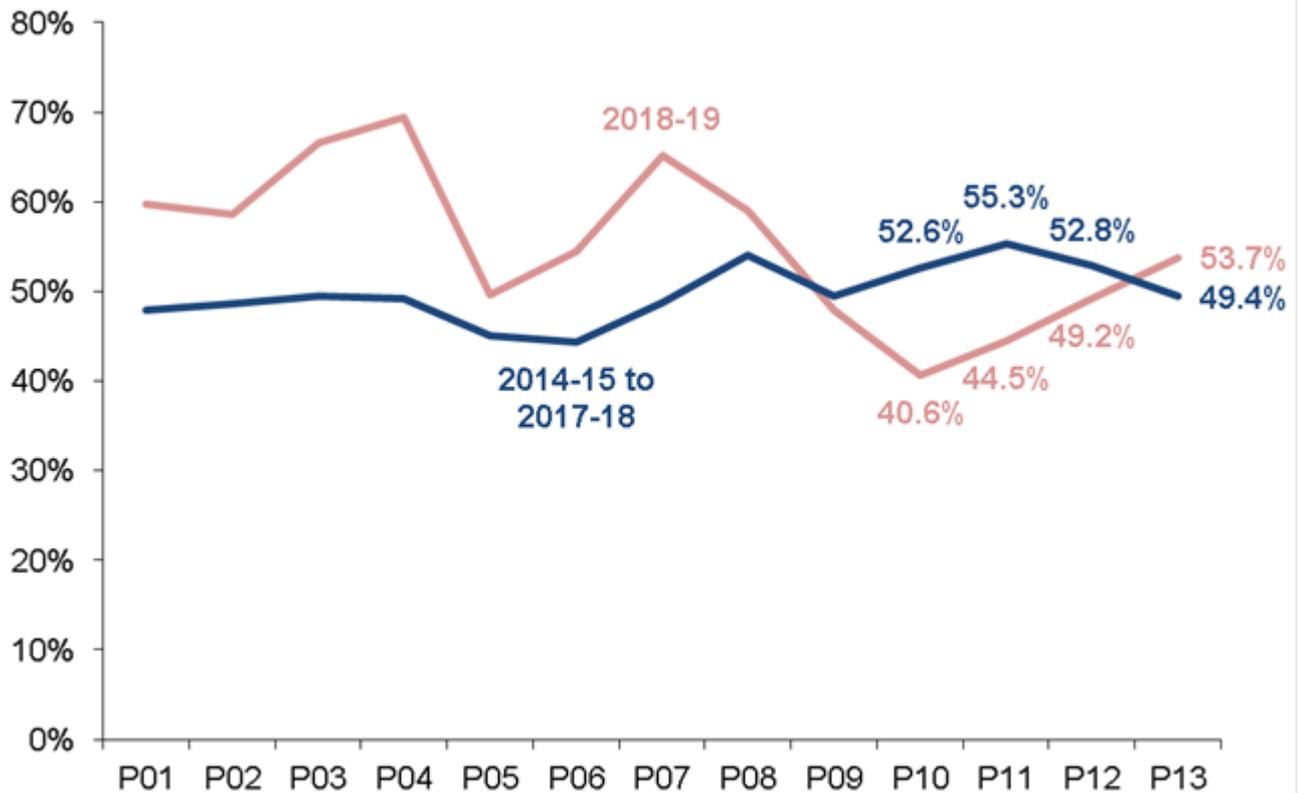
## Formal Enforcement - Provisional Order (train service performance)

3.24. The performance decline described and associated emerging challenges prompted several independent reviews of specific areas of the network to better understand underlying causes and make recommendations for improvements.  The findings of these reviews including the Donovan review of Abellio ScotRail's performance were the key drivers for ORR's formal enforcement action in November 2018.

3.25. We issued a Provisional Order under section 55 of the Railways Act 1993. This required Network Rail  to 'engage and work with train operators; deliver a report to ORR detailing how it is identifying the common underlying issues relating to performance planning and service recovery; and address and implement the conclusions of its report going forward into CP6'.

3.26. The main purpose of our Provisional Order was to ensure urgent action to understand and influence the performance decline evident throughout CP5.  It was a necessary, proactive step to avoid further deterioration of performance into CP6 resulting in a piece of long overdue action by the industry to understand the drivers of performance outcomes.

3.27. This intervention generated a positive response by Network Rail that aims to understand and tackle systemic issues impacting on performance including examples of specific activities in Network Rail's Scotland route. However, we recognise that overall punctuality is the outcome of delivery by all parties and requires cross industry engagement and collaboration. The industry now has an opportunity to collectively identify and deliver the components of good performance with more focus on inputs and leading indicators for train service performance rather than relying solely on performance outcomes.

3.28. Whilst we have formally confirmed that Network Rail has satisfied the obligations of the Provisional Order it is the implementation of the reports' findings, plans and commitments that is critical to securing the necessary improvements in train service performance.

3.29. Network Rail's role is to lead performance management and improvement in the industry. However, we will closely observe whole industry endeavours to drive a step change in performance management and outcomes and will report progress in the next monitor.

## Other performance interventions and measures

### Network availability

3.30. Network availability is an important passenger and freight end-user outcome. Network Rail should balance the level of disruption to passengers and freight customers, and the level of planned engineering work necessary to maintain, renew and enhance the network. In CP5, Network availability was measured using the Possession Disruption Index (PDI) for Passengers (PDI-P) and Freight (PDI-F).

3.31. As reported in our previous Monitor, a number of inaccuracies have been identified in the calculation, for PDI-P in particular. As a result, the outturn does not necessarily reflect the impact on passengers during possessions.

3.32. We undertook an extensive exercise to determine what Network Rail's customers thought of its delivery in this area. We also employed SNC Lavalin to advise on the best way of assessing network availability in CP6. Based on this advice, we discontinued the use of PDI-P and PDI-F. Instead we will use a suite of measures proposed by Network Rail that will give a clearer picture of how effectively Network Rail is managing in this area.

3.33. We will be engaging closely with Network Rail, in particular the System Operator (SO), to understand how it is working to optimise the balance between the level of disruption to passengers and freight customers and the level of planned engineering work necessary to maintain, renew and enhance the network.

## Network Capability

3.34. Network capability' describes the capability of the network in terms of track mileage and layout, line speed, gauge, route availability and the amount of electrified track. Our CP5 Final Determination required Network Rail to maintain (subject to network change) the baseline capability for which it is funded for the benefit of its stakeholders. For CP5, we said that the baseline capability of the network would be that in place as at 1 April 2014.

3.35. In CP5 we had some concerns about Network Rail's delivery in this area and its ability to adhere to accepted industry change processes. In response to stakeholder concerns and its own internal audit, Network Rail carried out a review of its processes and developed improvement plans. We commissioned Arup, as an Independent Reporter, to review CP5 Network Capability nationally and make recommendations regarding monitoring of Network Capability in CP6. Arup concluded that Network Rail's processes were delivering its obligations in CP5 and it made recommendations including creating a dashboard of measures to track Network Capability relevant KPIs. We will continue to monitor these outputs at an industry steering group.

3.36. For CP6, Scottish Ministers specified that in response to issues experienced in previous control periods, the Scotland route must deliver the Scottish gauge requirement[9].

## Freight performance

3.37. The regulatory performance measure for freight is the Freight Delivery Metric (FDM). This measures the percentage of freight trains arriving at their destination within 15 minutes of scheduled time. FDM covers delays for which Network Rail is responsible - i.e. not those caused by freight operators. The FDM MAA at the end of 2018-19 was

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[9] The Scottish Gauge Requirement is defined as per the Scotland HLOS:

The Scottish ministers require that the capability of the network will be operated and maintained as a minimum throughout CP6 at a level which will satisfy all of the track access rights of all passenger and freight operators in place at the date of the publication of this HLOS and any rights secured, or in course of being secured, between then and the 31 March 2019. In particular, it must be fully consistent with the service level commitments specified in the ScotRail and Caledonian Sleeper franchises.

**Passenger**: all Scottish routes are maintained to be capable of accommodating the gauge of all locomotives and passenger rolling stock, including cross border services and charter operator's vehicles, which have run in Scotland in CP4 and CP5 or are known to be planned to run in Scotland in CP6.

**Freight**: Freight gauge capability should be maintained to at least the capability in the most recently published issue of the Freight Gauge Database Map (published and maintained categories), or the Sectional Appendix, or the full suite of RT3793 forms for Scottish routes, whichever is most capable at the time of publication of this HLOS.

94% 1.5pp ahead of the regulatory target of 92.5%. The FDM for the Scotland strategic freight route was 96.7%, the same level as the start of the year.

3.38. We continue to liaise with the Freight and National Passenger Operators (FNPO) route to gain assurance that this level of performance is sustained and that the FNPO route will continue to deliver for freight and national passenger operators whose services cross the geographic routes.

## Monitoring Train service performance in CP6

3.39. We published a [revised framework](#) for holding Network Rail to account in CP6 which focuses on routine monitoring and assessment, inter-route comparison and early resolution of concerns to protect rail users.  It places more emphasis on collaborative working and stakeholder engagement to incentivise Network Rail to deliver for its customers and passengers and maximise the benefits of devolution.

3.40. We will monitor and assess train service performance through three 'lenses', that we will consider together:

- how Network Rail's geographic routes, system operator and FNPO are delivering against their own **scorecards**;

- how Network Rail is delivering against two **consistent route measures,** one for freight and one for passenger services. We also set a requirement for a national level freight measure (National FDM) reflecting the national nature of freight markets; and

- how Network Rail's component parts are retaining a focus on **reactionary delay and reliability** (i.e. cancellations) as well as punctuality, which Network Rail will regularly report on.

## Route scorecards

3.41. Network Rail introduced route scorecards in 2014-15 to monitor its key performance indicators and to align its train performance more closely with its customers' requirements.

3.42. Scorecards are complex and contain a large number of measures. We intend to focus on consistent route measures and 'train operator level' measures, rather than looking at more detailed measures. However we may consult/refer to alternative measures and indicators to support any review or investigation of Network Rail Scotland's delivery.

3.43. In the HLOS, the Scottish Ministers set performance targets of 92.5% PPM for Abellio ScotRail services and 80% for right time arrivals (RTA) for Caledonian Sleeper

services. We determined that the Abellio ScotRail PPM target for each year of CP6 should continue to be set at the HLOS target of 92.5% and 80% RTA for Caledonian Sleeper services. The obligation on Network Rail is to achieve the PPM and RTA targets to the greatest extent reasonably practicable. These targets have been reflected in the Scotland route scorecard for CP6.

3.44. The Scotland HLOS required delivery of freight performance (FDM-R) for Scotland of 93% at the start of CP6, moving through staged improvements towards 94.5% at the end of CP6.  We have agreed that this should be set in line with the levels required by Transport Scotland. We also set a requirement for national FDM, reflecting the network-wide nature of freight markets.

## Consistent route measures

3.45. In Scotland we will hold Network Rail to account against its PPM and RTA targets. In the event of performance being below expectations, we will use consistent route measures to provide further insight on Network Rail Scotland's contribution to overall network performance and to compare how much delay Network Rail Scotland causes to train services across all the routes.

3.46. Our routine monitoring and assessment focuses on these measures set in the Final Determination which are:-

■ a consistent route measure for passenger services known as CRM-P. This is all of the delay minutes to passenger services caused by each Network Rail route, normalised per 100 train kilometres; and

■ a freight delivery metric for each route known as FDM-R. This is a measure of Network Rail's ability to get commercial freight services to their destination within 15 minutes of scheduled time.

3.47. For each of these measures we will monitor delivery against the annual target for each route and the regulatory floor for each route. The floor is set below the target and signals the point at which we are highly likely to formally investigate.

3.48. The Scotland HLOS required delivery of a FDM-R for Scotland of 93% at the start of CP6, moving through staged improvements towards 94.5% at the end of CP6. The HLOS requirement is reflected in the form of FDM-R, which measures the route's impact on the GB-wide FDM measure. We have set a regulatory minimum floor for FDM-R which indicates the point below which we are highly likely to investigate whether or not Network Rail has breached its licence obligations.

3.49. Reflecting that there are specific Scottish HLOS targets for passenger performance, the role of the CRM-P will be different in Scotland. While we will hold the route to

account against its PPM and RTA targets, in the event of performance being below expectations, we will use CRM-P to provide further insight on the route's contribution to overall network performance (reflecting that CRM-P records Network Rail-caused delay only).

3.50. We will report on both measures publicly in CP6 editions of the Monitor. This public reporting will be based on a 'league table' approach, i.e. which routes are doing better than others. Our current comparisons can be found here.

## Reactionary delay and reliability

3.51. CRM-P focuses on delay caused by Network Rail. It does not reflect reactionary delay from train operator-caused incidents. Network Rail, as infrastructure manager and SO, is responsible for recording and managing delay from all incidents regardless of cause and culpability. There is a risk that our monitoring of CRM-P could have the unintended consequence of reducing the relative attention given by Network Rail to management of reactionary delay caused by others, which would not be in the interests of passengers or freight users.

3.52. Network Rail reports reactionary delay to the National Task Force (NTF) which reviews it, and other industry groups. Network Rail will increase the visibility of this reporting within the company and with train operators in CP6. We have required Network Rail to go further by reporting this publicly in CP6, including comparative information about reactionary delays by cause and operator type. We also require this report to include cancellation data.

3.53. We are reviewing levels of reactionary delay and cancellations through our regular monitoring and will intervene if evidence emerges that Network Rail Scotland is not meeting its commitments to manage these issues effectively.

# 4. Asset management

## Asset performance

4.1. Network Rail Scotland's asset management performance was good in periods 8-13 of 2018-19, which saw the number of delay incidents at an average low for the control period. However, as set out in chapter 3, the delay minutes associated with those incidents were higher than average.
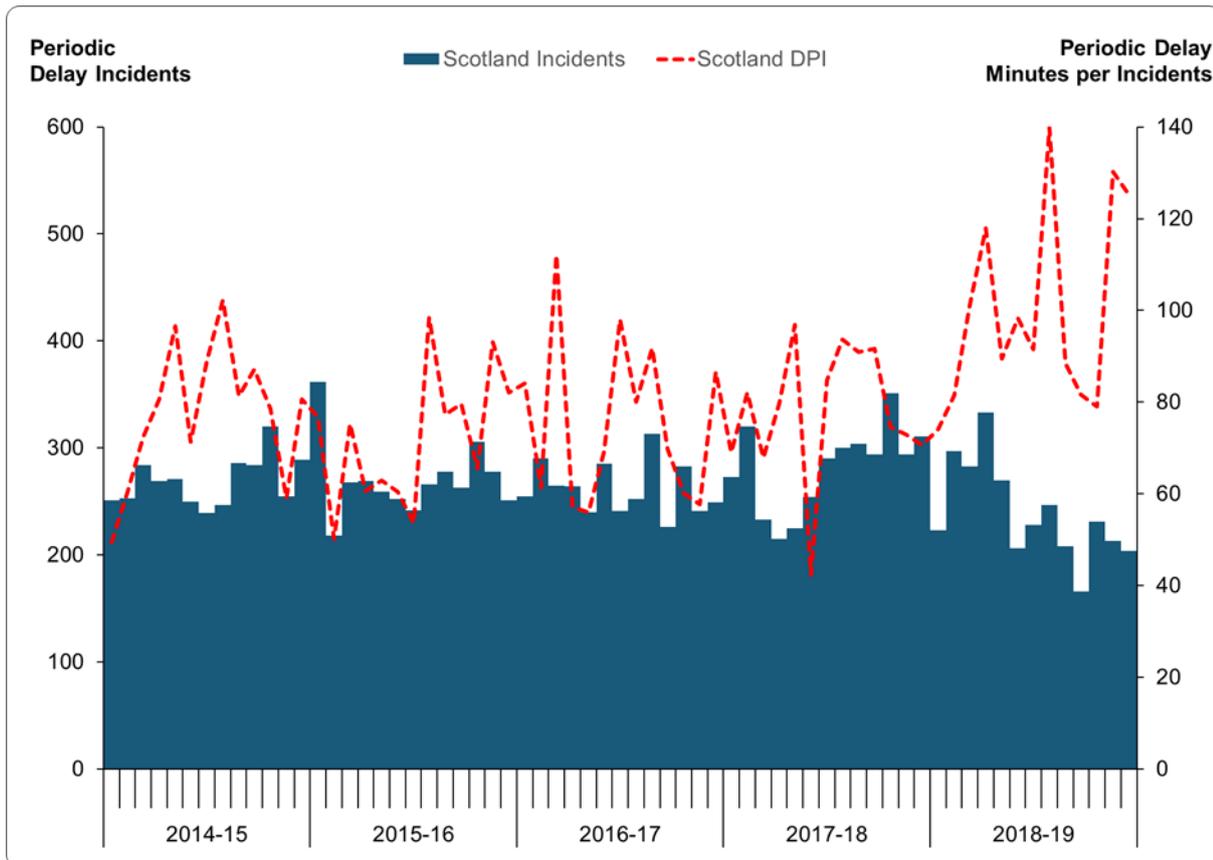


4.2. Period 8, 12 and 13 saw high delay minutes against relatively low numbers of incidents. These higher delay incidents were associated with issues including axle counter failures, points failures and overhead line equipment failure.

Periodic Delay Minutes — Scotland Minutes, Scotland DPI — 2014-15 to 2018-19
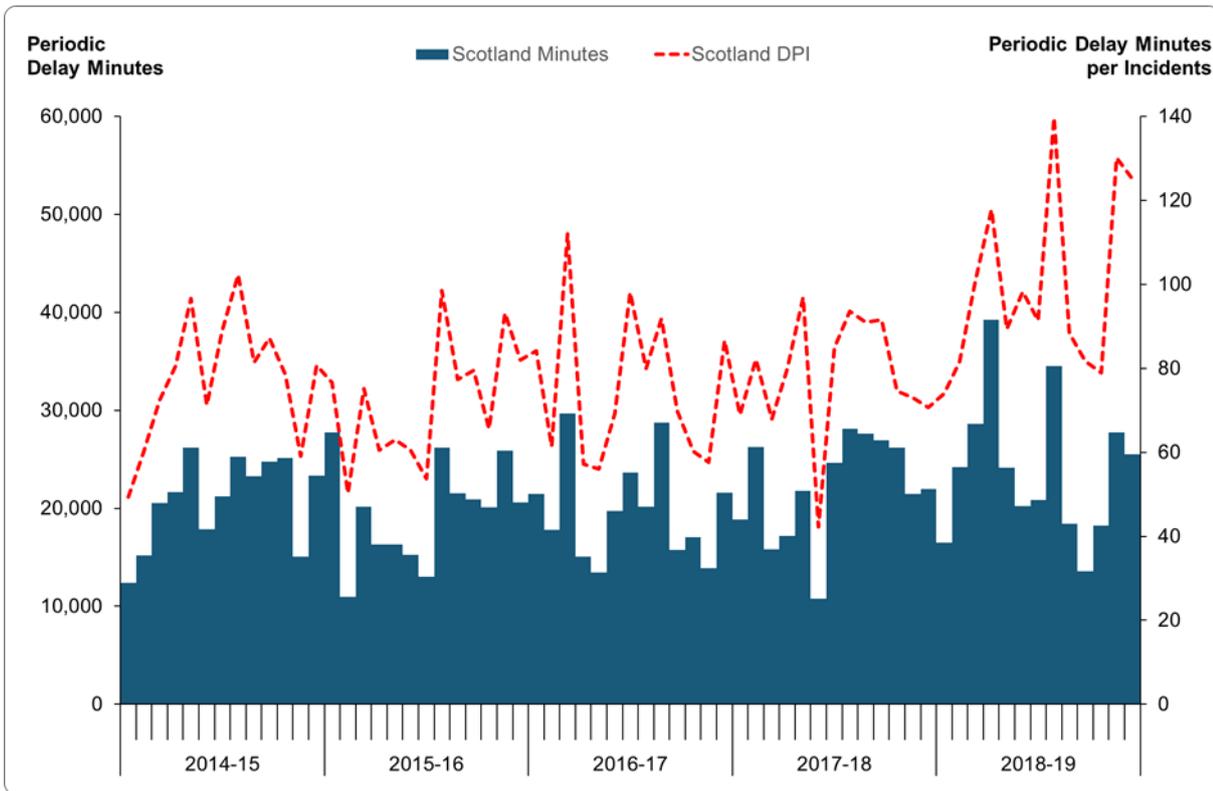
4.3. The Scotland route had 2,304 service affecting failures in 2018-19. This is better than the target of 2,387. Scotland was the only route in Great Britain to achieve its target.

4.4. Network Rail Scotland's Composite Reliability Index (CRI) score rose over the control period despite dipping during 2018-19 finished the year 1.0% above target. This equates to an 18.8% improvement over the control period.

Composite Reliability Index — Scotland Actual, NR Target, 2014-15 to 2018-19
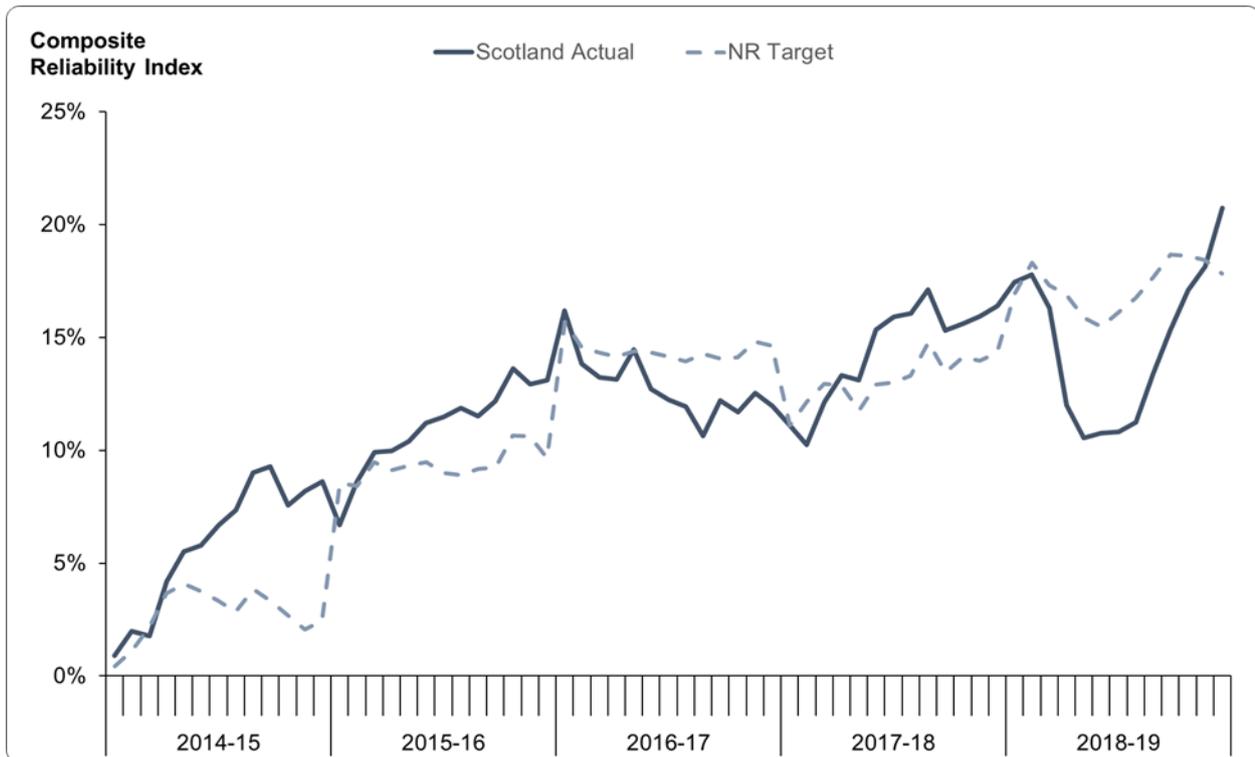
4.5. Track service affecting failures for periods 8-13 of 2018-19 were in line with the same period for 2017-18, with a slight decrease overall. Rail breaks and immediate action defects per 100km remained stationary through periods 8-13 but steadily increased from a low point at the end of 2016-17.This was however still low compared to the start of the control period. The percentage of poor track geometry was stable and in line with the previous two years.

4.6. Quantities of signalling service affecting failures rapidly decreased in periods 8-13 2018-19 compared to previous years, and were at their lowest in the control period. Number of points failures were slightly better than previous years with a downwards average trend. Numbers of telecoms failures increased compared to the beginning of 2017-18, but were lower than most of the rest of the control period.

4.7. Numbers of alternating current traction power failures slowly increased towards the end of the year. More non traction power supply failures were seen than in periods 8-13 of 2018-19 than of previous years, though remain low. Network Rail Scotland has increased its electrification asset base through enhancement works throughout the Control Period, which would in part explain these increases.

# Renewals and maintenance volumes

4.8. Maintaining and renewing the network is fundamental to Network Rail' Scotland's responsibilities. Regular maintenance counters the incremental effects of wear and ageing to keep the assets safe and performing as intended.

4.9. Network Rail Scotland's asset policies set out the renewal work required to sustain the condition of the network assets efficiently. The resulting volume of renewals required during CP5 was set out in Network Rail's CP5 Delivery Plan.

4.10. We monitor the actual volume of work completed by Network Rail Scotland, to hold it to account for achieving its current plan, and to understand any volume of work deferred from the original delivery plan.

4.11. Network Rail Scotland reports against 'Six Key Volumes' on its scorecard and it achieved 100% of its planned renewals, better than its target of 95%.

4.12. In terms of the wider range of asset renewals, there was variability, with on target delivery for the key volumes, over-delivery in some areas and some changes in work mix. Track plain line volumes generally met target, whilst there was deferral in heavy refurbishment of Switches & Crossings (S&C). Signalling renewals remained on target. Civils structures were slightly under target volume and earthworks over-delivered by 18%. Drainage saw large deferrals in track and earthworks drainage as well as a change of intervention within earthworks from refurbishment to maintenance. Operational property volumes slightly under-delivered as a whole. Electrification & Plant volumes were met for OLE re-wiring but were forecast to be under budget for all other categories.

4.13. Maintenance volumes for the end of 2018-19 have not yet been received but were forecast to be on target with those originally budgeted. Of note, there were more S&C crossing renewals than originally planned. Maintenance volumes in off-track activities such as fencing, drainage and vegetation management were also forecast to exceed their original targets. This reflects the greater commitment to off-track maintenance that Network Rail Scotland has built into its policy and helps control risk from vegetation encroachment and livestock on the lines.

# Composite sustainability index

4.14. Maintaining and renewing the network in the short, medium and long-term to meet reasonably foreseeable future demand for railway services is one of Network Rail's key obligations, as set out in its Network Licence. We have required a consistent route level measure of network sustainability in order to help us assess Scotland route's progress against this important outcome. This measure is the Composite Sustainability Index (CSI). This measure was developed by Network Rail before the

start of CP5 to monitor changing patterns of asset life and some aspects of asset performance and risk. It uses models that measure changing asset life by analysing patterns of degradation and improvement from interventions. The models is re-run annually using updated survey and work records. The CSI itself is the percentage change in the residual asset value. Scotland exited CP5 having gained 3.59%. Route comparison data for CP5 can be found [here](#).

4.15. Whilst CSI is a useful measure, we consider that it has potential for further improvement. Since the publication of our Final Determination and Network Rail's acceptance, Network Rail continues to work on updating its model for the calculation of the remaining asset value or asset condition score. We continue to work with Network Rail on how this new model will be integrated and presented in the most effective format. Scotland route has used the current model for creation of its objectives within their 'Route Strategic Plan'. The CP6 forecasts were set in line with the Final Determination and will be updated via the change control process to reflect CP5 actuals and RF11 Delivery Plan submission.

## Station Stewardship Measure

4.16. Station Stewardship Measure (SSM) is an average condition score of each station in Scotland. A lower SSM score indicates a better station condition. In our PR13 Final Determination, we set SSM targets as a regulated output for Network Rail Scotland.

|  | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|---|
| **Scotland** |  |  |  |  |  |
| Actual | 2.21 | 2.20 | 2.20 | 2.17 | 2.15 |
| Target | 2.33 | 2.33 | 2.33 | 2.23 | 2.32 |

4.17. In Scotland, Network Rail exceeded its target.

# 5. Developing the network

5.1. Network Rail Scotland managed a strong finish to its CP5 enhancements delivery, meeting a number of regulated milestones on or ahead of schedule and effectively managing late emergent issues on projects.

5.2. It is worth highlighting the achievements of the Shotts Line Electrification (part of the Rolling Programme), which delivered on time and within our revised assessment of the efficient cost. The project team successfully managed emergent issues late in the programme including the collapse of its electrification contractor Carillion and worse than anticipated ground conditions through Carfin cutting, whilst maintaining a steady cost for the works. This is a particular success given the challenges faced by electrification projects in CP5 across Great Britain. Other recent achievements include the on-time and efficient delivery of the Highland Mainline Phase 2 project, Stirling Dunblane Alloa Electrification achieving its regulated milestone and continued good progress on the redevelopment at Glasgow Queen Street Station.

5.3. The System Operator has engaged well with the new process for specifying, funding and committing to enhancements in CP6, starting work on several business cases for inclusion in the new pipeline. Network Rail Scotland will need to continue working closely with Transport Scotland to ensure that schemes progress in a timely and efficient manner through the new governance arrangements.

5.4. Over the whole of CP5, there were 31 milestones for Scotland enhancements:

- 18 milestones were complete (6 to 'GRIP3' single option selection, 12 to Entry Into Service).

- 5 milestones were missed.

- 8 milestones were revised through a formal change control process; and

- Additional details, including the full list of milestones in this Monitor period can be found here

## Project Progress

### Edinburgh to Glasgow

5.5. The remaining Key Outputs 2, 3 and 4 (a series of interventions to enable longer and faster trains and the redevelopment of Glasgow Queen Street Station) are progressing in line with programme and the work is currently on course to achieve its regulated milestone in March 2020. Costs have been stable and productivity on site

is good; the management of Queen Street redevelopment whilst minimising passenger disruption and continuing to operate services is notable.

## Aberdeen to Inverness Improvements Phase 1

5.6.    The project made good progress during its 2018 blockade, substantively completing works to the west end of the line and handing back on time. Engineering access has now been secured for the 2019 15 week blockade (4 May to 19 August) and site setup is already underway; the blockade will see extensive construction work along the east end of the line that will require careful co-ordination by Network Rail Scotland. Risks including several land issues and the condition of Don Viaduct have been successfully managed, however risks to achieving the regulated milestone remain and the estimate is under pressure. In particular, Network Rail Scotland has still not demonstrated that it has a fully risk-assessed and integrated programme.

## Scotland Rolling Programme of Electrification

5.7.    Both the remaining projects delivered their outputs ahead of the March 2019 regulated milestone, with ORR authorising the electrification infrastructure as ready for use in December 2018. This is a significant achievement for Network Rail Scotland and its contractors, particularly given the challenges both projects faced earlier in the control period. Stirling Dunblane Alloa electrification has seen significant cost increases over the past year, in part associated with acceleration of the works in line with the December 18 timetable change, and it is imperative Network Rail Scotland is able to get this under control as we move into CP6.

## Highland Mainline

5.8.    Highland Mainline achieved its regulated milestone in March 2019 and within the efficient determination. The overall low-cost solution was due to excellent cross-industry working between Network Rail, Transport Scotland and operators, delivering a solution that should drive journey time improvements with minimal infrastructure intervention and disruption. The station and signalling works at Pitlochry and Aviemore in particular were well managed and commissioned on time. The final cost was around 50% below the forecast cost at the start of CP5.

# 6. Expenditure and finance

6.1. This section examines Network Rail Scotland's efficiency and wider financial performance in 2018-19, including an assessment of the associated debt and borrowing and for CP5 as a whole.

6.2. This analysis is based on draft financial information provided by Network Rail. We will report more fully on these matters in our annual efficiency and finance assessment[10].

## Expenditure on core business activities has increased

6.3. We monitor the efficiency of Network Rail's core business activities. These are operations, support, maintenance and renewals. Overall, Network Rail Scotland spent £651m in 2018-19, £64m (11%) more than in 2017-18.

**Table 1 Network Rail Scotland's expenditure on core business activities**

| £m (2018-19 prices) | 2018-19 | 2017-2018 | Variance | % |
|---|---|---|---|---|
| Operations | 53 | 45 | 8 | 17% |
| Support | 56 | 48 | 8 | 15% |
| Maintenance | 161 | 131 | 30 | 23% |
| Renewals | 381 | 362 | 19 | 5% |
| **Total** | **651** | **587** | **64** | **11%** |

6.4. Network Rail has attributed the increased operations, support and maintenance costs in Scotland to planned increases in work in preparation for CP6. Although these costs were higher than in 2017-18, they were 5% lower than budget.

6.5. The increase in maintenance expenditure included a £36m enhanced maintenance regime that Network Rail implemented in 2018-19 to improve the prediction and prevention of asset failures, and the ability to respond more quickly to incidents on the network (discussed in chapter 3). It also included a range of small-scale investments including the purchase of new plant and equipment, conversion of signal heads from filament to LED, and construction of new access points to the network.

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[10] See http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/monitoring-performance/efficiency-and-finance-assessment.

6.6. Support costs increased due to increases across several functions including IT and telecommunications. The increase in operations costs includes some one-off credits offsetting operational costs in 2017-18 that have not been repeated in 2018-19.

6.7. Renewals expenditure was 5% higher than in 2017-18. Volumes increased across most of Network Rail's main renewals activities, including signalling (225% increase) and switches and crossings (7% increase). Network Rail Scotland has stated that this was mostly due to the acceleration of projects that were originally planned for CP6 to utilise available headroom in CP5.

## Wider financial performance

6.8. The regulatory financial performance measure (FPM) provides a better understanding of Network Rail's financial performance than simple income and expenditure variances. FPM compares actual income and expenditure to Network Rail's annual budget across most items of income and expenditure, and then to the financial assumptions in our PR13 determination (which underpin the company's level of funding)[11]. It ensures that Network Rail does not benefit from delaying work to a later date if that work will still need to be done. It also adjusts for the value of any outputs that Network Rail was funded to, but has not delivered such as reliability of train performance.

**Figure 1: Network Rail's Scotland's financial performance compared to budget in CP5**



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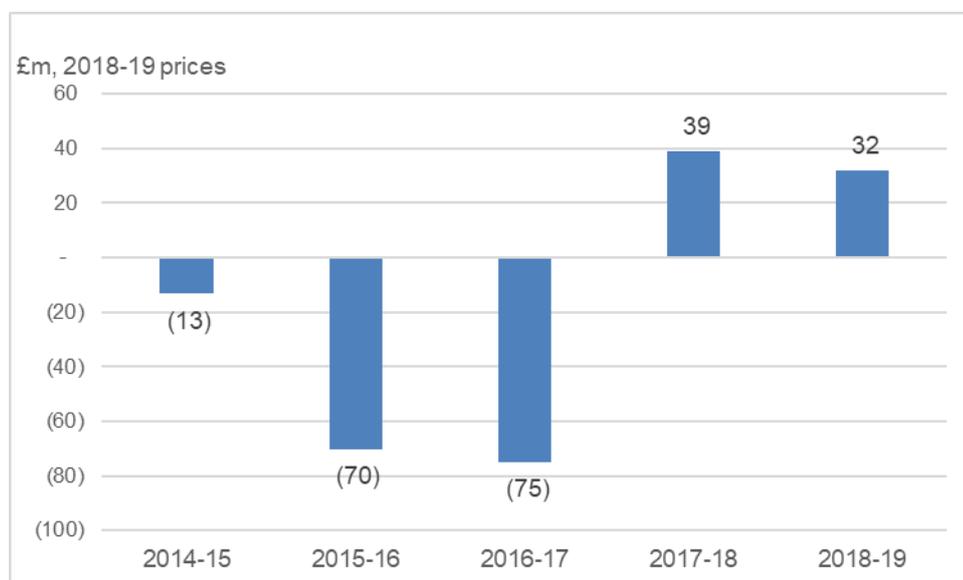
[11] It excludes some income and expenditure that is not as controllable by Network Rail. This includes network grant, fixed track access charges, traction electricity income and costs and business rates.

6.9. Network Rail Scotland outperformed against its internal budget in the last two years of CP5, following earlier underperformance.

6.10. Financial performance compared to our PR13 financial assumptions was significantly worse than compared to Network Rail Scotland's own internal budget. Overall, Network Rail Scotland has financially underperformed against our PR13 determination by around £0.8bn in CP5. This means that Network Rail Scotland spent around £0.8bn more than we thought that it should for the outputs that it delivered in CP5. The majority of this underperformance was in renewals and enhancements, although Network Rail Scotland underperformed across most expenditure categories including maintenance and network operations.

## Financial performance in 2018-19

6.11. Network Rail Scotland financially outperformed against its internal budget by £32m in 2018-19. This outperformance was largely because of lower than budgeted renewals rates and Schedule 4 costs, partly offset by higher than budgeted Schedule 8 costs.

**Table 2: Network Rail Scotland's financial performance in 2018-19**

| £m | Budget | Actual | Variance b/(w) | Of which out / (under) performance |
|---|---|---|---|---|
| Turnover | 118 | 113 | (5) | 0 |
| Schedule 4 | (30) | (17) | 13 | 15 |
| Schedule 8 | (20) | (31) | (11) | (11) |
| Operations | (54) | (53) | 1 | 1 |
| Support | (64) | (56) | 8 | 8 |
| Maintenance | (166) | (161) | 5 | 3 |
| Capex – Renewals | (368) | (381) | (13) | 15 |
| Capex – Enhancements | (531) | (503) | 28 | 1 |
| **Financial performance (internal)** [12] | | | **26** | **32** |
| Budget vs. PR13 | | | | (306) |
| Adjustments for missed regulatory outputs | | | | (13) |
| **Financial performance (regulatory)** | | | | **(287)** |

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[12] Neutral timing differences including deferral of work represent the £6m difference between £26m of cumulative income and expenditure variances and the £32m of financial outperformance against budget.

6.12. Network Rail Scotland underperformed against the regulatory financial performance measure by £287m in 2018-19 largely because its internal budget was £306m higher than our PR13 financial assumptions for the year.

6.13. Network Rail underspent on enhancements compared to its 2018-19 internal budget. This was largely due to a £37m underspend on ring-fenced funds following agreed scope changes with Transport Scotland. This underspend was partly offset by overspend on the Edinburgh to Glasgow Improvement Programme (EGIP).

## Debt and borrowing

6.14. Network Rail's debt attributable to Scotland increased by £0.6bn to £5.3bn in 2018-19.

6.15. Following its reclassification to the public sector during CP5, Network Rail agreed to borrow from the UK Government rather than through the issuance of debt. As part of this, Network Rail agreed fixed borrowing limits with the Department for Transport for its activities in England and Wales, and in Scotland for CP5[13]. Network Rail Scotland used, but did not exceed its remaining available borrowing in 2018-19.

# Getting ready for CP6

6.16. Poor planning for CP5 caused a number of the problems with Network Rail's renewals delivery and efficiency, therefore we required Network Rail to demonstrate that it is better prepared to deliver efficiently from the start of CP6.

## Renewals planning

6.17. Effective renewals planning is important because it improves the robustness of the network and reduces costs. It provides a stable profile of work for Network Rail's supply chain, can avoid more critical work than necessary being planned for delivery in the final quarter of the year (when weather conditions are most challenging) or prevent slippage of work into the following year.

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[13] There were separate limits for England and Wales, and for Scotland.

**Figure 2: Percentage of renewals projects in 2019-20 with financial authorisation**



CP6 Year 1 Project Authorisation

| | Anglia | LNEEM | LNW | Scotland | South East | Wales | Wessex | Western | Total |
|---|---|---|---|---|---|---|---|---|---|
| Work captured in Oracle | 96% | 89% | 93% | 98% | 92% | 94% | 96% | 90% | 93% |
| Work authorised in Oracle | 72% | 69% | 67% | 62% | 66% | 72% | 40% | 83% | 67% |

■ Work authorised in Oracle   ■ Work captured in Oracle
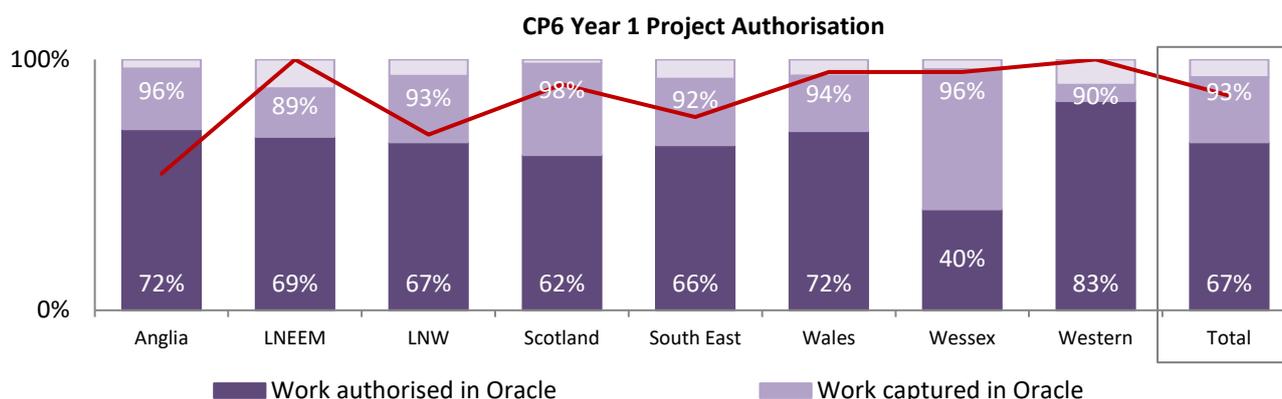
6.18. For Great Britain as a whole, 67% of renewals projects for 2019-20 (by value) had completed detailed designs and had received financial authorisation for delivery. Scotland was slightly below the Great Britain average at 62%. This is 24 percentage points behind Network Rail Scotland's internal 86% target.

6.19. We recently commissioned the independent reporter, Nichols, to review Scotland's workbank preparations. Nichols work is still underway. Its early findings are that worbanks are well developed for 2019-20 and that reasonable progress has been made for 2020-21. However, the leading indicator only provides a partial picture. It is coarse and masks differences between asset classes. Nichols has identified additional sources of information, which Network Rail is currently considering to improve its insights into workbank planning. We will report further on this in our next monitor.

## Securing engineering access to the railway

6.20. Network Rail Scotland achieved its internal target for booking disruptive access to the network for planned engineering work in 2019-20. It had the highest percentage of disruptive possessions booked of any route.

**Figure 3: Percentage of required network access in 2019-20 booked**



Disruptive Access booked

| | Anglia | LNEEM | LNW | Scotland | South East | Wales | Wessex | Western | National |
|---|---|---|---|---|---|---|---|---|---|
| Access booked as % of required | 96% | 69% | 86% | 104% | 76% | 76% | 53% | 79% | 80% |

Legend: SBP forecast; Access booked as % of required
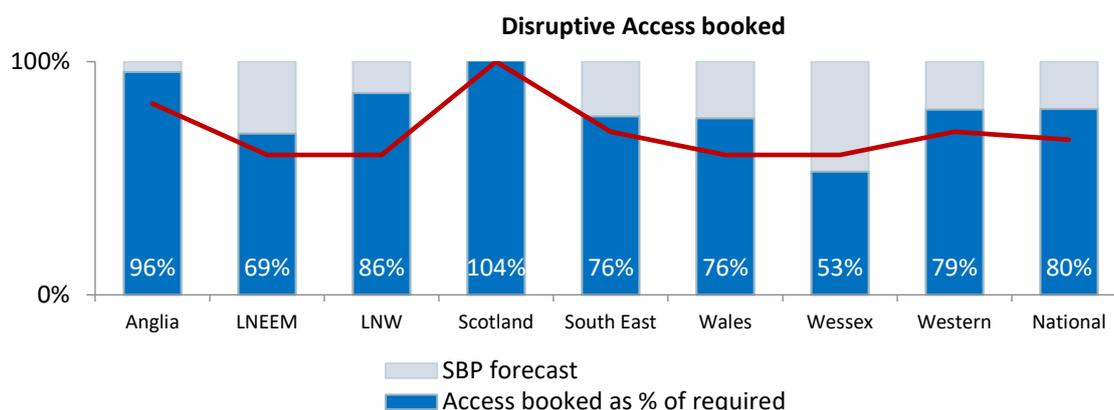
## Maintenance capacity

6.21. Network Rail Scotland intended to recruit an additional 143 full time maintenance staff in 2018-19 in preparation for its planned increase in maintenance activities in CP6. By the end of the year, it had recruited 98 Full Time Equivalents, a 31% shortfall on its planned recruitment. This represents a 4% shortfall compared to Network Rail Scotland's total maintenance headcount.

**Figure 4: Maintenance headcount compared to 2019-20 requirement**



Maintenance capacity

| | Anglia | LNEEM | LNW | Scotland | South East | Wales | Wessex | Western | National |
|---|---|---|---|---|---|---|---|---|---|
| Maintenance heads to date | 98% | 99% | 95% | 96% | 104% | 97% | 92% | 95% | 95% |

Legend: Maintenance heads to date; Remaining increase required; Route Glidepaths
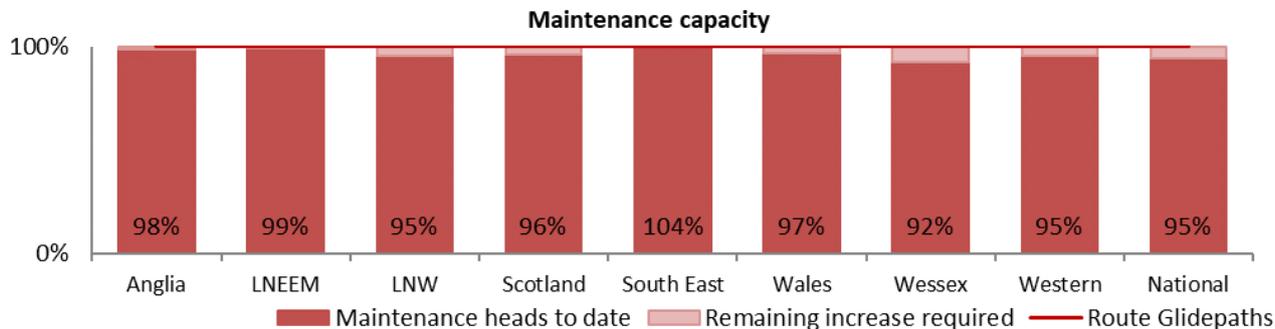
## Efficiency planning

6.22. We recently reviewed Network Rail Scotland's progress in terms of planning and monitoring how it will deliver efficiency in CP6. Overall, we considered that Network Rail Scotland was better prepared to deliver efficiency improvements in CP6, than it was at the start of CP5. However, we identified areas where improvements should be made to efficiency plans and Network Rail's related processes for monitoring delivery.

6.23. As a result of our review, Network Rail developed an action plan to improve planning and monitoring of routes' efficiency plans. We are monitoring Network Rail's progress in implementing the plan. One of the key changes that Network Rail has already

implemented is to replace the CP6 efficiency trackers that it used in the run up to CP6 with a more extensive maturity assessment of routes' plans for 2019-20.

6.24. Network Rail is developing new efficiency reporting tools that routes are required to produce on a periodic basis. Network Rail is also developing calculators for routes to report efficiencies on a consistent basis. We are currently reviewing the efficiency calculators and the processes for their approval.

**Figure 5: Network Rail Scotland's assessment of the maturity of its 2019-20 efficiency plans**



| | Key |
|---|---|
| | Project has been delivered (i.e. milestones have been hit) and Network Rail are waiting for benefits to be realised |
| | Project is in place with delivery plan and milestones |
| | Strategic enabling theme assigned and commitment to deliver but no plan in place. This includes LEAN and other short lead time projects |
| | Unknown |
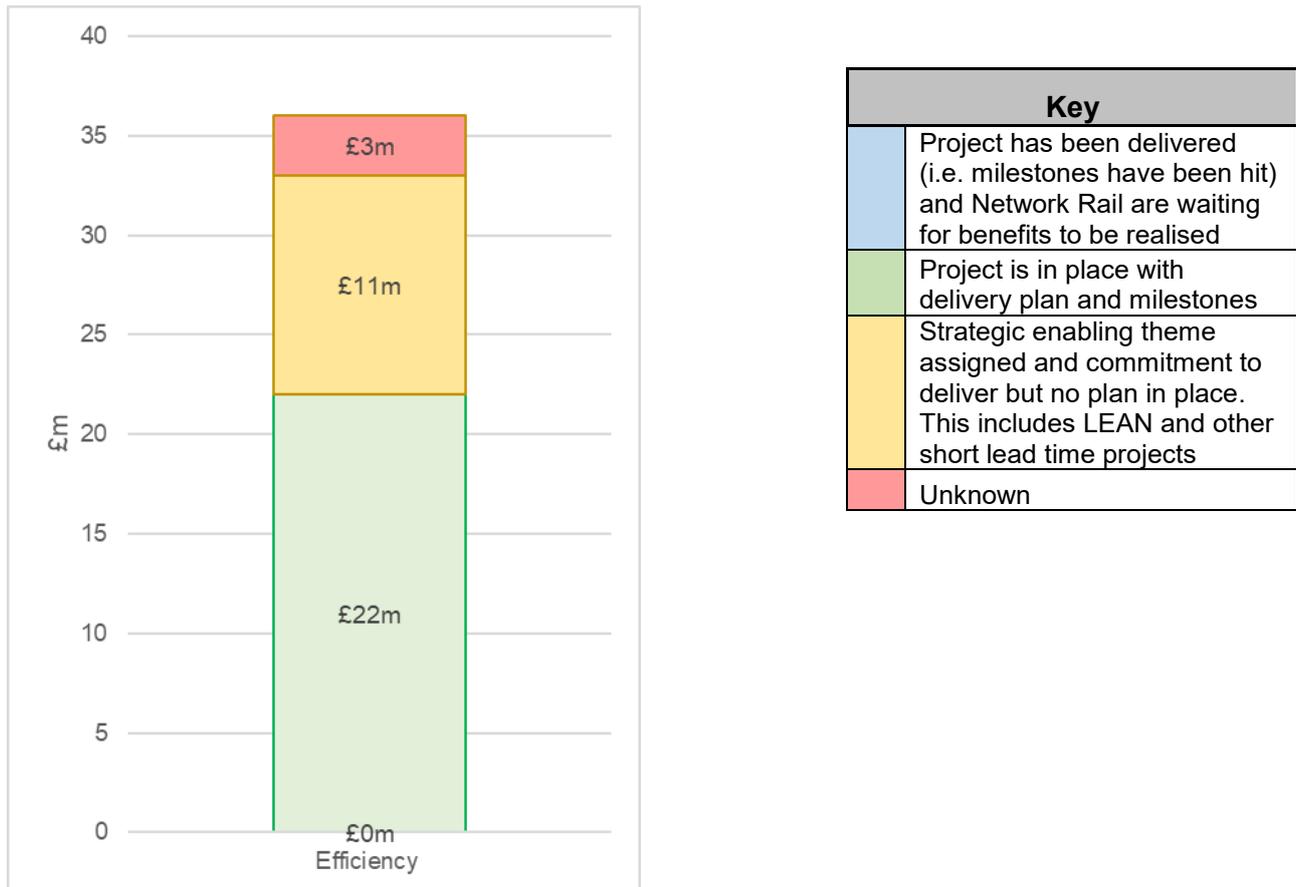
6.25. Network Rail Scotland has taken a more cautious view than England & Wales routes about its efficiency plans for 2019-20. For example, no efficiencies have been included for projects that have been delivered even though some contracts have been successfully renegotiated. The £3m of unknown efficiency is due to the sale of Buchannan House to Network Rail no longer going forward. This sale was expected to reduce workplace management and running costs.

6.26. We recently commissioned the independent reporter, Nichols, to review Network Rail's efficiency plans for year 1 and 2 of CP6. Nichols work is still underway. Its early findings are that there is clear ownership within the Scotland

route of the business changes that are required to deliver required efficiency improvements. However, there is variable quality of documentation of how forecast efficiencies have been calculated, and how efficiencies will be delivered. We will report further on this in our next monitor.

## Changes to our monitoring approach for CP6

6.27. As part of PR18, we consulted on changes that we intend to make to the way that we assess Network Rail's efficiency and financial performance[14]. In CP6, we will provide more rounded assessments that draw out key messages about the drivers of performance, recognising that different audiences want different levels of technical detail. We will also make more informed forward-looking assessments of the efficiencies that Network Rail will likely deliver across the control period.

6.28. To support these changes, Network Rail will need to make changes to the information that it provides to us. Network Rail has largely supported our intended changes and is working with us to agree how these should work in practice. Network Rail has committed to:

- improve its communication of the reasons for cost changes due to changes to routes' efficiencies, mix of work and external factors;

- provide a sharper focus on performance compared to delivery plans; and

- identify the most appropriate measures of routes' productivity and leading indicators of performance.

6.29. Our finalised approach will be set out in our CP6 regulatory accounting guidelines.

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[14] See http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/price-controls/periodic-review-2018/pr18-consultations/our-approach-for-assessing-network-rails-efficiency-and-wider-financial-performance-in-control-period-6.

# 7. Glossary

| Term | Explanation |
|---|---|
| **Cancellations and Significant Lateness (CaSL)** | The proportion of trains which arrive at final destination greater than 30 minutes from planned arrival, or full/part cancelled or missed calls |
| **CAPEX** | Refers to the funds used by Network Rail to acquire or upgrade physical assets on the railway and related infrastructure in order to maintain or increase the scope of their operations. Such expenditure is referred to as Renewals (of existing infrastructure e.g. works that will provide long term benefits such as replacing a section of track) or Enhancements (upgrading existing or building new infrastructure, e.g. electrification of a railway line). |
| **Civils** | A term describing only those responsible for structures such as bridges |
| **Close Call** | Any unsafe act or unsafe condition that in different circumstances could have led to an accident or personal injury, or could have resulted in damage to property or equipment, but would not introduce risk to the railway infrastructure. |
| **Composite Reliability Index (CRI)** | It provides an indication of the contribution of asset reliability to the safety and performance of the railway. |
| **Control Period** | A control period is the period to which an access charges review (e.g. a periodic review) applies. Control periods are typically five years in length, but maybe shorter or longer depending on what the regulator decides as part of the review.<br><br>• CP6 covers from 1 April 2019 to 31 March 2024<br><br>• CP5 covers from 1 April 2014 to 31 March 2019<br><br>• CP4 covers from 1 April 2009 to 31 March 2014<br><br>• CP3: 1 April 2004 to 31 March 2009<br><br>• CP2: 1 April 2001 to 31 March 2004<br><br>• CP1: from the privatisation of Railtrack to 31 March 2001 |
| **DPI** | Delay per incident or DPI represents the average delay attributable to each incident |
| **Earthworks** | Natural earth slopes and earth-related structures such as cuttings and embankments |
| **EGIP** | Edinburgh to Glasgow Improvements Programme |
| **Enhancements** | Schemes to change to network outputs, usually involving construction, that improves network capacity or capability (e.g. enabling higher speeds, allowing heavier loads) relative to the level of network outputs funded at the last relevant periodic review. |

| Term | Explanation |
|---|---|
| | Usually outputs are required at specific times (in contrast to most renewals). |
| **Fatalities and Weighted Injuries (FWI)** | An index measuring relative risk from fatalities, major and minor injuries. |
| **Final Determination** | Our final determination sets out our overall package of decisions for the periodic review 2018 (PR18). |
| **FPM** | Financial Performance Measure |
| **Freight Delivery Metric (FDM)** | This measure tracks the punctuality of freight services at destination as well as taking into account Network Rail caused delays. |
| **Gauge** | Distance between the inner running faces of two rails on the same track. Also used to describe the "envelope" through which train profiles must fit; this is the structure gauge. |
| **GRIP** | Governance for railway investment projects. A Network Rail formal procedure through which investments project on Network Rail's network must pass. It consists of a number of stages; at the end of these a review is carried out and if the project cannot meet the pass criteria it is stopped or held until it does. |
| **HAVS** | Hand Arm Vibration Syndrome |
| **Independent Reporter** | A consultant whose role is to provide ORR with independent, professional opinions and advice relating to Network Rail's (as the railway licence holder) provision or contemplated provision of railway services, with a view to ORR relying on those opinions or advice in the discharge by ORR of its functions. |
| **Infrastructure Projects** | Network Rail division in charge of overseeing the company's CP5 enhancements programme. |
| **LTIFR** | Lost Time Injury Frequency Rate - a measure of the number of lost time injuries occurring in a workplace per 1 million man-hours worked. |
| **Moving Annual Average (MAA)** | Moving annual average - the average of the last 13 four-week time periods. |
| **Network Grant** | A proportion of Network Rail's income in the past has been paid directly by DfT and Transport Scotland in the form of network grants. Over CP5, more than 60% of Network Rail's income is forecast to come from network grants. |
| **Network Licence** | Network Rail operates under a network licence. This licence contains a set of conditions under which Network Rail must operate. As the operator and owner of the national rail infrastructure, it has a key role to play in railway safety and improving railway performance and |

| Term | Explanation |
|---|---|
| | efficiency. The network licence is a tool we have for holding Network Rail to account. |
| **Operational Property** | Buildings, land and structures in use as part of the operational railway. |
| **Overhead Line Equipment (OLE)** | An assembly of metal conductor wires, insulating devices and support structures used to bring traction supply current to suitably equipped traction units. The conducting wires are normally strung between masts or poles in some form of catenary arrangement but simple systems may have a single trolley wire. |
| **Plain Line Track** | Track without switches and crossings |
| **Possession Disruption Index (PDI)** | 'Possession disruption index – passenger' (PDI-P) and 'Possession disruption index – freight (PDI-F)': a graph indicating the level of disruption caused by possessions over a period of time. Network Rail needs to restrict access to the network to carry out many of its maintenance and renewals activities. These restrictions of access are referred to as possessions. Possessions are considered to be 'disruptive' if they impact on the running of passenger or freight operators' normal timetabled services. |
| **Possessions** | Network Rail needs to restrict access to its network to carry out many of its maintenance and renewals activities. These restrictions of access are referred to as possessions. |
| **PPE** | Personal Protective Equipment |
| **PR13** | The Periodic Review 2013 or PR13 is our assessment of what Network Rail had to achieve for the last five year period from 1 April 2014 to 31 March 2019. This is also known as Control Period five or CP5. |
| **Public Performance Measure (PPM)** | The Public Performance Measure (PPM) is the percentage of trains arriving at their final destination within 5 minutes of their scheduled arrival time (within 10 minutes for long distance services). |
| **Regulated Outputs** | These are outputs that we determine as part of our periodic review that Network Rail is required to deliver over the relevant control period. |
| **Renewals** | Major capital works or replacement of the network in order to maintain its required capability. These may be required at specific times but are more often carried out according to Network Rail's own timetable |
| **Right Time** | Performance measure measuring train arrival within one minute of the scheduled time |

| Term | Explanation |
|------|-------------|
| **RM3** | Rail Management Maturity Model: the tool we use to assess an organisation's ability to achieve excellence in controlling health and safety risks. |
| **Route availability** | A code used to indicate which rolling stock can use which routes. |
| **Schedule 4** | Schedule 4 (the possessions regime) is the part of passenger and freight operators' track access contract with Network Rail that sets out arrangements for compensation to the operator in the event of planned disruption to their services. |
| **Schedule 8** | Schedule 8 (the performance regime) is the part of passenger, freight and charter operators' track access contract with Network Rail that sets out arrangements for compensation in the event of unplanned disruption to services. |
| **Scour** | The removal of material from a bed or bank of a watercourse or material from a beach by current or wave action. This is a particular problem where the removed material was providing support or restraint to a structure such as a bridge pier or retaining wall, ultimately leading to its collapse. |
| **Single-cut cables** | The provision of controls in only the feed or return side of a circuit, used only where there is no risk of false feeds or faults to earth. |
| **SPAD** | Signal Passed At Danger: one of the criteria on which the safety of the national rail network is measured and relates to the occasions where a train passes at signal at which it should have stopped. |
| **Switches and Crossings (S&C)** | Track consisting of switches (an assembly of two movable rails – the switch rails) and two fixed rails (the stock rails) and crossings (an assembly that permits the passage of wheel flanges across other rails where tracks intersect. |
| **TOC** | Train operating companies: run the passenger trains and services on the network. |
| **Track Geometry** | The horizontal and vertical alignment of the track. |
| **Twist Faults** | Where particular misalignments between the heights of rails which can cause the risk of train derailment. |
| **User- worked crossings** | A level crossing where the barriers or gates are operated by the user. |
| **Wrong-side failure** | A failure that causes a piece of equipment to cease functioning in such a way as to cause danger to the safety of the line. |