Wales & Western region - Network Rail

Investigation report

28 May 2024

Executive summary

Context for our investigation into Network Rail's contribution to train performance in Wales & Western

1. The train service experienced by passengers and freight in Network Rail's Wales & Western region has not been good enough. Performance has been worsening in the region since 2021. While this partly reflects a fall from the very high levels of performance during the COVID-19 pandemic, the deterioration in performance in Wales & Western has been worse than for other Network Rail regions and Network Rail-attributed delay (as measured by the Consistent Route Measure – Performance (CRM-P)) is now significantly worse than the levels achieved before the pandemic.

2. Compared to performance at the end of 2019-20 (the end of the first year of the control period 6 (CP6) and prior to significant impact from the pandemic), the percentage of trains arriving on time fell from 65.1%% to 58.6% at the end of 2023-24. Train cancellations have risen from 2.6% to 4.9% during that period.

3. We formally raised our concerns over train service performance with Network Rail in March 2022 and carried out enhanced monitoring – including requiring the region to develop a consolidated performance recovery plan. The region provided us with this in August 2022 and has reported on progress in delivering the plan since. However, delivery of the plan did not lead to any significant improvement in the region's overall performance.

4. We therefore, in November 2023, launched this investigation into delivery of train service performance in the region. The investigation centres primarily on three aspects of Network Rail's compliance with its Network Licence: network management, asset management and sufficiency of resources.

Summary of our investigation findings

5. Our investigation into Network Rail's contribution to train service performance in Wales & Western has drawn on and scrutinised huge amounts of evidence provided by Network Rail and involved extensive engagement with the organisation and its stakeholders. From our investigation and engagement with Network Rail, it is clear there is a strong drive to turn performance around in the region.

We have not identified a singular issue driving poor train service performance in Wales & Western which if resolved would turn around performance.

6. The deterioration in train service performance is driven by many different factors, including those within Network Rail's control as well as wider industry factors and external causes (such as extreme weather). There is not one simple or quick solution. While there are some strengths in Network Rail's management of performance, there are also opportunities to continuously improve its asset management and network operations to deliver improved performance. Many of the factors driving the current poor performance and the opportunities for improvement have been identified by Network Rail in its performance recovery plans.

Network Rail understands the primary causes of delay but does not yet fully understand why delays are increasing for each incident; this limits its ability to improve train performance.

7. Wales & Western has analysed the causes of delay and quantified their impact (using delay attribution data). Understandably, it has focused on the factors attributed to Network Rail. We have verified Network Rail's understanding with independent analysis. Network Rail has provided evidence that it has supported its analysis of delay attribution data with root cause analysis and is putting in place additional measures to improve this. In some cases, its understanding of root causes is still developing.

8. The most significant contributors to Network Rail-attributed delay in the region include fatalities/trespass, track faults, points failures, severe weather, axle counter failures and delays associated with signalling. Wales & Western has produced improvement plans that include actions aimed at these sources of delay.

9. While Network Rail largely understands the causes of delay, it still does not fully understand the operational factors that are driving increased delay associated with each incident. This means that it does not have all the information it needs to target the factors within its control effectively. Additionally, it does not yet have robust or reliable data on the time it takes to arrive on site and the time it then takes to fix assets.

Recommendation NR1: Network Rail must improve its understanding of why the impacts of incidents are increasing (with more delay for each incident) and then review its plans to ensure they target relevant factors within its control. To improve primary delay and overall performance outcomes, it should measure, report and manage quantifiable elements of operational response that are within its control across the Wales & Western region.

Network Rail has developed and is delivering a tactical performance recovery plan. It has recently built on this with emerging, more holistic plans to manage performance in Western, which must be fully scoped and delivered.

10. The Wales & Western region provided ORR a consolidated performance recovery plan bringing together various plans and initiatives in August 2022 in response to our scrutiny and has periodically iterated and revised it since. The plan identified timebound actions for each of the key areas of attributed delay. It has delivered well against the plan, completing 116 actions out of 140 as of December 2023. The plan has focused primarily on tactical, short-term interventions intended to provide a rapid boost to delivery for passengers and freight. These have delivered benefits but not reversed the decline in overall train performance due to new issues arising (including beyond Network Rail's control) and the need for a more holistic plan to address long-term issues.

11. Wales & Western began developing an additional plan after we initiated our investigation, called Project Brunel, aimed at addressing longer-term asset sustainability, asset reliability and operational practices on the Western route out of Paddington. The plan includes supporting organisational and governance structures and promises a more holistic approach. From the evidence provided during the investigation, the project continues to be developed and remains to be fully scoped with clear, timebound milestones for all aspects of delivery. It is also unclear how its benefits and any structural improvements from the project will be sustained and incorporated into its wider performance recovery plan to deliver sustainable improvements across the wider route and region.

12. Wales & Western must now ensure that it continues to deliver its Performance Recovery Plan, and that it incorporates the more holistic approach being proposed for Project Brunel, to deliver sustainable improvements across the region.

Recommendation NR2: Network Rail must establish clear timebound milestones for its plan to sustainably improve asset reliability and operations on the Western route out of Paddington (Project Brunel) and must track and report delivery against these. It must incorporate the more holistic approach being proposed for Project Brunel into its Performance Recovery Plan to deliver sustainable improvements across the region.

Network Rail's refreshed Wales & Western leadership must focus on strong performance governance, accountability and culture to drive improved train performance.

13. Wales & Western has, previously, lacked sufficient focus on delivering strong train service performance to passengers and freight. The consolidated performance recovery plan that the region produced in August 2022 was only in response to scrutiny from ORR.

14. The region, formed in 2019, has had three different managing directors since its inception. Similarly, the Western route has had three route directors in that period. On the Wales route where new, focused leadership has been in place for longer, there are signs that this is starting to deliver improved contribution to train performance. This is supported by the views of stakeholders.

15. With safety remaining a prerequisite, the region's new leadership team must ensure strong governance and accountability to drive a more performance-led culture and to ensure that risks are managed across the full range of the region's activities. The regional accountability structure does not always drive joined-up decision making on performance, for example ensuring engineering decisions are cognisant of optimising train performance outcomes. Infrastructure delivery sits outside of the region's route governance, with no clear, structural line of accountability from infrastructure delivery to the day-to-day delivery of train service. The region has recently reviewed its operating model and is considering devolving accountability for asset management as a result.

16. We consider that the high-profile closure of Nuneham Viaduct demonstrated substantial weakness in the region's approach to understanding and managing the network effects of engineering decisions. It also demonstrated weakness in how it identifies and escalates performance risks both internally and with operators.

Recommendation NR3: Wales & Western's leadership must focus on strong performance governance and accountability to drive a performance-led culture. In particular, it must review whether its current structure, with infrastructure management separated from route accountability, supports effective decision making and performance management. In the past, Western has primarily been focused on long distance passenger and freight flows – in recognition that there are now more regional stakeholders with different priorities (including metro-style services), Wales & Western should drive an organisational and cultural change programme to ensure it better manages its stakeholders' varied and potentially competing needs.

The likely impact on train performance of successive major changes on the Western route was not fully exposed by Network Rail's and industry's planning.

17. Cross-industry processes for the introduction of major changes did not fully understand and therefore plan for the cumulative whole-system effects of successive changes to the rail network and its operations, primarily but not exclusively on the Western route. These changes include the Great Western Electrification Project (GWEP), Crossrail, the introduction of Class 800 and 802 and Class 345 trains and a major increase in heavy freight from the Mendip quarries.

18. For example, while modelling was carried out to understand the impact of Elizabeth line timetable changes on performance, this did not account for the interdependencies between factors such as: increased wear on electrification assets that were not renewed under GWEP, changed service patterns and associated engineering access constraints, and changed operational plans (including unmodelled changes in train crew diagrams). As a result, it underestimated system-wide effects and the heightened risk of delay to passengers and freight.

19. Weaknesses in understanding the network as a system were compounded by the fragmented nature of the industry in specifying, planning and developing the network for both passenger and freight services. As a result, Network Rail's operational (signalling and control) capability and some asset groups were not sufficiently upgraded to prepare for the changes made.

20. While Network Rail convened and chaired the cross-industry steering group (Event Steering Group (ESG)) for introduction of Elizabeth Line services to provide oversight and to plan for the smooth transition of timetable changes, this came too late to influence funding decisions or key enablers for these major changes. The service specifications and infrastructure plans were not fully coherent. The resulting timetable

did not meet the original ESG performance requirement even after compromises were made by both operators and funders. We consider that greater clarity about the role, responsibilities and accountabilities of ESGs and their relationship to network and upgrade specification would help drive improvements in planning for major change.

21. The Industry Programme Management Office (PMO – chaired by Network Rail) carried out assurance of industry risks but there is no independent system-wide audit and assurance capability (as recommended by the ORR in its report into the May 2018 Timetable).

Recommendation to industry IN1: Industry should review how it can ensure processes for planning major service upgrades fully consider the cumulative impact of successive major changes, including on asset condition and reliability, when identifying supporting work required.

Recommendation to industry IN2: Industry should consider how to provide greater clarity about the roles, responsibilities and accountabilities of the ESG and related specification processes to help drive improvements in oversight of, and planning for, major change.

Network Rail underestimated the impact of major change programmes on Western's assets and operations when planning for major network change.

22. Network Rail recognises that it underestimated the impact that the new Elizabeth Line services and the increased Great Western Railway (GWR) and freight services would have on its assets and operations. It carried out a cross-industry programme of works to prepare for the introduction of Elizabeth Line services (Project Fusion) – with partial success – but it is now clear that a programme of additional engineering work and operational change is required to support train performance (see also recommendation NR2).

Recommendation NR4: Network Rail must carry out a retrospective review of its timetable modelling carried out for the introduction of Elizabeth Line services, to ensure it learns lessons and applies these in planning for future major changes – such as the introduction of HS2. Network Rail should consider whether its timetable modelling capability should be augmented to take better account of the change's impact on asset condition, reliability and resilience – and therefore train performance – rather than core performance of the timetable alone.

23. With the introduction of Elizabeth Line services and major increases in freight use on the Western route, there are more parties with competing interests in securing access to the network, running services and recovering services following disruption. The route should continue to mature its approach to managing the competing interests of its customers in an open and fair way. The region underestimated the complexity of the operational culture change that these changes would require, especially given the extra growth of Great Western services following earlier infrastructure enhancements (see recommendation NR3).

24. While the Western route has many forums for engaging with stakeholders, there is limited alignment between the different operators' priorities and their approach to running train services. With limited compatibility of approaches, this makes it more difficult for the route in achieving better balanced outcomes for passengers and freight users.

Recommendation NR5: Network Rail should consider how best to drive greater cross-industry engagement on delivering system-wide performance, including consideration of a cross-industry senior governance forum to improve alignment on desired industry outcomes and resolve disputes.

There is a backlog of maintenance and renewals work at critical locations on the network, and a need for a strategic approach to engineering access.

25. There are specific asset types and locations where the reliability of assets has decreased, and more maintenance and renewal is needed to deliver a reliable network.

26. In some areas assets are being managed at, or beyond, their original design-life which, whilst not unsafe, is impacting performance. For example, asset condition and

reliability on certain freight branches has had a significant impact on freight performance (such as on the Tytherington Line when it reopened to traffic, prior to recent works). Further, Network Rail's accelerated inspections on the overhead line equipment between Paddington and Airport Junction has revealed a significant number of defects that must be addressed.

27. Wales & Western has a renewals and maintenance backlog for certain assets. The region's delivery of these works has been constrained by reduced access to the network to carry out both planned and unplanned work. This is a particular issue on the busiest parts of its network such as between Paddington and Airport Junction. This reduced access was foreseeable and should have been planned for.

28. The region must take a strategic approach to planning and optimising the efficiency of its access to ensure that it can establish and then maintain a sustainable approach to delivering the required engineering works. In doing so, it should review and adopt best practice, including in use of tools and technology.

29. Network Rail launched Project Brunel, as part of which it aims to address asset reliability problems between Paddington and Airport Junction and at strategic sites across the Western route. It is in the process of agreeing arrangements with operators for increased access windows to carry out the works. This must be scoped and delivered effectively to address backlogs of work, improve asset condition and reliability and therefore deliver a longer-term improvement in performance on a critical part of the route. As stated previously, Network Rail must now set out a timebound plan and milestones for the works that will be delivered.

30. We understand that the increased access as part of Project Brunel is to support its delivery (and is therefore shorter-term in nature). Any long-term additional access requirements need to be fully justified, properly planned and consider the needs of all users including freight.

Recommendation NR6: Network Rail must review its ongoing access requirements and arrangements for delivering inspection, maintenance, renewal and repair works (building on the approach being developed for Project Brunel) to ensure it can manage its assets in a sustainable way while meeting the needs of its customers. This should include looking at best practice being adopted in other routes which are similarly heavily-trafficked and assessing the scope for better use of tools and technology.

The reliability of specific railway asset types has deteriorated in critical areas with resulting effect on network delays.

31. There has been a marginal increase in the number of overall asset failures across the region but this broad picture masks underlying trends. For example, track asset failures have increased and are well above historical levels, particularly on the Western route, and a small number of highly-disruptive axle counter failures have occurred in the Thames Valley.

32. Asset reliability (as measured by the Composite Reliability Indicator (CRI), which is weighted by asset criticality) has been particularly affected by failures in heavily-trafficked, critical areas, where more repeat faults have occurred. On this measure, track reliability is particularly poor. Temporary speed restrictions (such as those to mitigate the risks of poor track condition) have continuously eroded performance and made performance recovery more difficult due to the tightly planned network.

Recommendation NR7: Network Rail should deliver on its plans to minimise causes of delay arising from poor asset reliability. This should include continuing to target the root causes that lead to temporary speed restrictions on any line of route and to ensure it is maximising its use of leading indicators of future problems.

33. Notwithstanding the trends in number of failures for individual asset types, there has been a large increase in delays associated with asset failures across the board (as indicated by Delay per Incident (DPI)).

34. In particular, given the increased busyness of the route out of Paddington (where there has been a large increase in traffic and tonnage), the reliability of assets has become more important to counter increased delay from each incident (which is then propagated across Western). For example, high profile failures of overhead lines between Paddington and Airport Junction have led to large amounts of delay and highlighted the need for proactive interventions and a firmed-up asset management plan to support improved performance.

35. The need to ensure enhanced reliability of assets in the Thames Valley area to cope with the increased stress was foreseeable. It is now clear that a more significant programme of asset refurbishment, renewal and resilience works should have been delivered prior to introduction of Elizabeth Line services to support the changed railway operational environment and to protect performance. This is a specific focus of Project Brunel (see recommendation NR2)

Recommendation NR8: In support of its strategic plan to improve asset reliability and sustainability on the Western route out of Paddington (Project Brunel), Network Rail must provide a clear, timebound plan for required renewal of overhead line headspans from Paddington to Heathrow Airport Junction and a mitigation plan to ensure reliability until that work is complete.

Network Rail should make sure it delivers its long-term plans to improve resilience to climate change and extreme weather.

36. More frequent and more extreme weather conditions caused by climate change are already affecting the rail network and will continue to do so. Delays associated with weather have been increasing in Wales & Western.

37. Wales & Western's approach to adaptation and resilience of assets to the impacts of climate change has improved during CP6, as evidenced through the development of improved Weather Resilience and Climate Change Adaptation (WRCCA) plans. It has recently updated its plans for CP7. The region has also provided evidence of specific actions being taken as part of its performance recovery plan. Overall, we are satisfied that Wales & Western is taking appropriate actions to improve resilience to climate change and extreme weather. It should continue to deliver on current workstreams, respond to emerging risks and deliver on its WRCCA plan for CP7. We are keeping this under close review.

The system-wide operational plan on Western lacks resilience but Network Rail is working to improve factors it can control.

38. The network is significantly busier on the Great Western route out of Paddington, with 7% more trains running in 2023 than in 2018 between Paddington and Maidenhead. It now supports a cross-London service alongside pre-existing long distance, commuter and freight services. It is more vulnerable to disruption than before.

39. The system-wide operational plan on Western lacks resilience, including the timetable and resourcing of that plan by operators, and the effect was underestimated by modelling (as described above). When assets (such as track and overhead wires) fail, delays to services are magnified by the operational design of the timetable and the design of operator resourcing plans.

40. The integration of the uplifted Elizabeth Line timetable in May 2023 was a particular challenge in part due to the planning coinciding with industrial action. There is evidence that the region understands the issues with that timetable. Performance

incidents attributed to the timetable have reduced in each of the four years. Network Rail remains focused on incrementally improving the resilience of the timetable to basic perturbation, within specification constraints and has provided evidence of changes made and their benefits. This needs ongoing support from passenger and freight operators.

41. Wales & Western should continue its collaborative work with Network Rail's System Operator to analyse further opportunities for timetable improvement.

Recommendation NR9: Network Rail should continue to focus on ways to maximise timetable resilience to basic perturbation within the possibilities of the existing specification, learning from best practice in other routes.

Network Rail has conducted reviews of incidents on its network but it must improve governance to ensure that lessons are fully learnt and embedded, with focus on tackling complex, multilateral issues.

42. Our investigation has found that Network Rail has incident learning processes in place and that action delivery is both tracked and reported on. However, Network Rail's customers have raised concerns about its ability to embed lessons from incidents and provide transparency of actions taken across industry.

43. From our review of incident learning reports, we have identified that most actions are completed in a timely fashion. There are, however, instances where learning has not been fully embedded. This includes, for example, lessons for the effective operational management of overhead wire failures and the management of stranded trains. In general, complex issues involving more than one party (and in particular more than one operator) appear less likely to be fully embedded.

44. In its review of the closure of Nuneham Viaduct, Network Rail has instigated reviews of the emergency engineering remedial works and safety decisions, but not of wider factors such as stakeholder communications and operational decisions.

45. These examples indicate that Network Rail must improve governance around incident learning reviews, in particular around these complex issues.

Recommendation NR10: Network Rail must review how it leads learning from complex and multilateral delay incidents to make sure that recommendations are fully and effectively implemented, and knowledge is shared across the industry. The process must include reviewing common themes across the portfolio of incident reviews.

Network Rail has had resource shortfalls in crucial areas supporting performance, but is taking action to improve the sufficiency of its operational and performance management resource and it should continue to improve its capability in these areas.

46. Network Rail's management of performance in Wales & Western has been impacted by shortfalls in its resources in critical areas. The region has taken action to address shortages in delay attribution staff, operations managers and performance managers. For example, it has increased headcount in its performance teams from 15 to 33 in Wales and from 42 to 50 in Western. It is also taking action to address current resource needs following implementation of its modernising maintenance programme, but should make sure that it does so at pace.

47. Network Rail recognises that core operational and signalling capability can be improved and this is a particular issue in Western due to loss of experienced staff in the Thames Valley Signalling Centre and relative inexperience of newly recruited staff.

48. Network Rail is currently taking forwards improvement under its '21st Century Operations' programme and the region should review opportunities to accelerate its adoption of the programme. Stakeholders have expressed concerns about operational capability, and in particular the need to ensure effective and consistent use of technology and tools to support effective decision making.

49. The region appears to have recognised that its resource level has been problematic during CP6: in its plans for CP7, it describes that sufficient staffing levels are required in control and signalling roles to ensure review, learning and development activities can be carried out.

Recommendation NR11: Network Rail should continue to deliver improved operational and signalling capability, establishing and delivering against a clear timebound plan and developing a suite of indicators to measure capability. To support development of its operational capability, Network Rail should ensure that future significant operational changes – such as the adoption of new decision support technologies – have appropriate business change programmes (including consideration of human factors) to support their introduction.

There are opportunities to deliver improved train performance which rely on cross-industry collaboration.

50. As supported by representations from stakeholders and our cross-industry roundtable, we consider that there are clear opportunities to deliver improved train performance which rely on cross-industry collaboration. These include strengthening contingency plans for dealing with delays while retaining flexibility in their application, further roll out of technology to improve incident response and service recovery (such as Integrated Train Service Recovery) and improving the robustness of implementing learning from the industry's response to major delay incidents.

51. There are clear opportunities to learn from best practice elsewhere, not least given other regions have well established, similar operational challenges.

52. We consider it is an important enabler to set up a regional cross-industry forum focused on creating the strategic conditions that allow collaborative delivery of strong train performance. While Network Rail can take a lead, it is reliant on proactive input from across the industry.

Recommendation to industry IN3: Industry should consider how to drive forwards improvements to train performance in Wales & Western which rely on cross-industry collaboration. This should include securing greater strategic alignment and shared objectives that can be cascaded to those delivering day-to-day service, strengthening contingency plans for dealing with delays while retaining flexibility in their application, further roll out of technology to improve incident response and service recovery and improving cross-industry learning from incidents.

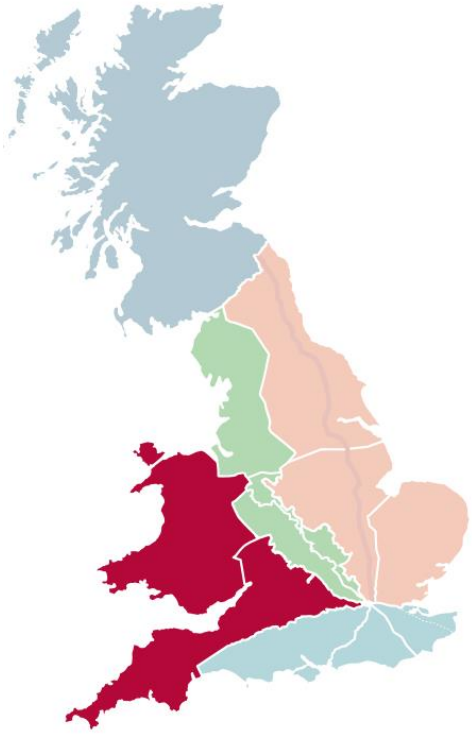
Investigation report

Context, findings and recommendations

1. Investigation background

Region description

1.1 Network Rail's Wales & Western region extends from London Paddington to Penzance via Reading, Swindon, Bristol, Exeter and Plymouth in the Western route and transports commuters to key locations such as Cardiff and Swansea in the Wales route. The region represents 17% of Network Rail's railway infrastructure.



1.2 Passenger rail services in the Wales & Western region are operated by Great Western Railway, MTR Elizabeth Line, Transport for Wales, CrossCountry, Heathrow Express and Avanti West Coast.

1.3 The region serves leisure destinations in Wales and the South West which have seen increased demand following the Coronavirus (COVID-19) pandemic. Metro frequency services have become an increasing focus for the region with the Elizabeth Line running through the Thames Valley into London. The region also provides the rail to Heathrow airport. Rail freight services are also critical, particularly the movement of aggregates.

ORR action to date and purpose of investigation

1.4 Through our regular monitoring of Network Rail we identified a deterioration in train performance in Wales & Western in Period 1 of 2021-22. Following a significant number of track related service affecting failures in the first four periods of 2021-22 we began a period of enhanced monitoring from Period 5 with a focus on track asset performance as measured by the Track Reliability Index and the Composite Reliability Index. By Period 7 the focus widened to include overall train performance and we requested further evidence from the region to detail the approach being taken by Network Rail to address the negative trend.

1.5 We wrote to Network Rail in November 2021 as part of a network-wide performance update on the first half of 2021-22 and set out that we expected it to

deliver improvements to address the deterioration of train performance in Wales & Western.

1.6 In Period 13 of 2021-22, we formally escalated to Network Rail our concerns with train service performance delivery in Wales & Western, prompted by the prolonged decline in the consistent region measure for performance (CRM-P), a regulated measure for passenger train performance. We were concerned that if the region did not take sufficient action, CRM-P would breach the regulatory minimum floor that we set in our final determination for CP6 – the point below which we would be highly likely to consider a formal licence breach investigation.

1.7 Subsequently, we requested that Network Rail produce a consolidated regional performance recovery plan to provide assurance that appropriate actions were being taken to address poor performance. Following the development of Network Rail's performance recovery plan, we met with the region's route directors, finance director and performance leads every four weeks to review performance and delivery of the plan. We also carried out deep dives into specific issues impacting performance.

1.8 Our Annual Assessment of Network Rail 2021/22 (published in July 2022) highlighted again that performance in the region had declined more quickly than in other regions, noting that performance on the Wales route was of greatest concern. Our letter to Network Rail in November 2022 highlighted specific concerns with the region's asset performance, increased delay and poor response to incidents.

1.9 Wales & Western provided us with a recovery plan at the point that it breached the regulatory floor for CRM-P in Period 4 of 2022-23. While it proceeded to make progress in delivering performance improvement actions, train performance continued to decline. In Period 11 of 2022-23, both passenger and freight performance had declined to unacceptable levels and were below the region's initial worst case scenario forecasts presented in their recovery plan. We further escalated our concerns over the continued decline in train performance. In our Annual Assessment of Network Rail 2022-23 we set out our expectation that the region must deliver on its performance recovery plan, keeping it updated to make sure that it led to improved overall performance outcomes. We set out our expectation that the region must deliver on its performance recovery plan, keeping it updated to make sure that it led to improved overall performance outcomes.

1.10 In Period 7 of 2023-24, we advised Wales & Western that the severity and sustained nature of the performance decline was such that we would now consider further regulatory action.

1.11 On 29 November 2023, we wrote to Network Rail initiating an investigation into Wales & Western's compliance with the Network Licence. We set out that the investigation would focus on any potential breach of licence conditions 1 (network management), 3 (sufficient resources) and 5 (asset management). If appropriate, other licence conditions would also be investigated. We have included these licence conditions in fuller detail at Annex A.

1.12 Our investigation has sought to ascertain if there is currently or has been a breach of the Network Licence in Network Rail's Wales & Western region. We have assessed various factors including but not limited to:

(a) if best practice has been applied in performance management capability and system operation;

(b) the key factors contributing to the decline of train service performance; and

(c) the suitability and delivery of the performance improvement plan.

1.13 ORR has also reviewed external, wider industry factors that impact on Network Rail's ability to deliver an effective and reliable service for passengers and freight customers.

1.14 As part of this investigation, we have drawn on a wide range of information. We have made use of pre-existing data and updates provided to us by Network Rail in connection with our routine activities of holding Network Rail to account. We have re-assessed the information previously provided to us by Wales & Western in response to our enhanced monitoring of its performance recovery plan. We have also asked Network Rail detailed questions to delve deeper into specific areas of concern, to provide status updates and to fill in gaps in our knowledge. We have followed up Network Rail's submission of evidence with in-depth meetings with Network Rail's subject matter experts and senior leadership. We have sought the views of stakeholders in the region, such as train and freight operating companies, and passenger representative organisations. We also held a roundtable meeting with Network Rail and senior industry leaders to understand the main industry-wide challenges impacting train performance in the region and opportunities for cross-industry work to improve performance.

1.15 The purpose of this report is to summarise our review of the information that has been provided to us and set out our findings and recommendations. We do this by firstly setting out our analysis of train service performance in the region, assessing the factors that have driven a deterioration in performance. We then consider in turn the region's leadership and governance, how it has managed its assets, its performance management and operation of the network, the additional actions it has taken to recover train performance, and its engagement with stakeholders to meet their reasonable requirements. We have subsumed our consideration of the sufficiency of Network Rail's resourcing within the report's chapters on asset management, network management and performance recovery. We conclude the report with recommendations to Network Rail.

1.16 While our investigation and report has focused on Network Rail's contribution to train performance, we recognise that delivering train service performance relies on cross-industry collaboration. In support of this we have also included in this report a summary of the industry roundtable meeting that we held in February 2024 together with our recommendations that emerged from that discussion and industry-wide recommendations as a result of our investigation (Chapter 8 and Annex C).

2. Analysis of train service performance in Wales & Western

2.1 This chapter sets our analysis of the deterioration in performance outcomes, helping identify some of the specific areas that require investigation with the Wales & Western region.

Major changes in the region

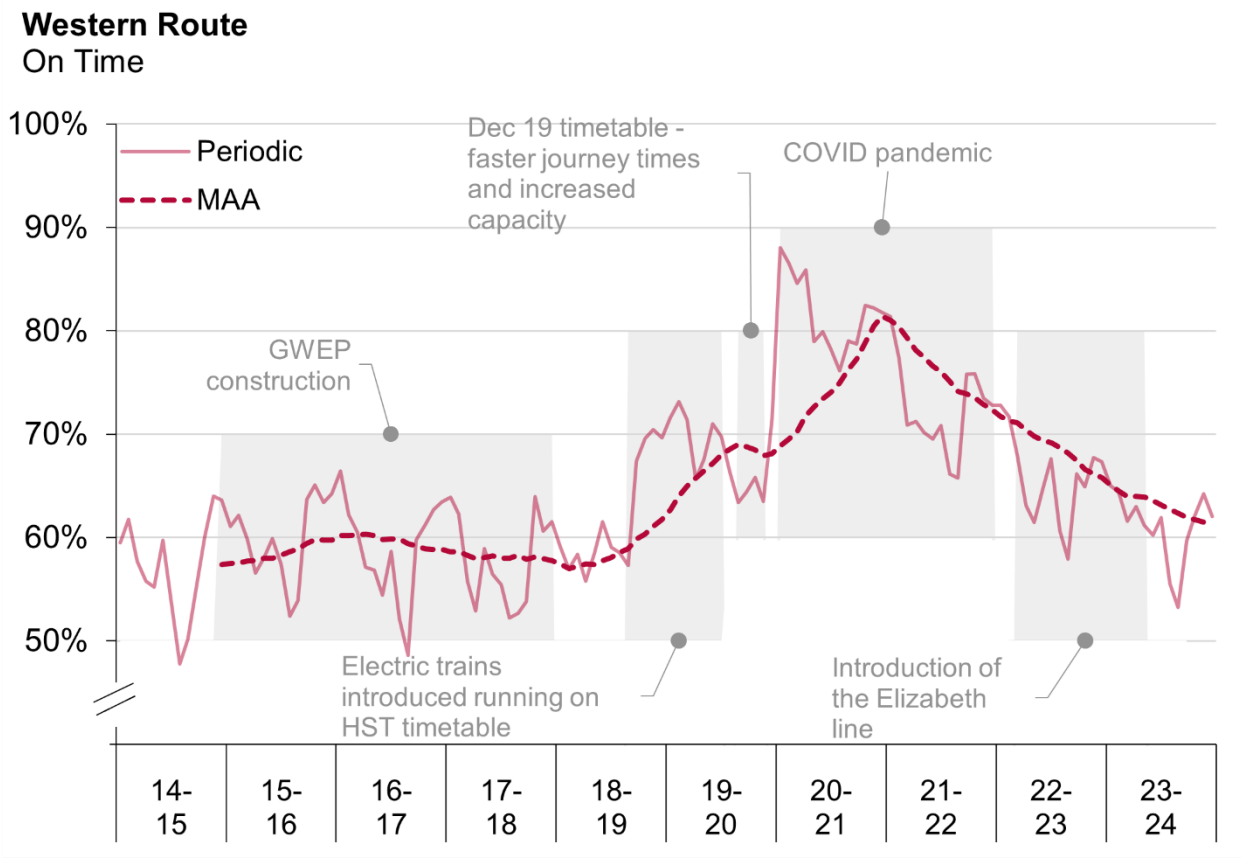
2.2 The Wales & Western region has experienced significant change over the last ten years, particularly on the Western route. This has influenced performance trends in that time. These major changes can be divided into five broad phases:

- **Great Western electrification construction:** Between 2014 and 2018 train service performance was disrupted by the construction phases of the Great Western Route Modernisation Programme This included electrification between London, Newbury, Bristol and Cardiff.
- **Electric trains introduced**: The electrification programme was completed in late 2018. Along with the new infrastructure, new, faster, electric trains were introduced. However, the timetable was still based on the slower timings for high speed (HST) diesel trains. This helped to artificially and temporarily drive better punctuality.
- **Faster journey times and increased capacity realised**: The timetable was changed in December 2019 to realise the benefits of the new infrastructure and electric trains. The benefits included more services, more connectivity and faster journeys – but the temporary punctuality improvements were degraded as a result.
- **COVID-19 pandemic**: In March 2020, the COVID-19 pandemic spread to the UK and successive lockdowns were implemented. Train service performance rapidly improved as there were fewer trains and passengers. As lockdown restrictions were eased, and passengers returned, performance declined. This train performance trend was replicated across Great Britain (although train service performance in Wales & Western declined faster than in other regions).
- **Introduction of the Elizabeth Line**: In November 2022 the Elizabeth Line was integrated into the wider rail network for limited cross-London services.

The timetable was recast, with increased service frequency and revised journey times, in May 2023. This timetable change also included changes to Great Western Railway's services on the route.

2.3 We illustrate how these changes have related to On Time train performance on the Western route below:

Figure 2.1 Key changes impacting Western On Time, 2014-15 to 2023-24

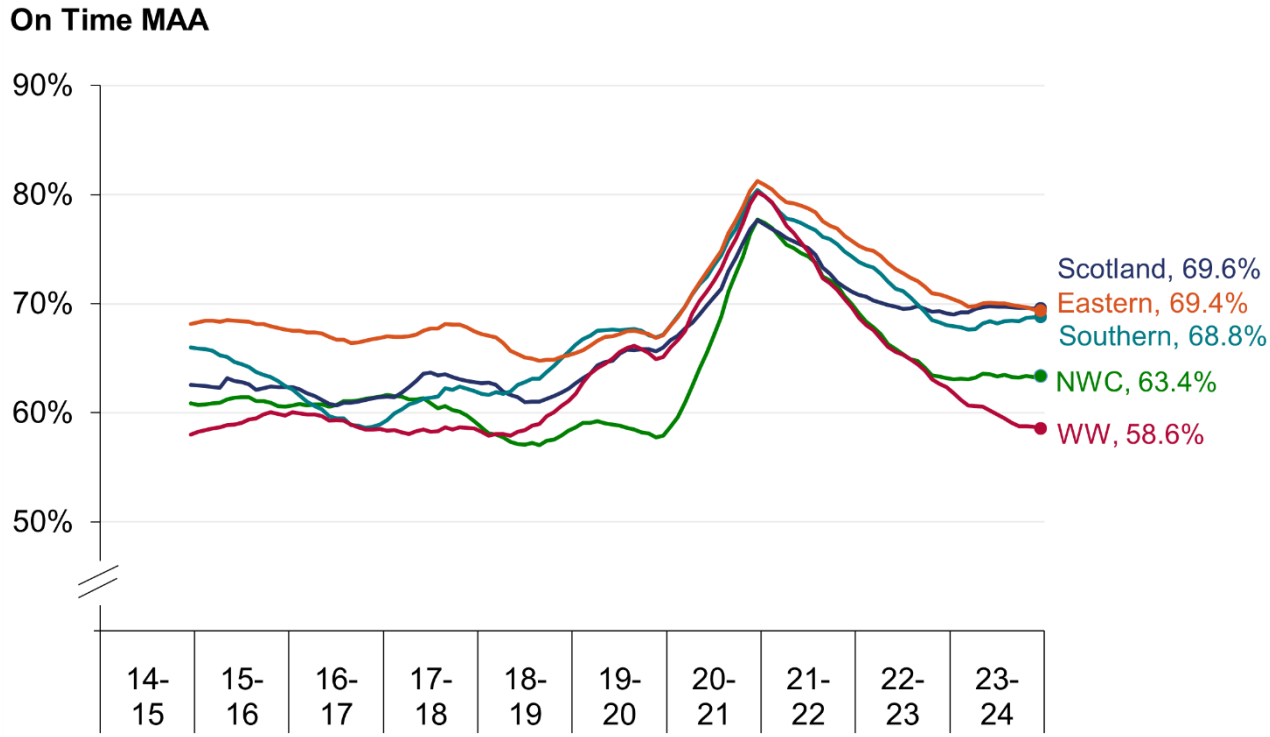


2.4 Looking ahead, the construction of Old Oak Common station connecting the Great Western Main Line to the High Speed 2 line will generate further challenge for train performance.

Wales & Western compared to national performance

2.5 Train performance in all Network Rail regions has declined in the last three years. Wales & Western's decline has gone further and faster. In the last year, On Time performance has stabilised in the other four regions. In Wales & Western the decline has continued (Figure 2.2).

Figure 2.2 Regional comparison of On Time, 2014-15 to 2023-24

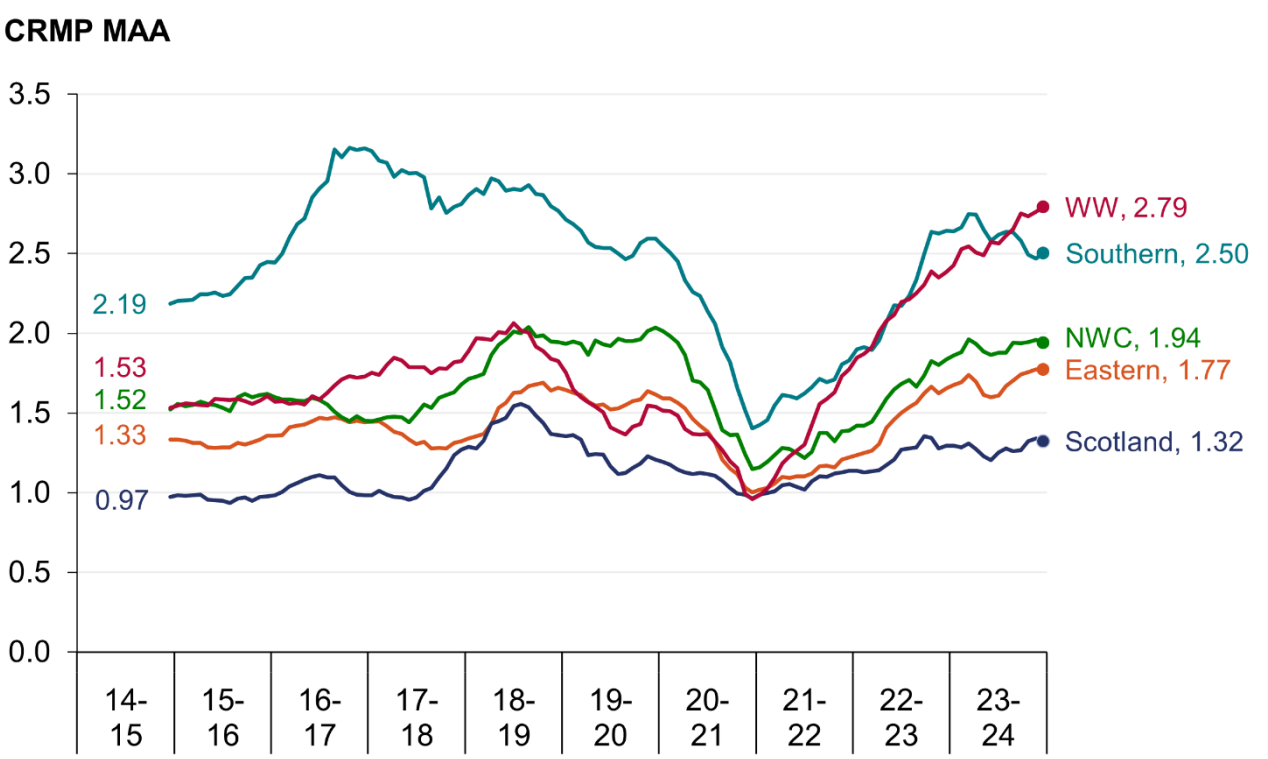


2.6 The same is true of delay. Network Rail-attributed delay in Wales & Western has increased by 76% compared to 2014-15, the worst of any region.

2.7 To create a fairer comparison between regions, we used the Consistent Region Measure of Performance (Passenger) (CRM-P) to regulate Network Rail during CP6 and are using an equivalent supporting measure in CP7.

2.8 Since 2020-21, every region's CRM-P has shown a similar shaped trend with a rapid improvement and then reversal, related to the pandemic. Most regions have now shown some sign of stabilising. Wales & Western's CRM-P decline has been the sharpest and continues; it went from having the lowest (best) CRM-P of any region, to having the highest (Figure 2.3).

Figure 2.3 Regional comparison of CRM-P, 2014-15 to 2023-24



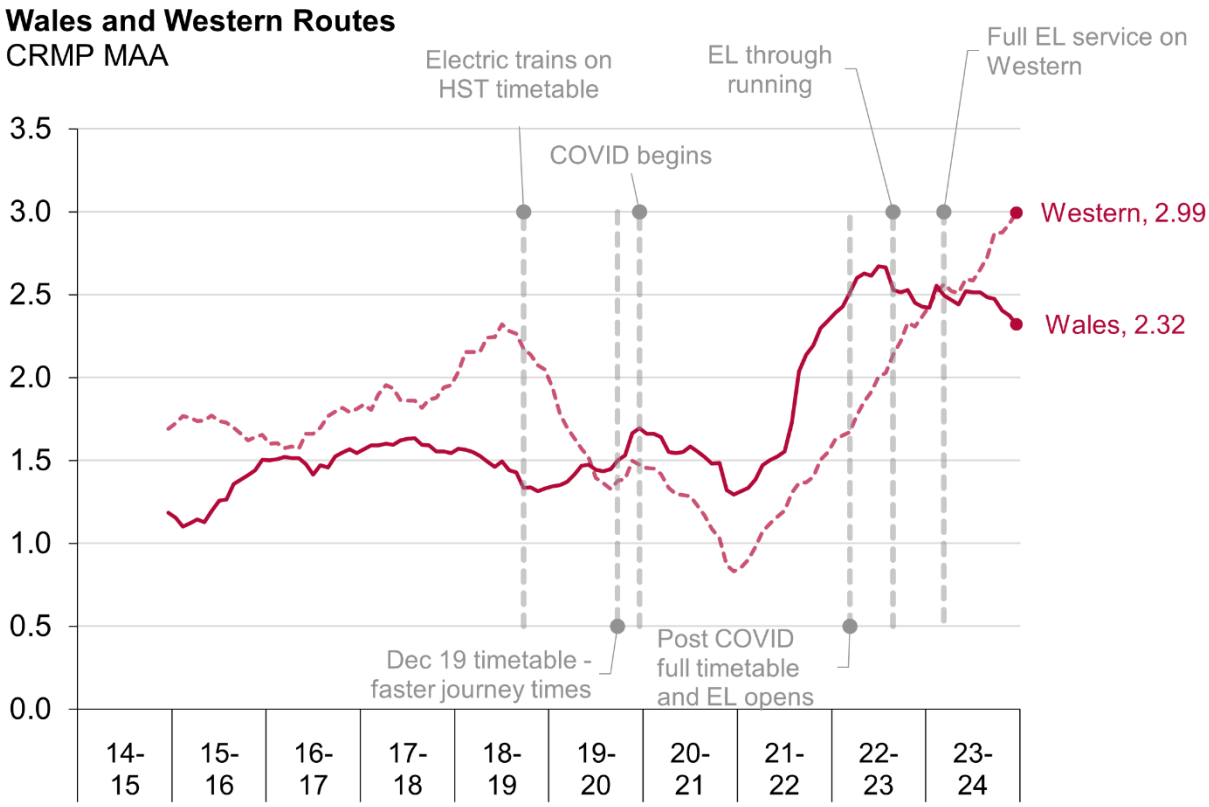
Western route and Wales route compared

2.9 Both operator and Network Rail delay has been increasing in the region, although Network Rail's delay has been increasing slightly faster.

2.10 On the Wales route, operator delay has primarily driven the increase. Both operator and Network Rail delay increased after lockdown restrictions were eased. However, in the last 18 months, Network Rail delay has been stable, while operator delay has been increasing. In contrast, on the Western route, Network Rail delay has primarily driven the increase.

2.11 Our analysis of Network Rail's delay in the region shows that it has been driven by the Western route, mainly because of its larger size. When we apply our regulatory measure, CRM-P, to compare the two routes, Western is still worse. Wales's CRM-P has stabilised and started to fall, while Western's CRM-P has continued to increase (Figure 2.4).

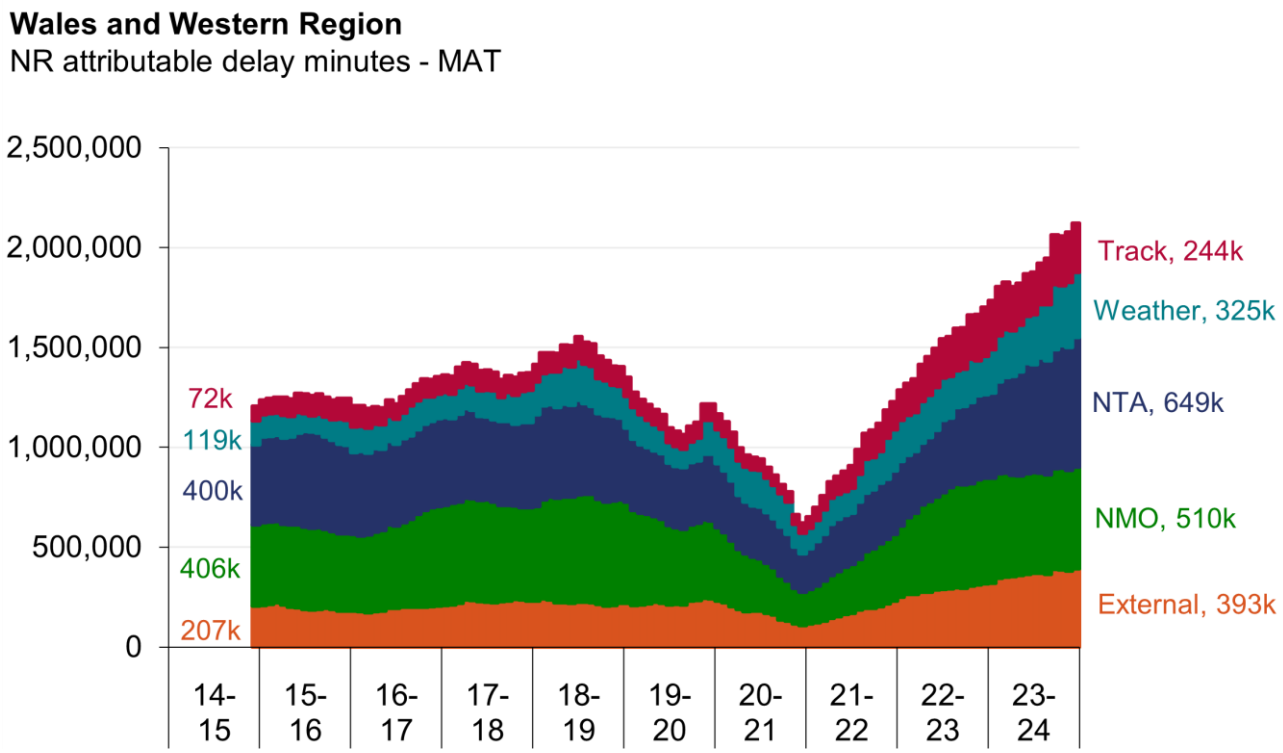
Figure 2.4 Wales and Western routes' CRM-P, 2014-15 to 2023-24



Types of Network Rail-attributed delay

2.12 In 2014-15, Network Rail caused about 1.2 million delay minutes in the region. By 2023-24, Network Rail was causing over 2 million delay minutes per year (Figure 2.5).

Figure 2.5 Wales & Western delay minutes Moving Annual Total (MAT), 2014-15 to 2023-24



Delay cause codes: track, weather, non-track assets (NTA), network management/other (NMO), external

2.13 The biggest increases in Wales & Western's Network Rail-attributable delay minutes since 2014-15 in absolute terms have been in non-track assets (250k more minutes) and weather (206k more minutes). However, in relative terms track delay minutes have increased the most, by 238%, in that time. Weather delay minutes increased by 172%. The regional headlines are:

- All of Western's delay codes have increased since 2014-15. Track, weather and non-track assets have increased by the largest absolute amounts. Track and weather experienced the largest relative increase with track increasing by approximately 317% and weather by 209%.
- The effects of track quality on performance may be even greater than this increase suggests: an increase in temporary speed restrictions could augment the effect of delay incidents in other categories as they use up allowances in the timetable that act as the network's resilience to perturbation.
- The Wales route has also experienced increased delay across all its delay categories, and by about the same amount in relative terms as Western

route. However, as it has fewer trains and tracks, it has contributed a lower proportion of the region's delay. Weather and external delay have seen the biggest relative increase in delay. Network management/other (for example, delays that are not physical infrastructure failures, such as operational decisions) and external delay were responsible for the largest absolute increase in delay. Track causes a much lower proportion of delay in Wales than Western.

- We compared Wales & Western to Network Rail's other four regions. Delay in those four regions combined was 13% higher than it was ten years ago. Across these four regions, weather has seen the biggest increase in delay (113%), external delay has increased by 31%, and track delay increased by 12%. Non-track assets and network management/other have seen small decreases.

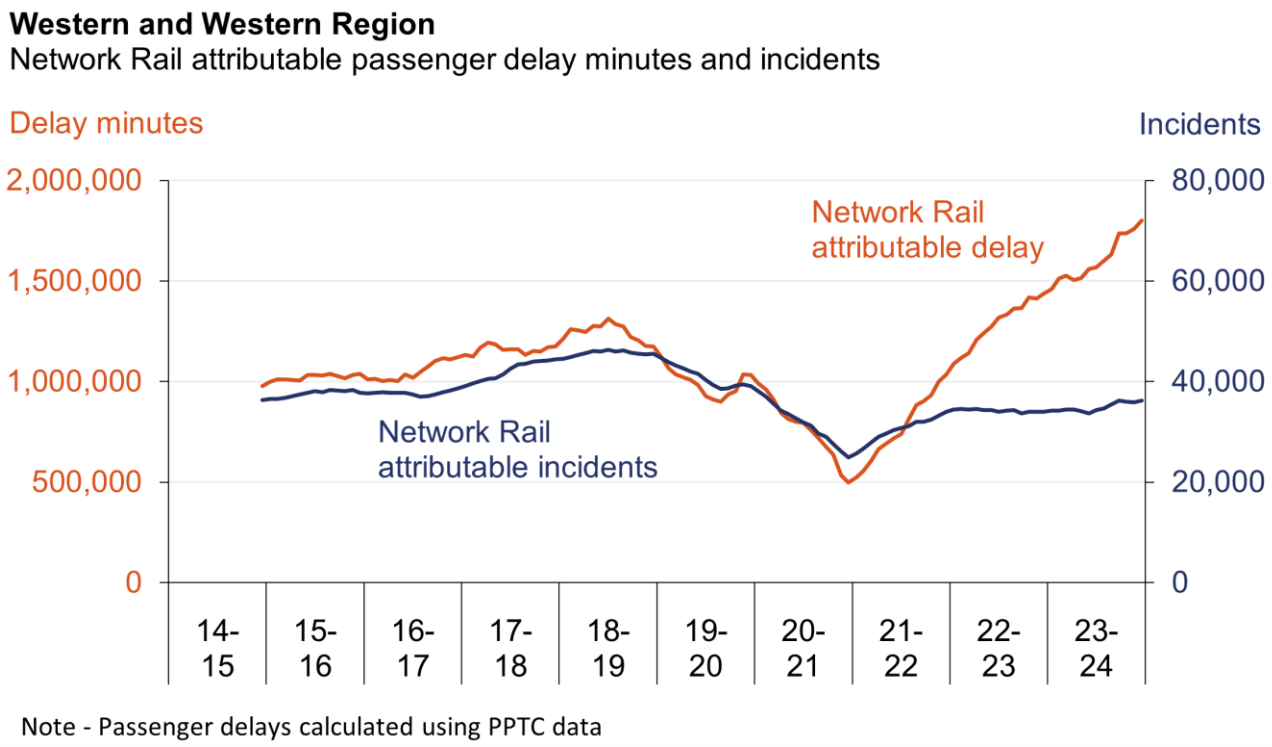
Other factors driving increased Network Rail delay

2.14 The increase in delay being caused by each incident in the Wales & Western region is a key change. Whole industry delay and incidents have both increased, but delay has increased more quickly than incidents. In other words, an average incident is causing more delay than it historically has.

2.15 While Network Rail largely understands the causes of delay in the region, it has not been able to fully explain the reasons for the increase in delay per incident. We have undertaken our own analysis to aid us in focusing this investigation.

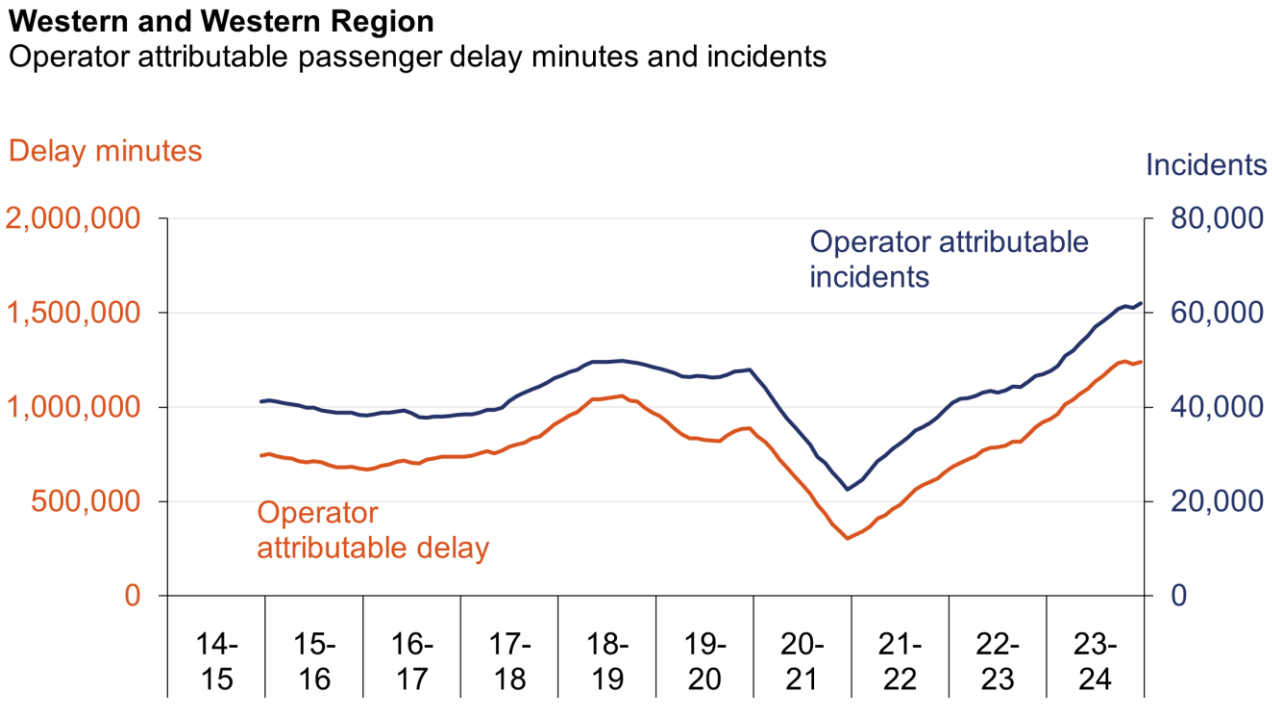
2.16 Figure 2.6 (below) shows that Network Rail attributable incidents in the region, across all delay categories, have remained about the same. However, overall delay from the incidents has increased. Wales & Western's trend line shows greater relative increase in delay than other regions. In contrast, operator incidents and delay from them are increasing in proportion as shown in Figure 2.7 below. This implies that increased delay is not simply a function of adding more train services to the network (and is therefore not only linked to the increase in Great Western Railway, Elizabeth Line and freight services).

Figure 2.6 Wales & Western Network Rail-attributable delay and incidents, 2014-15 to 2023-24



Note - Passenger delays calculated using PPTC data

Figure 2.7 Wales & Western Operator-attributable delay, 2014-15 to 2023-24



Note - Passenger delays calculated using PPTC data

2.17 We understand that the different trends between Network Rail and operator incidents is mainly driven by the types of incidents. A major factor is that a Network Rail incident - for example a track or signalling issue – will often require operatives to access the track.

2.18 For the safety of workers, this activity now requires trains to be temporarily stopped at an appropriate time. More trains operate on the line than historically – especially since the increase in Great Western Mainline timetable in 2019 and the introduction of Elizabeth Line services in 2022 and 2023 – and there is little drop-off in service levels outside the peak (reflecting greater leisure travel on the Western route than prior to the COVID-19 pandemic).

2.19 Therefore, it is now harder for Network Rail to identify a suitable gap to stop trains in order to allow workers to access the track. Additionally, stopping trains creates a greater bottleneck than before these service changes.

2.20 On some occasions the issue cannot be fully rectified immediately, and to allow movement of trains the network temporarily reopens with lower capability (such as a speed restriction or partial line closure). Every train will be delayed in this circumstance, and this is magnified by greater traffic levels which also mean less available resilience in the system. A gap then needs to be found for all trains to be stopped again, to effect full repairs. The difficulty in finding a suitable gap may result in this being left until after passenger traffic levels reduce, in the late evening.

2.21 On the operator side, access to the track is less frequently required. It is relatively unusual, for example, for a significant train fault to require a technician to climb down to the track to inspect a unit.

2.22 If the increase in delay for each event was being caused purely by resilience of the timetable itself, we would expect delay arising from each operator incident to have increased. However, Figure 2.7 above clearly shows this is not the case, hence our conclusion that it is not solely the increase in trains on the network that is responsible for increased delay.

2.23 The increased DPI trend is starkest on the Western route, where it has increased consistently since 2021. Before then, there was a consistent correlation between incidents and delay. On the Wales route, there was a small increase in DPI over the same period, but this has now stabilised.

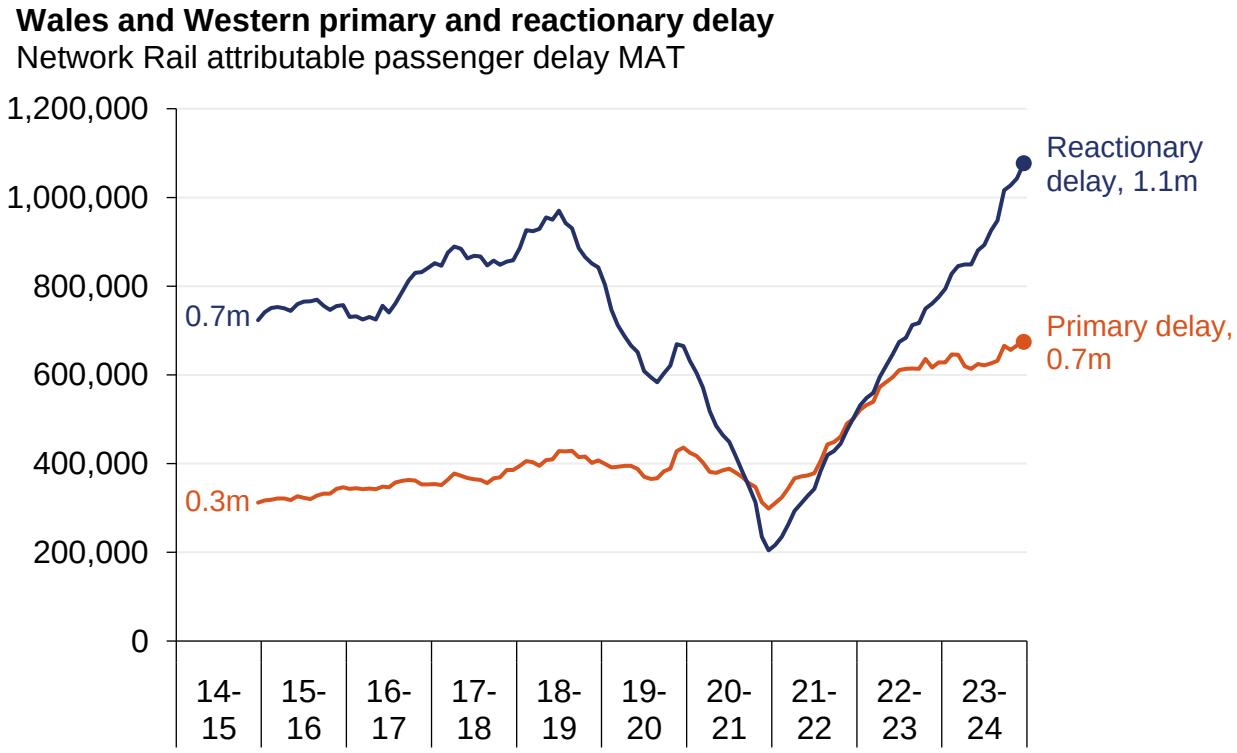
2.24 The increase in DPI on Western route varies between different categories of incident. For external delay, Wales & Western DPI has increased by 34%, much

more than any other region. The same is true for track DPI, which has increased by 238%.

2.25 We have also identified notable trends in the profile of primary and reactionary delay for the region, where:

- "Primary delay" is delay to trains caused directly by an ongoing performance incident.
- "Reactionary delay" is delay caused by services that are running late as a consequence of the incident, rather than being caused by the incident itself.

Figure 2.8 Wales & Western Network Rail-attributed primary & reactionary delay



2.26 Primary delay on the region due to Network Rail-caused incidents remained essentially stable during the pandemic, then nearly doubled through the year 2021-22. Network demand patterns changed in that year, but this also coincided with a period of time in which rules for accessing the track changed and, for safety reasons, track workers were required to stop all train movements to allow them to work (as described above, having previously been allowed to undertake some work in between trains).

2.27 Primary delay levels have remained elevated but been reasonably stable since 2021-22, despite the introduction of Elizabeth Line services; again, this suggests that the intensity of the timetable is not a major factor in primary delay levels.

2.28 In absolute terms, reactionary delay reached the equivalent of its highest pre-pandemic level at the beginning of 2023-24. It has accelerated in the most recent year, which is discussed in Chapter 5 of the report but broadly appears to relate to the network's readiness to manage further increases in traffic levels from May 2023 and changes to operator resourcing plans.

2.29 However, the ratio of primary to reactionary delay remains significantly less than it was prior to the pandemic (excluding 2019-20, when for most of the year faster electric trains were operating in a timetable designed for diesel units). This implies that, while the operating plan can be improved, it is not the main driver of performance issues on the region.

Key factors identified from our analysis of train performance

2.30 Train performance in Wales & Western has declined in the last three years. It has declined much faster than in Network Rail's other four regions. The main, but not only, contributor has been the increase in Western route's Network Rail delay.

2.31 The number of failure incidents has not increased for most asset types. However, there are exceptions, most notably track, whose failure rate is higher than before the pandemic.

2.32 However, the delay minutes resulting from failures of each asset type has increased faster than the failure rate. For track, the delay has increased by 238% since 2014/15. Weather delay has increased by 172%. Other categories have caused larger delay increases in absolute terms.

2.33 We also conclude that worsening overall performance is the result of more than simply having more trains in the timetable. In other words, this is both an operational and an asset-related challenge.

3. Wales & Western's leadership and governance

Leadership

3.1 Leadership is essential to any organisation's setting of priorities. A governance structure that provides focus on – and line of sight to – the priorities is key to success in achieving them.

3.2 The Wales & Western region has, previously, lacked sufficient focus on delivering strong train service performance to passengers and freight. It provided ORR a consolidated performance recovery plan bringing together various plans and initiatives in August 2022 in response to our scrutiny and has periodically iterated and revised it since.

3.3 A lack of continuity has played a part. The region was formed in 2019 as part of Network Rail's 'Putting Passengers First' devolution. Since then, it has had three different regional managing directors, its most senior role holder directly accountable to Network Rail's Chief Executive. The current Wales route director started in 2022 and the Western route has had three different route directors since 2019, with the current incumbent assuming the role in June 2023.

3.4 On Western, instability has noticeably impaired the region's organisational clarity and consistency of focus that was needed to prepare and adapt to the significant operational changes experienced. For example, the actions identified as part of Project Fusion (a project bringing operators and Network Rail together to prepare for Elizabeth Line operations on the Western route, which is discussed further in Chapter 5) were, in some cases, not successfully followed through to completion.

3.5 The evidence provided by Network Rail in response to ORR's investigation questions described many local and departmental processes in place to identify and progress individual interventions to address train performance. However, it has not been sufficiently evident to us, nor to many key stakeholders, how the region's overarching strategy and governance for delivering good train performance provides clear line-of-sight, coming together at the higher levels of accountability.

3.6 The fundamental and exceptional change in this route's operational characteristics has taken place at the same time as significant challenges that have affected all

regions: the COVID-19 pandemic, industrial action and the adjustments needed following regional devolution. Leaders and managers at all levels have therefore had to allocate additional time and attention to implement mitigating arrangements for these.

3.7 We recognise that effective leadership can take time to make an impact in the context of infrastructure management, as it is dependent on alignment of effort, advanced planning, integration of processes and shaping the necessary organisational culture. Where the region's leadership has had time and opportunity to provide clear direction, accountability and effective governance, such as on the Wales route, this has had a notable impact in arresting the decline in Network Rail's contribution to train performance.

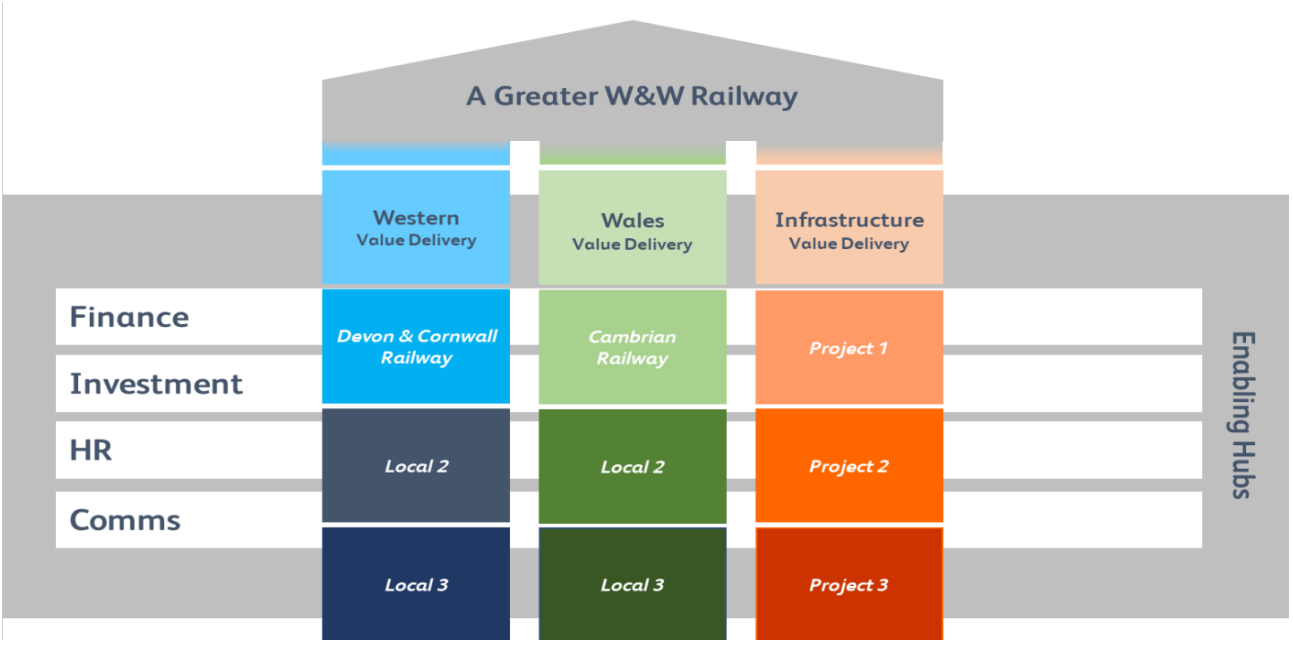
3.8 On the Wales route, there are signs that cultural changes made are starting to deliver improved contribution to train performance. This is supported by the views of stakeholders. A specific, new tailored framework called the "7 Rs" underpins all relevant discussions in the route. These visibly permeate through the route's activities and lend a consistent focus.

3.9 While there are positive examples of leadership and cultural change in the region, Wales & Western should also consider what more it could learn from best practice in other Network Rail regions and routes which have undergone change to adopt effective performance-focused working cultures. Stakeholders speak highly of the performance-culture on the Anglia route, which supports the Eastern operations of the Elizabeth Line. The Central route in the North West & Central region has succeeded in reversing poor train performance, underpinned by a noticeable change in its performance culture as a result of a performance recovery project.

Governance

3.10 In governance terms, the Wales & Western region is a matrix structure of "value hubs". There are four "enabling hubs" (core, cross-regional functions of finance, investment, human resources and communications) and three "delivery hubs" (Western Value Delivery, Wales Value Delivery and Infrastructure Value Delivery) which are comprised of the functions providing the operational railway on a day-to-day basis. This is shown in Figure 3.1 below.

Figure 3.1 Wales & Western regional organogram



3.11 The assurance principles in use are based on Network Rail's standard "three lines" model of:

- management assurance;
- functional assurance & corporate oversight; and
- internal/external audit.

3.12 We have seen evidence that Wales route's governance has a clear line of sight that it uses to instil, as it describes it, a "programme management mentality to the delivery of performance and route business". The Wales route has an app called the "Strategic Improvement Platform" (SIP), which it uses to log, track and report on activity and milestones towards its improvement plan. This project management app looks to be a relatively comprehensive technological platform supporting its improvement processes. When projects are identified and incorporated, this supports the route enacting effective oversight of improvement activities.

3.13 Western route uses a more traditional "Performance Improvement Plan" tracker, with a Power BI dashboard, to track performance improvement activity. Accountability for the tracker sits centrally with the Performance Improvement Managers, who update from various meetings they attend across the route. Consistent with a general lack of obvious network performance focus or culture within the current governance structure, it is not clear that there is a focal point within the route where people are either held to account for delivering these plans or

able to escalate issues (although we note that there are processes being put in place through Project Brunel).

3.14 We highlight that the Local Railways Initiative is a positive example of the way that the Value Hub approach can work, further devolving responsibility through the region.

Case study: local railways initiative

Wales & Western has developed ‘Local railways’ initiatives in Devon and Cornwall, and North Wales. These are intended to realise benefits from bringing infrastructure management and train operations closer together by removing organisational boundaries as far as possible. Leadership is provided through a combined local management team with a deep understanding of the local railway. The leadership is empowered to make decisions that maximise cross-industry outcomes.

Network Rail reports that the initiative is having a positive impact. Reported innovations include the introduction of an app for drivers to report non-urgent track quality issues and a joint 'sandpit' training area, helping train crew understand physical railway infrastructure better. Network Rail reports that the initiative has improved access to maintain the track and that it has therefore been able to remove temporary speed restrictions more quickly.

There has been positive feedback from industry partners. Transport for Wales (TfW) said that it was a “key positive to highlight”. In addition, Network Rail and TfW are planning to extend this approach to the West Wales region.

There is more to do. A freight customer has reported concerns that their interests may be compromised in this initiative. Network Rail recognise this threat and is working hard to minimise this risk.

This template might provide the basis for more of the relatively simple and less busy areas on the region, to allow greater organisational focus on the core of the network.

3.15 We consider there are two notable points of potential weakness within the structure, that are pertinent to ongoing performance problems, set out below.

The impact of governance and accountability arrangements on performance

3.16 “Infrastructure Delivery” sits on its own in the regional governance structure. It is not part of one or both routes, nor is it an ‘enabling’ (i.e. supporting) value hub within the Wales & Western governance matrix. As such there is no clear, structural line of accountability between Infrastructure Delivery and the day-to-day delivery of the train service.

3.17 In detailed discussions on governance, the region described that members of this value hub took part in all relevant route-led discussions and that the Route Directors holistically own and represent their routes. Successful delivery of scorecards requires all parts of the route to work.

3.18 This approach separates significant infrastructure and maintenance work from operations, further splitting track from train: train operators’ daily relationships are with the route functions within Network Rail and the approach sees Infrastructure Delivery isolated from the effects their work has on passengers and freight.

3.19 The separation is emphasised in overarching high-level meeting governance. The “Infrastructure Review” board is structurally parallel to the Wales Route and Western Route Periodic Business Review meetings, and reports to the “Regional Significant Scheme Review” – which has only a dotted line to the "Regional Value Board”. We have not seen evidence of a feedback loop where the contribution of infrastructure delivery schemes to ongoing operational and performance issues is considered at a senior level.

3.20 Evidence we have reviewed in respect of the failure of Nuneham Viaduct in early 2023 suggests that this separation contributed to a situation where operators were given only three days’ notice that the condition of the viaduct made it at risk of closure. This is discussed in greater detail in Chapter 4 of this report, which includes a case study of the Nuneham Viaduct issues.

3.21 Additionally, in light of the significant increase in tonnage and train services using the Western route, any separation of accountability between operators and engineering is likely to lead to a delay in sharing and identifying asset trends that need to be resolved. The asset management sections of this report and the Elizabeth Line readiness sections describe the consequences of this.

3.22 Wales & Western has recently reviewed its operating model against its core purpose. It is assessing structural changes to its infrastructure leadership and

governance as a result, focused on devolving capability and accountability to route level. The region has also introduced two interim roles, a regional infrastructure director to enhance provision of engineering and asset management oversight, and a chief of staff focused on assurance and strategic leadership support.

Recommendation NR3: Wales & Western's leadership must focus on strong performance governance and accountability to drive a performance-led culture. In particular, it must review whether its current structure, with infrastructure management separated from route accountability, supports effective decision making and performance management. In the past, Western has primarily been focused on long distance passenger and freight flows – in recognition that there are now more regional stakeholders with different priorities (including metro-style services), Wales & Western should drive an organisational and cultural change programme to ensure it better manages its stakeholders' varied and potentially competing needs.

Cross-industry alignment

3.23 We have found that, while the Western route has many forums for engaging with stakeholders, there is an absence of a single over-arching, senior cross-industry forum that brings the many parties responsible for delivering train performance together to collaborate (and align initiatives) on driving improvements.

3.24 Senior-level interface meetings in place on Western route and at regional level have primarily been bilateral, between Network Rail and individual operators. This may have been adequate historically, with GWR operating services both on main and relief lines from Paddington. However, the reconfiguration of services to incorporate the Elizabeth Line and a significant increase in freight volumes means that it is no longer sufficient.

3.25 In Wales, the situation is slightly different as there is a tripartite agreement in place between TfW Rail, Network Rail and Amey (who provide the Core Valley Line infrastructure) – but input from other operators, especially freight, is still limited.

3.26 The industry roundtable that ORR convened on 14 February 2024 was powerful because it brought senior stakeholders from Network Rail, train operating companies (TOCs) and freight operating companies (FOCs) together in one room. This opened up discussion about strategic alignment and exposed some of the different drivers of behaviours. A summary of that roundtable is included at Annex C.

3.27 Given the complexity of operations on the Great Western Mainline in particular, as a pre-condition for successful performance delivery there must be a level of strategic alignment between parties on how to resolve key performance challenges, including resolving disputes. From that point, senior stakeholders can drive necessary discussions with their own funders and/or shareholders.

3.28 More importantly, they can then enable a collaborative performance culture, communicating aligned goals effectively to their teams. This will enable better and more successful frontline relationships and improved network results.

Recommendation NR5: Network Rail should consider how best to drive greater cross-industry engagement on delivering system-wide performance, including consideration of a cross-industry senior governance forum to improve alignment on desired industry outcomes and resolve disputes.

4. Network Rail's management of railway assets to support performance

4.1 Wales & Western has a licence requirement to adopt and apply asset management policies and criteria which comply with the Network Management Duty, which includes operating, maintaining, renewing and replacing the network, in accordance with best practice, to meet the reasonable requirements of persons providing services relating to railways in respect of the facilitation of railway service performance.

4.2 Network Rail's management of its assets has a large bearing on delivering reliable and punctual train services. In considering whether Wales & Western has adopted and applied asset management policies which comply with the Network Management Duty, we have considered:

(a) Network Rail's asset management capability, including its asset data;

(b) Indicators of overall asset condition;

(c) The delivery of planned asset renewals and maintenance works;

(d) The reliability of key asset classes;

(e) Access to the network to deliver engineering work;

(f) Maintenance reform;

(g) Wales & Western's plans for addressing asset management issues (such as reliability of assets); and

(h) How the region is mitigating the impacts of climate change and extreme weather.

Asset management capability

4.3 Asset management best practice is set out in an international standard for asset management, ISO 55000. In our Periodic Review 2018 final determination, we set a requirement for Network Rail to meet the requirements of ISO 55000 by the end of March 2021. We carried out a targeted assurance review of Wales & Western's

progress against this requirement in 2021 and found that the region was in the 'developing stage' of its asset management capability. We required that the region achieve maturity within 12 months.

4.4 We carried out a further review in 2022 and determined that the region was substantially complying with ISO 55000. However, we encouraged the region to continue to drive forward improvements to its asset management capability maturity and practices. This investigation and our ongoing Technical Assurance Reviews also highlight opportunities for improvement – and these are discussed in further detail below.

Assessment of overall asset condition

4.5 We use a range of measures to understand whether Network Rail is managing its assets in a sustainable way to support long-term outcomes such as train performance. The Composite Sustainability Index (CSI) provides a high-level, aggregated view of asset sustainability (based on asset remaining life) by comparing it to the position at the end of CP4. CSI is reported on a yearly basis. Wales & Western finished 2022-23 with a CSI of −0.1%. This means that overall asset sustainability was 0.1% worse than at the end of CP4 and 0.3 percentage points worse than its trajectory (0.2%) for the end of CP6. While there has been a reduction in CSI, we consider that it is modest, and review of further asset management data is required to understand the impact.

4.6 We have compared the age and condition of Wales & Western's assets to the rest of Network Rail's network. Taken at portfolio level, the used life, remaining life and condition of the region's assets are broadly comparable with the wider network. The exceptions are its bridge assets, which are of poorer condition, and its overhead line equipment (OLE) which has significantly more life remaining due to the majority of it being more recently installed in 2018 as part of the Great Western Electrification Project (GWEP). However, the OLE between Paddington and Airport Junction is older and Network Rail plans to renew the headspans during CP7. A high-level comparison of asset condition with other Network Rail regions is provided in Annex E.

4.7 We have also considered the 2023 Extreme Heat Taskforce Final Engineering Report, commissioned by Network Rail to examine how resilience to extremes of temperature could be improved. The report identified broader underlying weaknesses in the resilience of infrastructure which were exposed by the extreme heat during Summer 2022. It provided recommendations to improve the resilience, maintenance and competence of the rail network's critical assets. It emphasised

the need for better knowledge of asset condition, a more proactive maintenance regime focused on preserving asset life, and the need to revise standards to cover higher ambient temperatures. There is much alignment between the Oakervee report and our investigation report.

Asset data

4.8 Effective asset data management is essential for maintaining the safety and reliability of the railway infrastructure and without good quality asset data, management teams cannot make fully informed decisions about their asset portfolio and the appropriate interventions.

4.9 We have reviewed Wales & Western's asset data against those of other regions. Based on the subset of data for which data quality is reported in Network Rail's Chief Engineer's report, the region's data is substantially (more than 95% in every category) at the required quality level (A2). Only Network Rail Scotland is in a better position. However, this subset of data does not provide the full picture.

4.10 Network Rail recognises that there is room for further improvement in the use, quality and accuracy of its asset data beyond the improvements made in CP6. For example, it is delivering improvements to its asset register for drainage assets and has recently carried out accelerated inspections to understand the condition of its electrification assets between Paddington and Airport Junction which has identified more than 300 defects for which Network Rail must provide a plan for renewal and mitigation (NR8).

4.11 Wales & Western has produced its Asset Data and Information Strategy for CP7. The region has set out that:

"The Asset Data and Information Strategy for Wales & Western is vital for ensuring the safety, reliability, and efficiency of the rail network. By addressing key components, setting clear objectives, and implementing a phased plan, Wales & Western can optimise asset data and information management in the short, medium, and long term."

4.12 We expect Wales & Western to deliver on its Asset Data and Information Strategy, and the plans that sit below it, and both will be subject to regular reporting to us. We are also discussing with Network Rail the potential to broaden and evolve current asset data accuracy measures to enable more effective measurement of asset data quality.

Renewals

4.13 In the long-term, under-delivery of required asset renewals will lead to more assets in use that are close to, or beyond, their design lives and higher likelihood of failures which may impact train performance.

4.14 Wales & Western's delivery of its planned renewals volumes for CP6 has been mixed. Its delivery (using the 'effective volumes' measure) compared with its original CP6 delivery plan is shown in table 4.1 below.

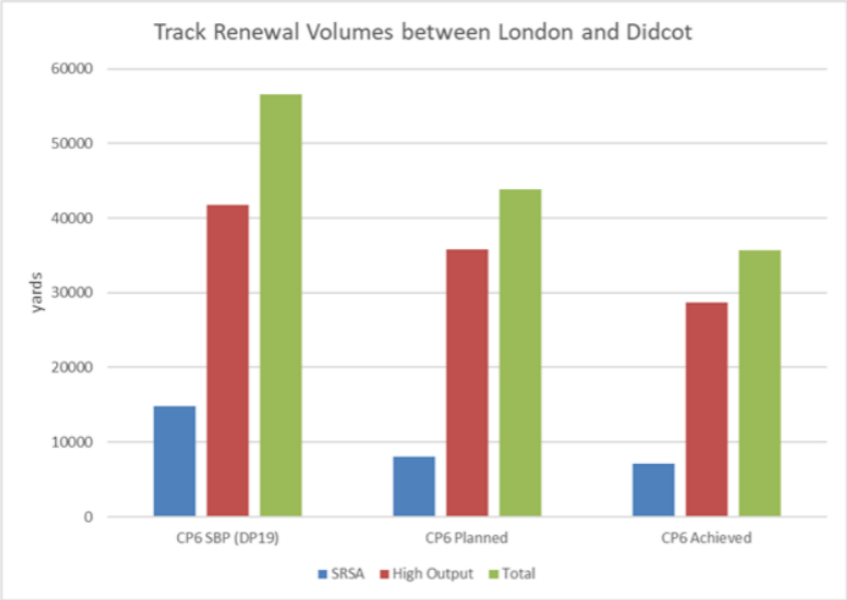
Table 4.1 Comparison of Wales & Western renewals against CP6 delivery plan

Asset Area	Delivery Plan	Actual delivery	Variance to plan
Track (Plain Line)	1,084	968	-11%
Signalling	640	990	+55%
Earthworks	405	515	+27%
Switches and Crossings	204	204	0
Structures	18,435	15,991	-13%

4.15 Under-delivery in track and structures has been the result of factors which have not been unique to Wales & Western. These include loss of effective volumes due to the impact of the COVID-19 pandemic, industrial action, and reprioritisation of available funding. The region overdelivered signalling and earthworks renewals.

4.16 The level of track renewal deferral across the region is unlikely to have had a large impact on train performance and has been managed through the region's deferred renewal process. The region has demonstrated understanding of its high-risk sites and that it has plans in place to manage these track locations, pending renewal. However, deferral of track renewal between London and Didcot has been markedly higher. Delivery on this part of the network has been nearly 40% lower than in the region's original CP6 delivery plan. This is shown in Figure 4.1.

Figure 4.1 Western track renewals volumes, London to Didcot, CP6



SRSA – South Rail Systems Alliance, Wales & Western's principal track renewals contractor

4.17 This under-delivery against plan on the busiest part of the region's network is due to factors including access, resource, and plant failures. It indicates a backlog of track renewals work at a critical location on the network. We consider Wales & Western's management of track in more detail below and also address the impact of access constraints later in this report.

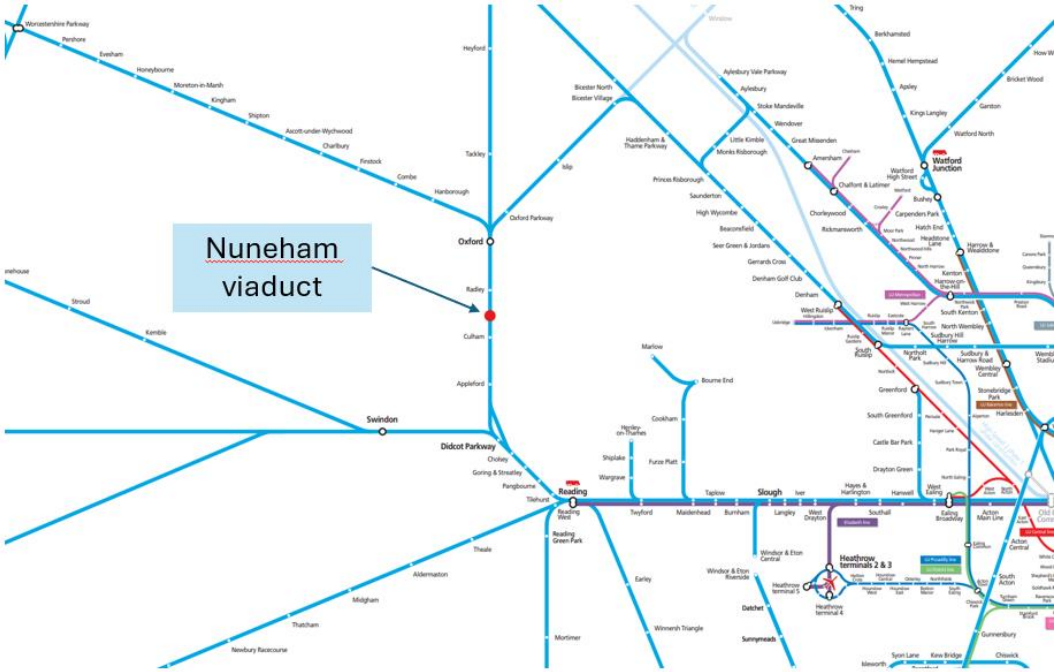
4.18 In any large asset base, there are likely to be some assets that are approaching or beyond their design lives, or whose condition has deteriorated to the point of needing renewal. These assets are more likely to fail unless carefully managed. In response to our investigation, stakeholders have raised specific examples of assets which they consider have been allowed to deteriorate beyond the point of needing Network Rail to intervene, or left too long before intervention.

4.19 Several stakeholders raised concerns about the condition of freight lines, considering that they are treated as lower priority, and citing the example of poor condition on the Tytherington line when it reopened to traffic (prior to recent works) which resulted in a 5mph speed restriction over an extended period before being resolved. Other issues raised included slow resolution of other temporary speed restrictions, the condition of overhead lines near Paddington, the management of vegetation, the condition of structures impacted by vegetation and the delayed resignalling of the Cornish mainline.

4.20 In Periodic Review 2023, Wales & Western submitted a business plan including £2.7bn for renewals. As part of our CP7 determination we identified that parts of the region's plans required more investment directed to core asset renewals to address the region's main vulnerabilities, improve asset sustainability and contribute to safety and performance. This was the case for structures, track, and earthworks assets.

4.21 Network Rail's recently announced Project Brunel aims to accelerate vital maintenance and renewal works in the Thames Valley. This is the subject of recommendation NR2.

Case study: Nuneham – managing the impacts of asset failure



Nuneham Viaduct is a vital structure on a major rail artery for freight and passenger services. The viaduct was closed at late notice in April 2023, and remained closed for urgent renewal between April and June 2023, causing huge disruption to passengers and freight.

For the purposes of this investigation, we have considered the closure of the viaduct as a case study as it may be indicative of systemic issues of governance, decision making and lesson learning.

We consider that Network Rail should have recognised that major renewal work was required on the viaduct in early 2023. Network Rail missed opportunities to intervene

earlier. It could have acted on key recommendations from a consultant report in 2019. It also missed opportunities to link intelligence from different asset disciplines (track, structures, earthworks and drainage) which would have helped diagnose the issue. These opportunities would have allowed Network Rail to plan its engineering works and so reduce disruption to users.

Because the severity of the issue was not recognised earlier, the region had to shut the viaduct at short notice. It gave train operators only days' notice of the closure. The lack of notice made the closure more disruptive and gave little opportunity to communicate the impact to rail users.

We consider that the management of the Nuneham Viaduct incident shows a need to review governance and decision-making arrangements, including how asset management and operational decisions are made in a joined-up way, and how risks are escalated internally and with operators.

In reviewing the incident for this investigation we have identified that, while Network Rail has instigated reviews of the emergency engineering remedial works and safety decisions, it has not commissioned a review of wider lessons that could be learnt – such as improvements to decision-making, governance, stakeholder communications and operational decisions.

Maintenance delivery

4.22 Each of Network Rail's five operating regions is responsible for determining its approach to the delivery of asset maintenance. Wales & Western has five maintenance delivery units with two for the Wales route (Shrewsbury and Cardiff) and three for the Western route (East, Central and West). Network Rail's central Technical Authority sets the minimum standards to be delivered and provides assurance and expert support to the regions.

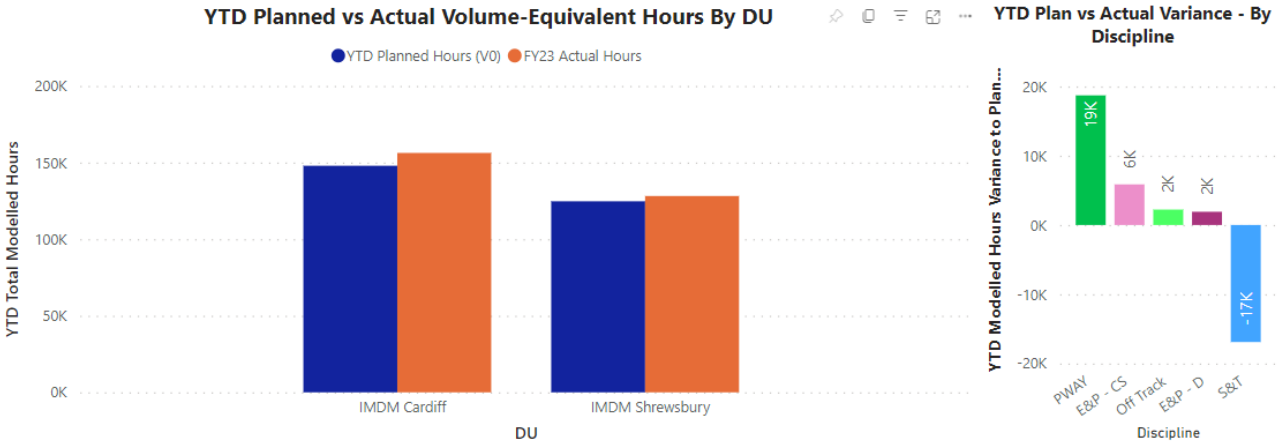
4.23 Within CP6 (April 2019 to March 2024), Network Rail sought to embed a new risk-based maintenance (RBM) approach based on failure risks, effects, and calculated costs of failure, rather than a traditional time-based approach. Whilst RBM has the potential to deliver better outcomes and efficiency, its effectiveness depends on sound asset data and clear business requirements.

4.24 We have highlighted the need for Network Rail to improve its data relating to assets and maintenance delivery over recent control periods. For example, there are known gaps in Network Rail's knowledge of its drainage and electrical assets. Where this is the case, RBM is heavily reliant on expert judgement rather than

data. It is also vital that new information, for example about asset failure modes and mean time between failures, is used to update the RBM approach.

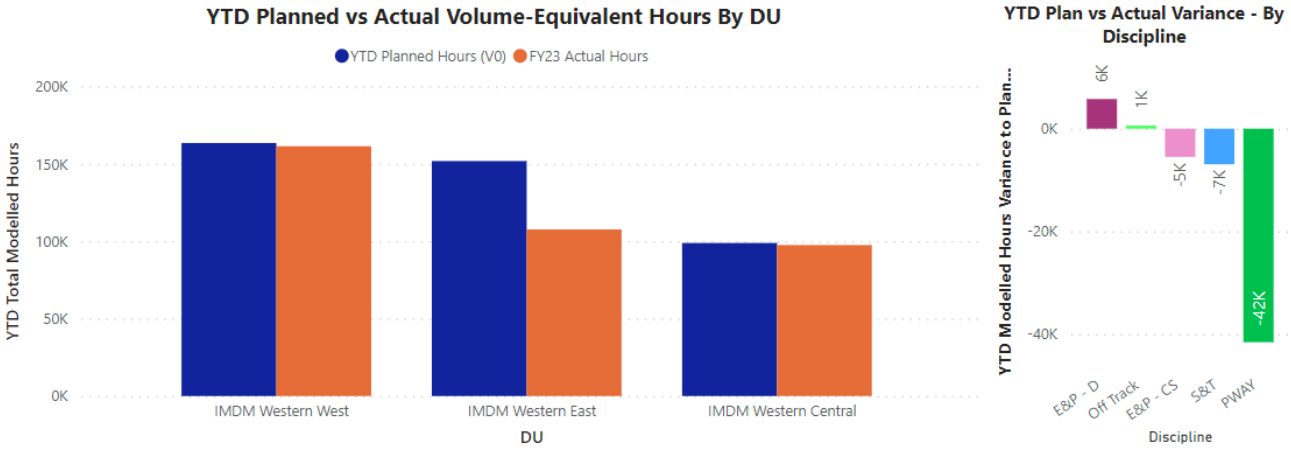
4.25 We have assessed both routes' delivery of maintenance 'volume equivalent hours' against plan for the first 11 periods of 2023-24. The Wales route has slightly overdelivered actual volume equivalent hours against plan except for signalling and telecoms assets where it is behind (as shown in Figure 4.2). The Western route has underdelivered on its planned volume equivalent hours with most of the under-delivery on the eastern end of the route, the most heavily trafficked section of the route. The route has delivered its planned Electrification and Plant (E&P) distribution and off-track maintenance but underdelivered on planned track, signalling & telecoms, and E&P (contact systems) asset maintenance (as shown in Figure 4.3).

Figure 4.2 Total maintenance volumes activities – Wales P11 year 5 (source Network Rail)



(PWAY – permanent way (track), E&P – CS – electrification & plant – (CS – contact systems, D – distribution system), S&T – signalling & telecoms)

Figure 4.3 Total maintenance volumes activities – Western P11 year 5 (source Network Rail)



(PWAY – permanent way (track), E&P – electrification & plant (CS – contact systems, D – distribution system), S&T – signalling & telecoms)

4.26 The region has provided evidence of its maintenance assurance plan and compliance system. It has also provided a breakdown of maintenance variance against plan. For example, it has explained that the replenishment of ballast using ballast trains was impacted by the closure of Nuneham Viaduct, but Western route has plans to recover the necessary trains before summer 2024. The region needs to manage backlogs in maintenance appropriately and continue to keep this under close review.

Modernising maintenance

4.27 Along with the rest of Network Rail, Wales & Western is undertaking a maintenance reform programme, 'modernising maintenance', aimed at improving productivity, efficiency and safety. Network Rail has stated that some of the key benefits of the programme will be quicker fault fixing through the introduction of multi-disciplinary response teams; greater use of technology so that control rooms are alerted before key equipment fail; right sizing teams for the fault that needs to be fixed; and upskilling its workforce so more of them can fix common faults.

4.28 The premise of modernising maintenance is to have a flexible frontline resource via individual rostering and more efficient team sizes. We recognise that change programmes by their nature can be disruptive in their early stages before the assumed benefits are realised.

4.29 Wales & Western has acknowledged challenges in recruitment and onboarding new staff, to replace those that have left. In its response to our investigation, it has

described how it has sought to mitigate these challenges by retaining the use of key staff via short-term contracts up to two years in length.

4.30 We acknowledge that the region is taking steps to mitigate resource shortages but it should seek to expedite recruitment of maintenance staff. Resource demands have changed with the introduction of new assets and changes in working practices. We are seeking further assurance that Wales & Western's maintenance resourcing reflects the challenges that it is currently facing, and we will be looking for further details of how the region is planning to meet them over the course of CP7. We will follow this up through our regular engagement outside of this investigation.

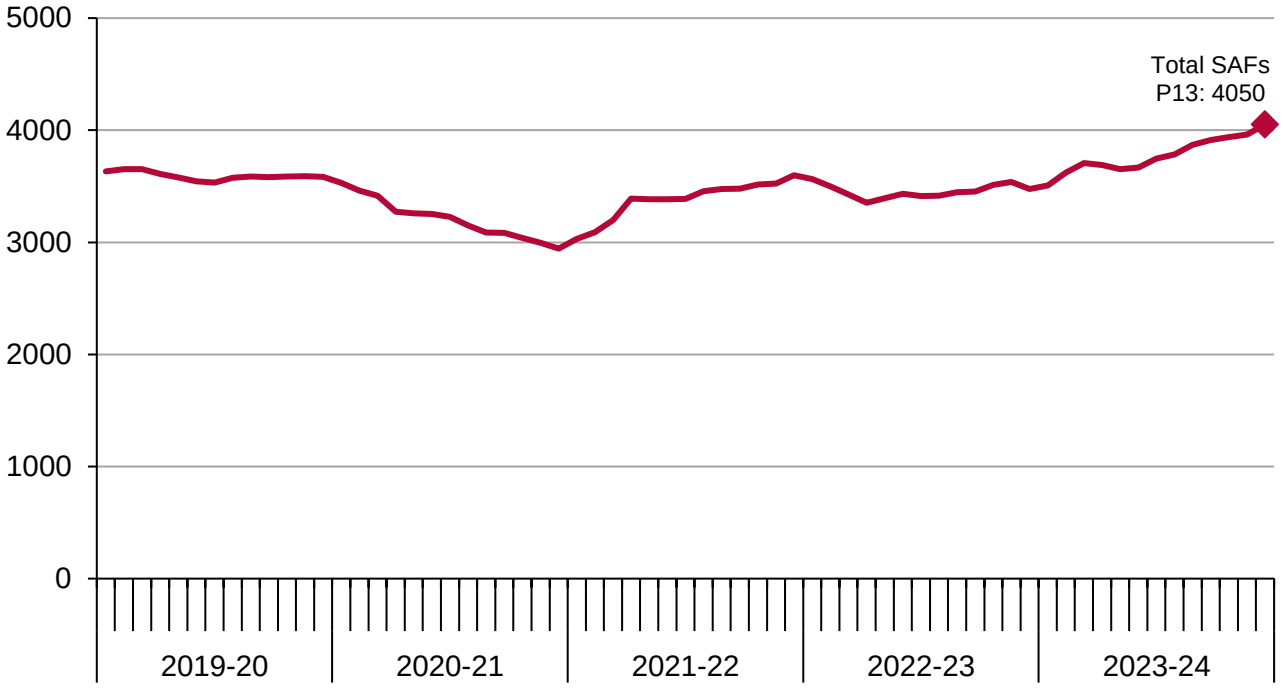
Asset reliability

4.31 Effectiveness of maintenance performance may be inferred from reliability metrics such as the number of Service Affecting Failures (SAFs) and the Composite Reliability Index (CRI), a measure of asset reliability that is weighted to the criticality of an asset. While the effectiveness of maintenance will have a strong impact on these metrics, changes in asset performance can also be due to other factors, such as changes in weather conditions or traffic patterns, that can increase or decrease stress and resulting failure rates.

Service Affecting Failures and Asset Reliability

4.32 In the final year of CP5 there were 3,817 service affecting failures in Wales & Western, whereas in 2023-24 there were 4,050 – an increase of 6%. This increase contrasts with both Wales route and Western route's CP6 Strategic Business Plans (which we assessed to be within our expected range), in which they proposed a −8% and −11% decrease respectively.

Figure 4.4 Total service affecting failures in Wales & Western, CP6



4.33 This total figure masks some significant changes by asset type, with track service affecting failures increasing by 56% over the period (primarily driven by Western) and electrification and power service affecting failures increasing by 36% (primarily driven by Wales).

Figure 4.5 Track service affecting failures in Wales and Western routes, CP6

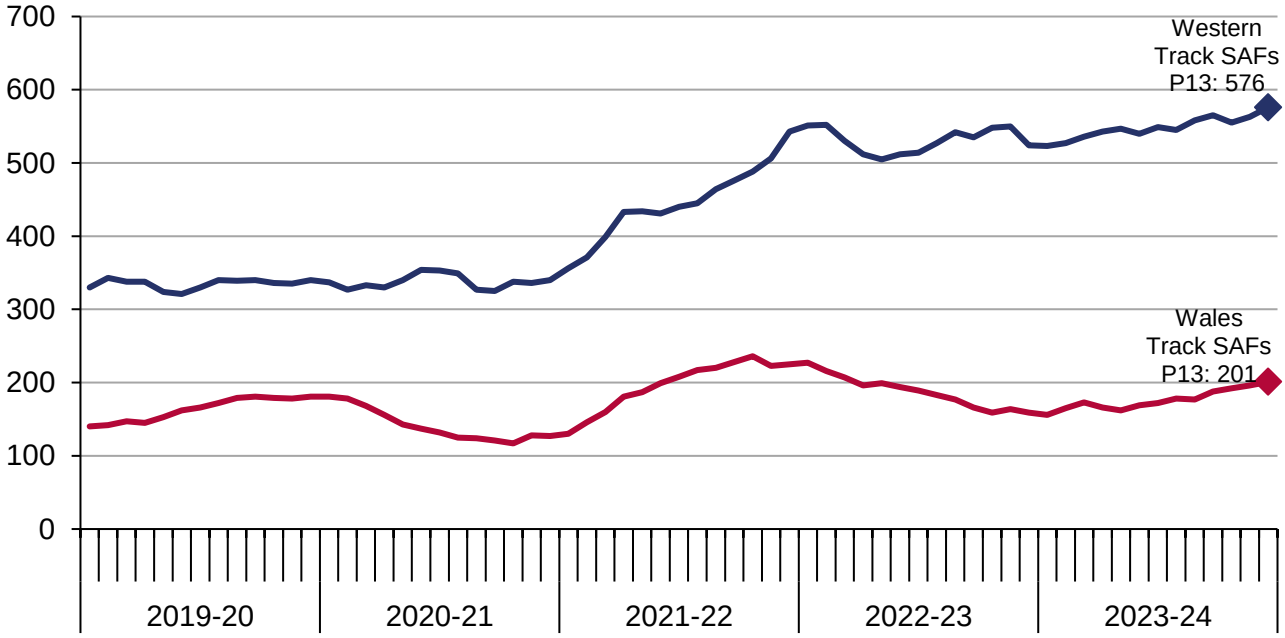
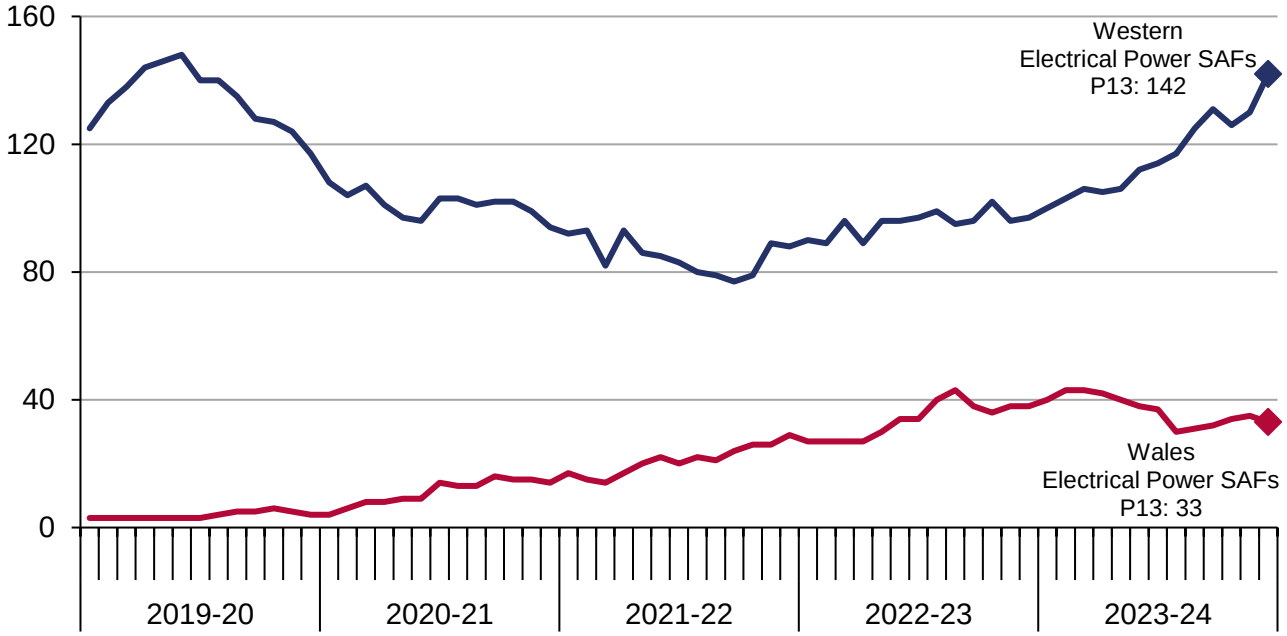


Figure 4.6 Electrical & power service affecting failures on Wales and Western routes, CP6



4.34 There are many factors which affect direct comparison between CP5 SAFs with those of CP6, such as:

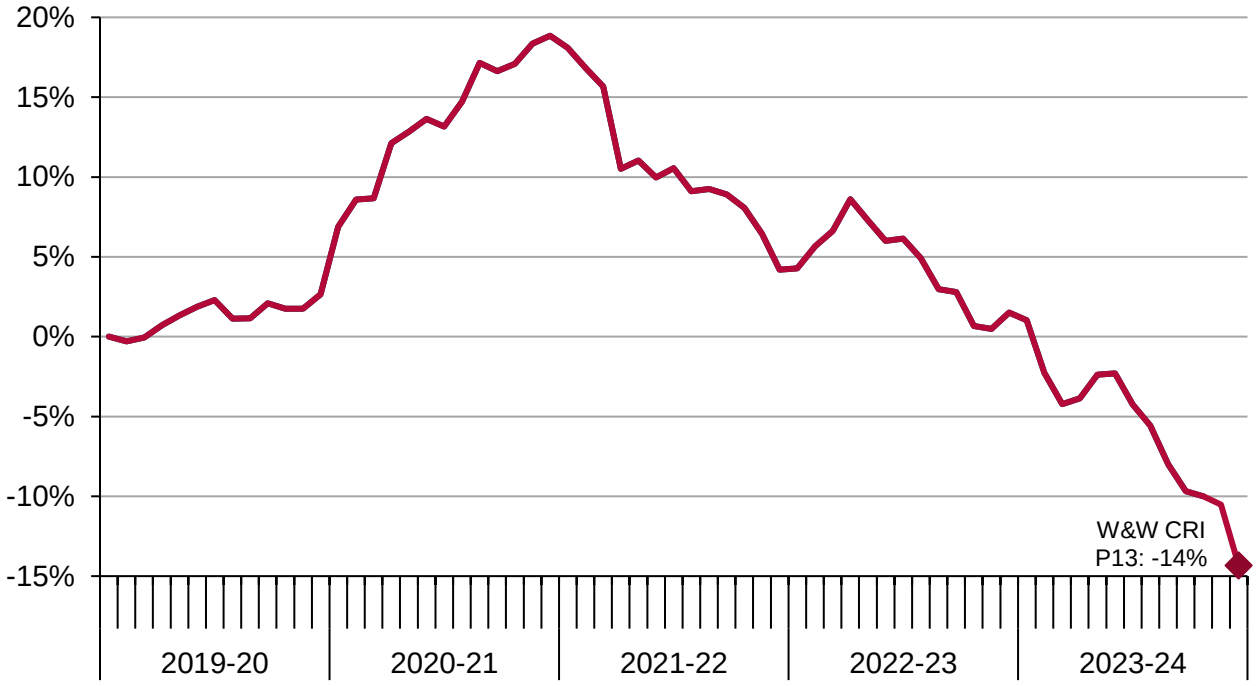
- Transfer of Core Valley Lines assets to Transport for Wales and transfer of Worcester Maintenance Delivery Unit and associated assets to the North West & Central region;
- Changes in traffic volumes and therefore asset failure rates, including reduced traffic during the COVID-19 pandemic and changes to timetables (such as the introduction of Elizabeth Line services);
- Changes in the asset base – for example GWEP completing in 2019, delivering new electrification assets; and
- Industrial action over the course of 2023, impacting delivery of both maintenance and renewals.

4.35 Even taking these factors into account, the increase in track service affecting failures is significant. We specifically address the region's actions with respect to track below.

Asset reliability on critical routes

4.36 The region originally expected asset reliability on critical routes, as measured by CRI, to improve during CP6 by 7.2% on the Wales route and 7.5% on the Western route. The region's CRI has now worsened by −14.3% at the end of CP6 (−14.5% worse than target) when measured against the CP5 exit position. For CP7, the region forecasts a further deterioration of CRI by −6.6% (worst case, before accounting for benefits from Project Brunel) which will be a further challenge for future train performance.

Figure 4.7 Wales & Western Composite Reliability Index, CP6



Source Network Rail Scorecards and CP7 final delivery plan.

4.37 The very significant worsening in CRI performance in years 4 and 5 of CP6 (below Wales & Western's planned levels), is a result of CRI for track, points, and electrical power assets. Of these, track CRI is the biggest factor. CRI has been particularly affected by failures in heavily-trafficked, critical areas, where more repeat faults have occurred.

4.38 We have reviewed Network Rail's understanding of its asset failures and whether its improvement plans have been targeted appropriately based on robust data. The region has provided strong evidence of a data-led approach to reviewing asset reliability. For example, it has demonstrated use of its Reliability and Performance Tool (RAPT) which provides intelligence on areas such as mean time between service affecting failures, asset failure hotspots, worst performing assets,

root cause analysis and repeat failures. This has been a key input to the process for developing improvement plans.

4.39 Wales & Western has demonstrated that it understands which assets are failing and which failures cause the most delay to services. For example, it has consistently presented the key causes of Network Rail-attributed delay (as measured by CRM-P) through updates to its Performance Recovery Plan. This has, for example, highlighted track, points, axle counters and overhead lines as being key contributors. As a further example, the region's period 8 update to its performance recovery plan identified six key areas that had accounted for 51% of delay in the Thames Valley in the previous 12 months. These included track, points, overhead lines and axle counters.

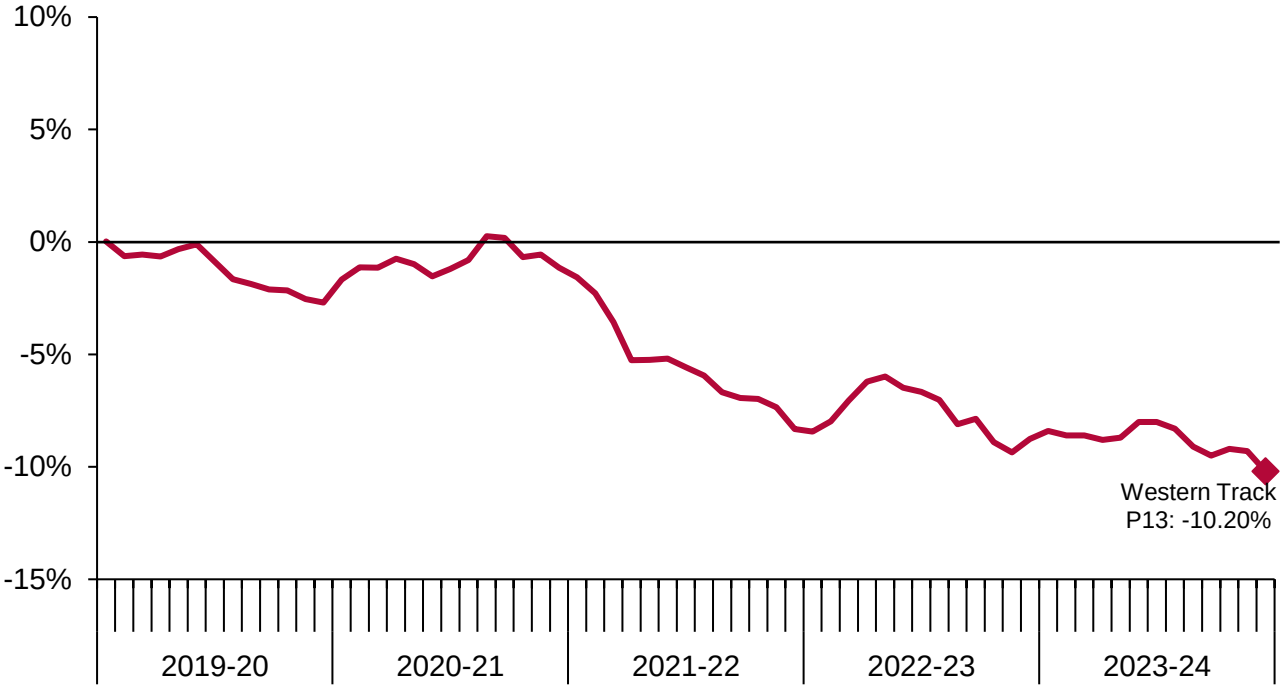
4.40 There is a strong correlation between the assets which are causing the most delay on the network and the quantum of actions in the region's Performance Recovery Plan. For example, on Western route, where track and points failures are the largest asset-related contributors to Network Rail-attributed delay, Western's improvement plan includes 14 track-related actions and 9 points-related actions (of the total 95 actions).

4.41 We have considered the reliability and train performance impact of key asset classes below.

Track

4.42 As set out above, track SAFs have increased on Western, and track reliability has worsened. The steep decline in the track component of CRI suggests that reliability has worsened on more critical routes. The primary contributors to track reliability are rail defects, temporary speed restrictions for other reasons related to condition of track, and rough ride reports.

Figure 4.8 Western route track contribution to Composite Reliability Index (CRI), CP6



4.43 Network Rail has identified that track SAFs have been particularly high against its internal target in Western's Central delivery unit. Our review of the data shows that track SAFs have also risen sharply in the East delivery unit area.

Figure 4.9 Track service affecting failures, Western Central Delivery Unit, CP6

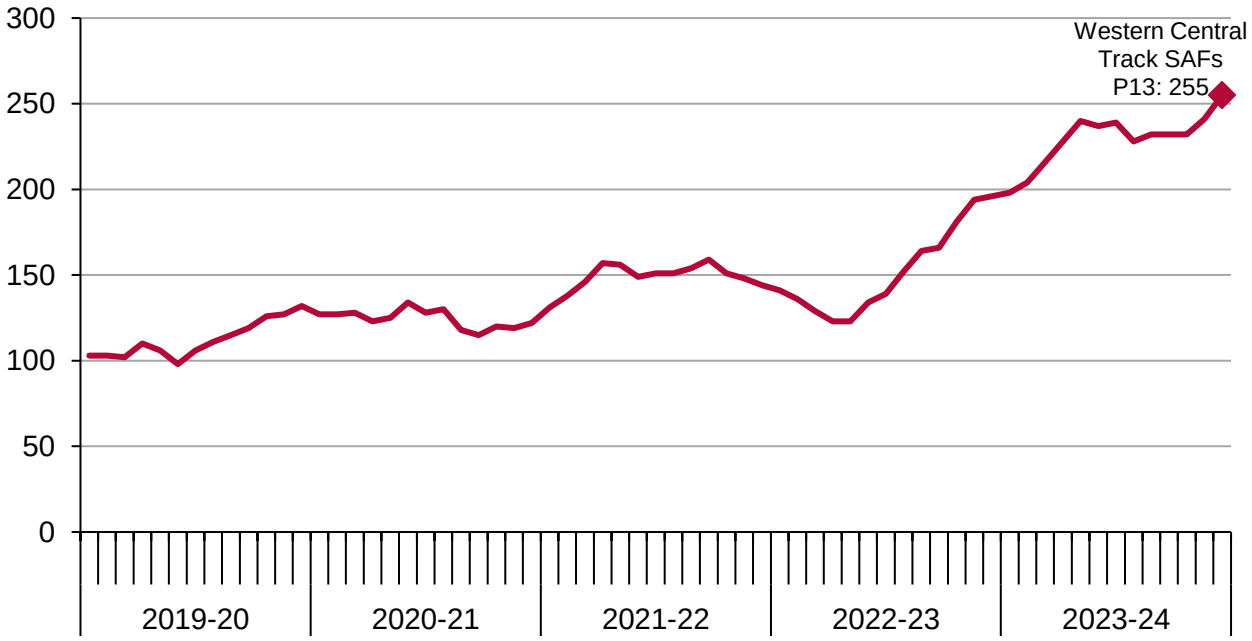
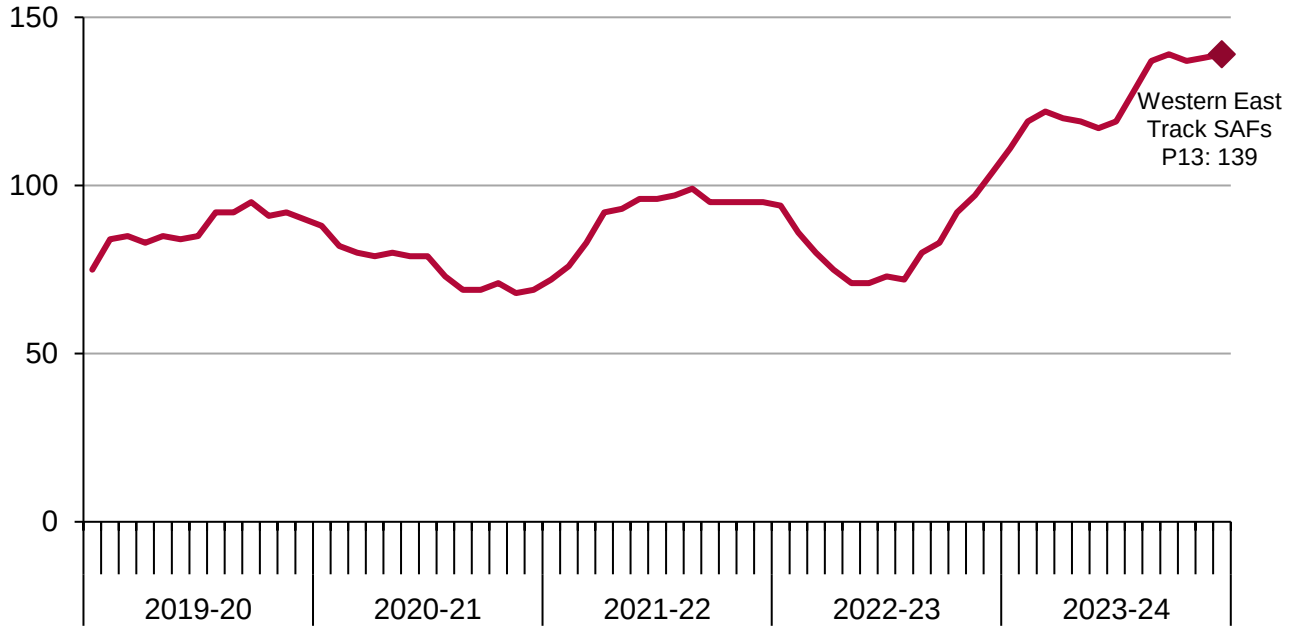


Figure 4.10 Track service affecting failures, Western East Delivery Unit, CP6



4.44 Network Rail has carried out a 'sprint focus group' to review track failures in the Central delivery unit – a short, targeted review of the issue to assess proactive and reactive actions. It identified that the primary causes were geometry-related rough rides and maintenance imposed TSRs due to crossing defects. In our detailed discussion with the region, it acknowledged that the performance of crossings has not been acceptable, referring to 94 cracked crossings in the last year. The region has provided evidence of the actions that it is taking on crossings. It has proactively replaced 14 crossings before failure, on top of 24 crossings which have been repaired or replaced in response to service affecting failures.

4.45 Western route has been conducting a rolling programme of installing void monitors – remote condition monitoring of switches and crossings that have the potential to provide an early indication of voids beneath the track that allow proactive early intervention. The programme has included installation in all three of Western's Delivery Units. It is now planning further installation in the Thames Valley area, with 30 monitors covering 13 further sets of switches and crossings. The region has provided extensive evidence of the benefits of these monitors and examples where they have led to proactive interventions before failures. The region has also introduced two new Measured Shovel Packing teams in the Thames Valley, to proactively address instances of voiding (with teams in place from Period 8 of 2023-24).

4.46 Within track assets, where there has been an increase in faults, these are generally in areas where access is difficult, and works have been 'replanned' multiple times. We are however seeing signs that track is adapting to the new conditions. Track leads know their assets and are aware of the problems, but they have stated that a lack of access is creating an increased backlog of works. We have not seen clear evidence that Network Rail has attempted to resolve this, for example through seeking increased access windows or additional staff recruitment.

4.47 Performance of track in Wales & Western has been a concern for ORR and focus of our engagement with the region for several years. We first raised this in October 2021, seeking to understand the reasons for the increasing track SAFs and deteriorating track CRI. The region considers that increased tonnage and axle loading is increasing track fatigue failures.

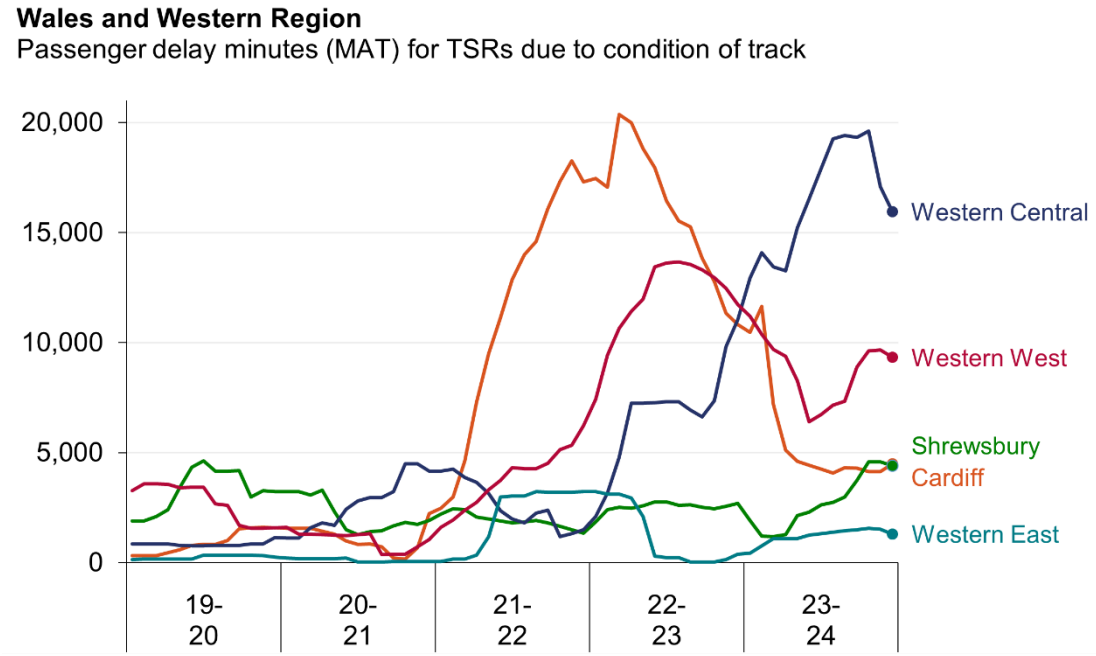
4.48 Track SAFs account for approximately 20% of all SAFs. While overall performance has deteriorated, we consider that the region has been broadly effective in following processes to manage rail defects. It has complied with its standards, completing inspection and rectification activities within required timescales, and implementing manual fixes where Infrastructure Monitoring trains fail to address the defects. Where necessary it has applied Temporary Variation processes to risk assess, mitigate and defer rectification.

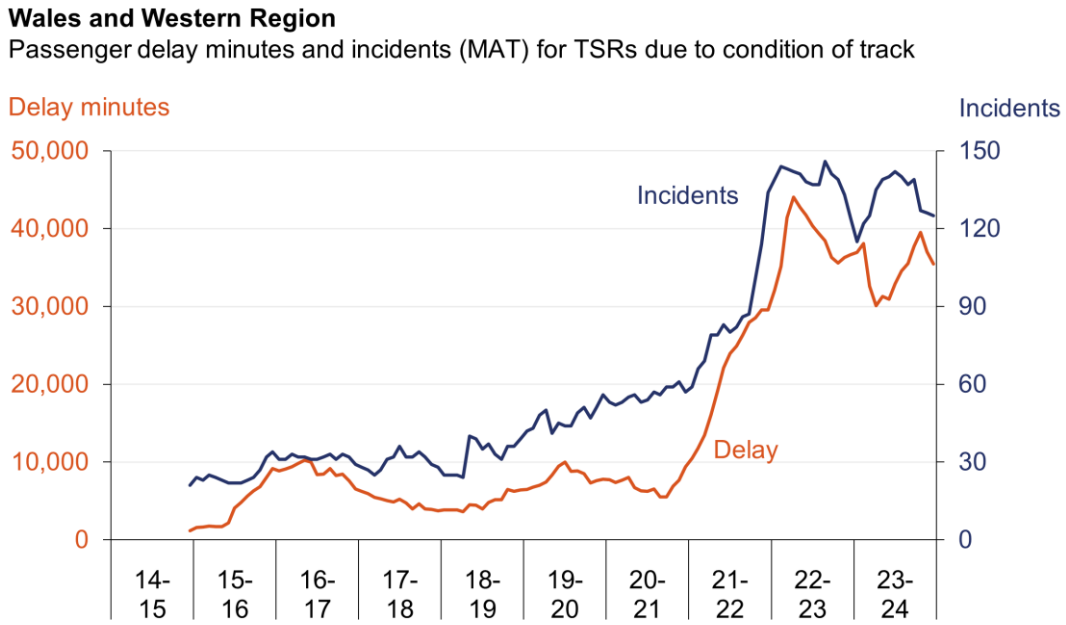
4.49 The region does not have definitive evidence of what is driving an increase in rough rides reporting. It believes that greater media attention (due to instances of broken rails on the main line) may have resulted in more conservative reporting of rough rides, and therefore more work to check that the line is safe. The region has provided evidence that indicators of track geometry are stable, and below thresholds. It has stated that it plans to work more closely with train operators to reach agreement on what constitutes a reportable concern. The region should consider whether there is good practice to learn from in this regard – for example, there was a similar increase in reporting on the West Coast following the Grayrigg accident.

4.50 The management of Temporary Speed Restrictions (TSRs) and Emergency Speed Restrictions (ESRs) is essential to both securing the safe operation of the network and delivering train performance. Speed restrictions are applied as a precautionary measure where track or other assets are not up to standard. But they can significantly affect train services and drive delays either directly or by eroding the resilience of the timetable (for example by impeding recovery).

4.51 There has been a clear rise in TSRs driven by poor track condition within the Central and Western sections of the Western route (Figure 4.11). While TSRs on the Wales route significantly increased and peaked in 2021-22, the route has successfully reduced their number.

Figure 4.11 Wales & Western TSRs due to condition of track





4.52 The Wales route has provided strong evidence of its management of TSRs. It has implemented a TSR board – a specific forum to provide oversight of TSR management. This has driven a greater focus on TSR sites leading to good

alignment between the Wales Condition of Track Register and sites identified for intervention in the remainder of CP6 and across CP7.

4.53 If the underlying asset issues which have necessitated speed restrictions are not addressed in a timely way, then the speed restrictions can have an ongoing impact on train performance. TSRs (such as those to mitigate the risks of poor track condition) have continuously eroded performance and made performance recovery more difficult due to the tightly planned network.

4.54 As at December 2023, there were 17 ESRs and TSRs on the region which had no planned removal date (see Annex F). We consider this number to be high (although we note that some of these sites were completed during Christmas 2023 works).

4.55 The region has initiated TSR Boards with the aim of applying consistent focus on their removal. Wales route has demonstrated particular successes with removal of longstanding TSRs (e.g. at Trenos). On Western route, we note that an early output of Project Brunel was the removal of two TSRs on the approach to Paddington on Line 1 and 2.

4.56 While line speed restrictions appear to be appropriately applied within Wales & Western to ensure that the railway is kept safe, we consider that the region should continue to increase its focus on removal of long-term speed restrictions. It should also consider its approach to conversion to permanent speed restrictions (PSRs) where a timely resolution cannot be found or is deemed unaffordable.

Recommendation NR7: Network Rail should deliver on its plans to minimise causes of delay arising from poor asset reliability. This should include continuing to target the root causes that lead to temporary speed restrictions on any line of route and to ensure it is maximising its use of leading indicators of future problems.

Overhead lines

4.57 Wales & Western has a mix of overhead line systems. The newly installed overhead line equipment as part of GWEP is reliable with very few issues and very few SAFs. However, the fixed aluminium conductor bar installed in the Severn Tunnel has had major issues with bimetallic corrosion due to the saline atmosphere in the tunnel. The region plans to replace the conductor bar with a better solution in CP7.

4.58 The overhead line equipment between Paddington and Airport Junction was commissioned in 1995 for Heathrow Express. When originally installed only eight trains per hour used the overhead line equipment, and it is now one of the busiest sections of overhead line equipment in the country following the introduction of GWR's electric fleet and the Elizabeth Line. There has been an increase in the number of overhead line equipment incidents on this section and incident resolution has been poor. Delay minutes have risen as a result.

4.59 Recent high-profile failures of overhead lines between Paddington and Airport Junction have led to large amounts of delay and highlighted the need for proactive interventions and a firmed-up maintenance, renewal and mitigation plan to support improved performance. As previously stated, the region has recently carried out accelerated inspections to understand the condition of these electrification assets which has identified more than 300 defects. This highlights the need for Network Rail to review whether current asset management and maintenance practices are sufficient to manage performance risks.

4.60 The region has planned a rolling renewals programme of the headspans element for this section of overhead line equipment in CP7 to improve its resilience, following on from some replacements already undertaken in CP6. Wales & Western has brought a framework developer on board to build a bottom-up plan, including for access, to renew these headspans.

4.61 However, these assets are approaching end of life, and the risk of continued high impact incidents will remain until the old sections of overhead line equipment are brought up to a modern equivalent standard. Pending the completion of renewals, the region will need to increase and prioritise maintenance of this stretch of overhead line equipment and make sure appropriate mitigations are in place.

Recommendation NR8: In support of its strategic plan to improve asset reliability and sustainability on the Western route out of Paddington (Project Brunel), Network Rail must provide a clear, timebound plan for renewing the overhead line headspans from Paddington to Heathrow Airport Junction and a mitigation plan to ensure reliability until that work is complete.

4.62 For over a decade in the Paddington to Airport Junction area, maintenance and fault response of overhead line equipment has been reliant on major projects (e.g. Crossrail) support. The region now plans for much more of this work to be delivered by its own maintenance teams. This change may present risks to future reliability of the asset and fault response and will require careful management.

Network Rail should carefully manage the competence of its maintenance teams to mitigate this risk.

4.63 The region acknowledges that it has further work to do to fully adapt to the changed access environment on Western. Access constraints are currently causing some faults to remain unresolved for longer than they should and to reoccur until suitable access can be arranged to deliver a permanent repair.

4.64 As part of Network Rail's own investigation into extreme heat it noted insufficient access for overhead line equipment inspections and maintenance (across all regions). It concluded that there was a need for access to be restored to ensure maintenance could be carried out to the accepted minimum level. From our review of Wales & Western's data, we note that overhead line equipment inspection and 'electrical and power' patrolling currently remain in backlog. A sustained backlog would not be acceptable and indicates that access needs to be appropriately managed.

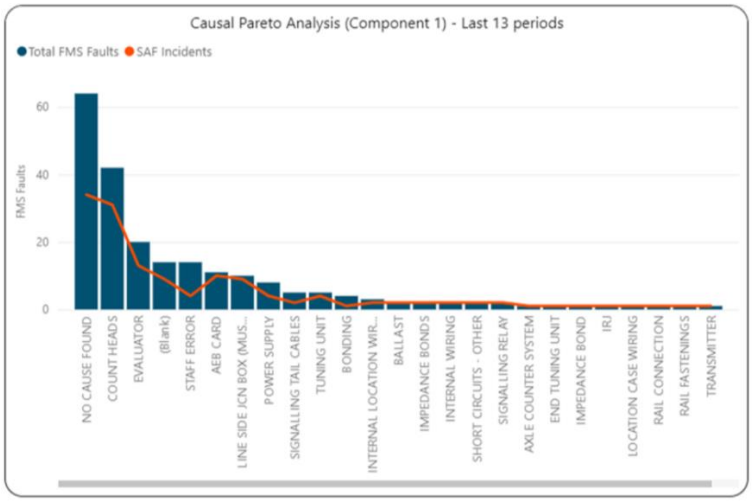
Signalling and train detection

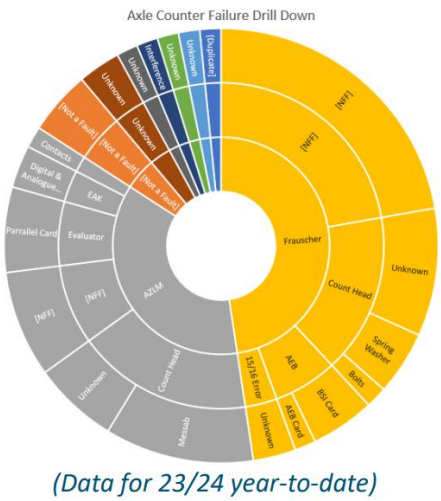
4.65 In December 2021, Network Rail delivered a programme to replace an ageing and unreliable population of track circuits (train detection) on the route out of Paddington with axle counters. The region has provided clear evidence that the introduction of these axle counters did initially provide strong performance benefits, raising the Mean Time Between Service Affecting Failures from 7.5 years (for the previous track circuits) to 17.6 years at the end of the first year of operation of the axle counters.

4.66 However, in the last year the region has experienced an increase in service affecting failures and a large increase in delay associated with them with, at Period 9 2023-24, a 46% worsening of Mean Time Between Service Affecting Failures and a 334% increase in associated delay. The failures and delay were primarily associated with just four of these new axle counters.

4.67 Wales & Western has provided strong evidence that it identified this increase in delay and responded to it in a timely way. It initiated a 'sprint focus group' – a short, targeted review of axle counter failures in its East Delivery Unit area. This was reported in its 2023-24 Period 06 Performance Recovery Plan. The region has demonstrated that it has carried out analysis to try to identify the root cause of these failures. It has also brought in specialist resource (the manufacturer) to support its investigation (including to review failure modes and to install monitoring equipment to provide early warning of failure risk).

Figure 4.12 Example of Network Rail analysis of axle counter failure root cause





4.68 A large percentage of these axle counter failures have been due to the mechanical clamp of their heads working loose – but the region has not yet managed to fully identify the root cause. As a short-term mitigation, the region has deployed different variations of locking mechanisms to secure the axle count heads. We expect that once the failure modes are fully understood and addressed, reliability of axle counters in the Thames Valley should improve to levels in line with the wider population. Once resolved, the region should share lessons learned with the rest of Network Rail.

Access

4.69 Access to the railway is a key requirement for maintenance and renewals activity, and for responding to, and fixing faults in a timely way.

4.70 Wales & Western has acknowledged that it has challenges in gaining sufficient access to undertake maintenance and renewal activities, especially outside of Paddington as it has become progressively busier. It states that the access profile has dramatically changed with the increasing intensity of services, while both routes have adapted to the red zone working prohibition for access.

4.71 The region states that it collaborates with its operators on at least a four-weekly basis to consider the trade-offs between granting access, operator impact and performance risk.

4.72 Access is also a constraint in responding to faults. On Western route, the region has identified that, where the immediate fault can be 'worked around' by the signaller, gaining access can be difficult, especially where multiple line blockages

are required. It states that this has the potential to remove maintenance teams from planned maintenance, with no track access available to respond to/fix the fault and hence loss of planned work. This suggests a need for the region to improve coordination between operations and maintenance teams in planning for and responding to asset failures and in recovering services.

4.73 Network Rail has reported constraints on access to carry out engineering works. Delay per incident for Network Rail's service affecting failures has increased (Figure 2.6). But it is notable that operator delay per incident has not similarly increased. This may be due to a specific issue with gaining access to fix infrastructure failures.

4.74 In response to problems with access, the region states that it has instigated a workstream to construct and trial a 'failure response tool' to improve the effectiveness of its maintenance response to infrastructure failures within the Paddington to Airport Junction corridor of the Thames Valley. It states that the workstream will include an assessment of the effectiveness of network access points and consideration of how data could inform suitable actions to mitigate extended or unpredictable response times to critical locations within the Thames Valley.

4.75 The Customer Impact Review conducted into the Ladbroke Grove de-wirement of 7 December 2023 identified that access/egress points need to be better defined in the Thames Valley to accelerate rescues and transport. The Significant Performance Incident Review (SPIR) into the same incident also recommended a review of data available to pinpoint nearest access points for future evacuations to speed up decision making during incidents.

4.76 The region states that it is committed to exploring effective solutions in the medium-term for increasing the productivity of access granted – an issue which it states will be explored as part of Project Brunel.

4.77 To fully understand what is driving increased Network Rail-attributed delays per incident, the region needs to have robust data – such as on its time-to-site and time-to-fix its assets. Network Rail has explained in its response to our investigation that it does not yet have robust or reliable data in these areas – and we discuss this further later in the report.

4.78 The challenge of accessing busy sections of the network (including adapting to safer ways of working) is not unique to Wales & Western – and the region can do more to learn from approaches taken elsewhere on the network.

4.79 Reduced access resulting from changes to train services was foreseeable and should have been planned for. The region has not demonstrated a strategic approach to planning and optimising the efficiency of its access, and therefore that it can establish and then maintain a sustainable approach to delivering the required engineering works. It should review and adopt any best practice learning from other regions, including in use of tools and technology, and work with stakeholders to ensure it is meeting the needs of customers, including freight.

Recommendation NR6: Network Rail must review its ongoing access requirements and arrangements for delivering inspection, maintenance, renewal and repair works (building on the approach being developed for Project Brunel) to ensure it can manage its assets in a sustainable way while meeting the needs of its customers. This should include looking at best practice being adopted in other routes which are similarly heavily-trafficked and assessing the scope for better use of tools and technology.

A strategic plan for asset reliability

4.80 Having reviewed the evidence, we agree with Network Rail on the need for it to develop a strategic plan for asset reliability: addressing backlogs of maintenance and renewal work; accelerating its targeted interventions to improve reliability of specific assets; ensuring it reaches a sustainable position on access to the network which appropriately balances the needs of freight and passengers; and optimising the use of its available access.

4.81 Wales & Western has a renewals and maintenance backlog for certain assets – it is not keeping pace with its required planned works. As set out above, the region has not demonstrated a strategic approach to planning and optimising the efficiency of its access needed to carry out both planned and unplanned work.

4.82 In particular, given the increased busyness of the route out of Paddington (where there has been a large increase in traffic and tonnage), the reliability of assets has become more important to counter increased delay from each incident (which is then propagated across Western). For example, high profile failures of overhead lines between Paddington and Airport Junction have led to large amounts of delay and highlighted the need for proactive interventions and a firmed-up renewal plan to support improved performance.

4.83 Network Rail's Project Brunel, a £140 million, 18 months programme of works, aims to address asset reliability problems between Paddington and Airport

Junction and strategic sites across the Western route. As part of this work, it is in the process of agreeing arrangements with operators for increased access windows to carry out the works. This must be fully scoped and delivered effectively to address backlogs of work, improve asset condition and reliability and therefore deliver a longer-term improvement in performance on a critical part of the route. Network Rail must now set out a timebound plan and milestones for the works that will be delivered.

Recommendation NR2: Network Rail must establish clear timebound milestones for its plan to sustainably improve asset reliability and operations on the Western route out of Paddington (Project Brunel) and must track and report delivery against these. It must incorporate the more holistic approach being proposed for Project Brunel into its Performance Recovery Plan to deliver sustainable improvements across the region.

4.84 We understand that the increased access as part of Project Brunel is to support its delivery (and is therefore shorter-term in nature). Any long-term additional access requirements must be fully justified, consider the needs of all users including freight and be properly planned.

4.85 The need to ensure enhanced reliability of assets in the Thames Valley area to cope with the increased stress was foreseeable. It is now clear that a more significant programme of asset renewal and resilience works should have been delivered prior to introduction of Elizabeth Line services to support the changed railway operational environment and to protect performance. Network Rail should have also considered how it would need to adapt maintenance to this changed environment.

Mitigating the impacts of climate change

4.86 More frequent and more extreme weather conditions caused by climate change are already affecting the rail network and will continue to do so. Delays associated with weather have been increasing in Wales & Western.

4.87 For example, during CP6, heavy rainfall in January 2023 has led to flooding (such as at Chipping Sodbury) and earthwork failures (such as in the Severn Estuary) – and extreme heat in the summer of 2022 caused track, overhead line and earthworks failures. The increased frequency of storms, combined with more dead, diseased and dying trees, has also led to more delay – for example, resulting from the impact of fallen trees during Storm Arwen in 2021-22. During

2023-24, named storms including Storms Babet, Ciaran and Henk have contributed to higher weather-related delay minutes.

4.88 In addition, climate change is having a direct impact on extending the vegetation growing seasons and vegetation growth rates. CP7 plans include increased maintenance for vegetation management. This includes managing vegetation for signal sighting, overhead line clearance, leaf fall and earthworks stability.

4.89 Management of vegetation brings with it particular environmental legal requirements. For example, the region has provided evidence that some vegetation clearance in Wales has been delayed due to the potentially large volume of habitat loss for the legally protected hazel dormouse. Wales & Western has been working with Natural Resources Wales to resolve this issue [REDACTED].

4.90 We have consistently highlighted the need for Network Rail to adopt a strategic approach to increasing the resilience of its network to climate change and extreme weather, and to take measures to improve its operational response to weather events.

4.91 Wales and Western's approach to adaptation and resilience of assets to the impacts of climate change has improved during CP6, as evidenced through the development of improved Weather Resilience and Climate Change Adaptation (WRCCA) plans. It has recently updated its plans for CP7.

4.92 Wales route is particularly prone to the impacts of extreme weather. We have reviewed the actions that it has taken to mitigate these risks. It has provided evidence of key workstreams including:

- a substantial programme of vegetation clearance to remove dead, diseased and dying trees on the South Wales Mainline (which has led to the route overdelivering against its vegetation clearance plans);
- implementation of a flooding sites camera dashboard;
- deployment of a new app to manage risk from high winds (GUSTO);
- initiation of a Vegetation Programme Board; and
- a review of extreme weather geotech speed restrictions to reduce their performance impact.

4.93 A particular challenge facing the rail network, including the Wales & Western region, is management of dead, diseased and dying trees – in particular due to ash dieback.

4.94 Wales route has completed its latest 3-yearly tree survey to identify hazardous and ash dieback diseased trees. However, Western has not yet completed its tree survey. Proactive management of hazardous trees, and demonstration of capability to create and sustainably maintain vegetation-compliant sites remain our key concerns under vegetation management. We expect the Wales and Western routes to be more proactive in their delivery of tree surveys and management of vegetation in line with their CP7 delivery plan, which we will monitor them against.

4.95 Having a strong understanding of drainage assets is vital to managing the impacts of heavy rainfall and flooding – and to making the right proactive interventions to mitigate risks of damage to other assets. All of Network Rail's regions have historically had a poor understanding of their drainage assets and we are monitoring their progress towards completing their asset inventories by the end of CP6. Wales & Western has delivered this in line with its plans – in contrast to certain other regions.

4.96 Overall, we are satisfied that Wales & Western is taking appropriate actions to improve resilience to climate change and extreme weather. It should continue to deliver on current workstreams, respond to emerging risks and deliver on its WRCCA plan for CP7. We will keep this under close review.

5. Network Rail's performance management and network operation

5.1 In this chapter, we review whether Wales & Western applied best current practice in train service performance management capability and system operation.

Application of performance management best practice

5.2 Performance Management Capability describes how effective an organisation's processes and structures are at improving operational performance outcomes. This includes how it identifies the causes of poor performance and develop solutions to resolve them.

5.3 Network Rail led the industry to build new processes called the "Performance Improvement Management System" (PIMS) from 2019, partly in response to a Provisional Order served on Network Rail by ORR in late 2018. The Provisional Order required Network Rail to show how it was planning for performance improvement and required improvement in Network Rail's ability to recover from incidents. Network Rail was also required to show how it was embedding improvements and sharing best practice.

5.4 PIMS identifies that performance is the product of the whole system. Its whole-system model of performance includes areas such as fixed assets and fleet, service recovery and external delays. The industry has reported good overall progress in implementing PIMS, which includes:

- The improvement of Joint Performance Strategies (JPS) between Network Rail lead routes and their lead operators;
- Building a whole system approach to performance risk;
- Using visualisation boards and right-time groups; and
- Sharing best practice via the Industry Performance Knowledge Hub.

5.5 In Wales & Western, use of PIMS has continued to be demonstrated in the Joint Performance Strategies (JPSs) for April 2023 to March 2024. We reviewed these

JPSs and considered the strategies relevant to the region to have been of generally good quality.

5.6 Delivery of the strategies has recently been subject to peer review, managed through the PIMS Governance Board, a sub-group to the industry's Network Performance Board. This review produced strong endorsement for the work that has been done on the JPSs.

5.7 The region uses the Risk Management Maturity Model for Performance (RM3P). This is a self-assessment audit that examines the relative strength of performance improvement across more than thirty topic areas and can be undertaken alone or jointly by organisations or by individual departments within them.

5.8 The region and train operating companies have jointly completed several RM3-P assessments. This is part of a rolling programme. The assessment for Great Western Railway was detailed and set out actions to improve weaker areas. The joint assessments for TfW and CrossCountry were also in-depth but had less robust actions. Wales & Western also carried out an RM3P assessment with MTR Elizabeth Line (and Anglia Route) in September 2023, followed up by quarterly summary reviews of lowest performing areas.

5.9 To enable and support PIMS and RM3P, both routes' have increased the size of their performance teams. This includes all posts in the performance teams, including TRUST delay attributors.

5.10 We are satisfied overall that, at working levels, Wales & Western region is using the PIMS framework and products to improve its approach to performance management. Its overall progress is largely consistent with others across the GB rail network.

5.11 However, we note that Wales & Western needs to prioritise improving its maturity in certain areas.

5.12 When comparing to the industry's PIMS Governance and Assurance Framework, there are distinct weaknesses in governance at a whole system level, such as the areas we highlighted in Chapter 3. Our primary concerns are the line of sight and accountability between engineering and operations, and agreeing a common, multilateral direction for the Western route and for the Wales & Western region overall.

5.13 Other priorities include the approach to learning from incidents, beneficial use of the Industry Performance Knowledge Hub and the assessment of performance scheme benefits.

Readiness for Elizabeth Line and other major changes

5.14 The Elizabeth Line has added a new type of service, that of a high-frequency metro, that has not previously been part of Western route's operating environment. This is in addition to the airport express, suburban/commuter, long-distance and freight traffic on the route. As Network Rail has observed, the number of services in the standard off-peak hour increased from 20.5 trains per hour (tph) in 2018 (12.5 tph on the main lines and 8 tph on the relief lines) to 29.5 tph in May 2023 (15.5 tph on the main lines and 14 tph on the relief lines).

5.15 Network Rail says that there have been large increases in key volume metrics, such as:

- 7% more trains / 17% more station stops;
- A 398% increase in passenger journeys between 2018 and 2023;
- 262% increase in passenger/km between 2018 and 2023; and
- Increased tonnage on Paddington to Reading by 37% between 2019 and 2023.

5.16 By their nature, metro services run with high intensity. They are demanding on certain assets and can amplify the impact of incidents on performance measures by driving an increase in reactionary delay (which is the amount of delay caused by services that are running late as a consequence of a performance incident, rather than being caused by the incident itself). Readiness to manage a "metro" operation requires a different mindset and higher resource levels – and adding this to the existing mix of services on Western route was going to be a significant challenge.

5.17 All parties recognised there were risks and issues arising from this change, and substantial preparatory work was planned to accompany the phased introduction of Elizabeth Line services (as discussed below).

The timetable

5.18 In 2016, the end state Elizabeth Line service was specified. It included an off-peak frequency of 10 Elizabeth Line tph on the Great Western Main Line with 12tph

during peak periods. The 10 tph included 2tph to Heathrow Terminal 5, 4tph to Terminal 4 and 4tph to Maidenhead/Reading. In addition, there are also four freight services per hour on average in each direction on the relief lines.

5.19 Network Rail established the Western Event Steering Group (ESG) in May 2019 to focus on Elizabeth Line delivery with participation from industry. The ESG overlaid the specification for the end-state Elizabeth Line timetable on the December 2019 timetable (the major post-GWEP timetable uplift for GWR, which had been subject to a previous ESG process prior to operation).

5.20 As part of the timetable development work, the ESG commissioned performance modelling from Treno Lab, using the Trenissimo model. The modelling indicated that the timetable would not deliver the performance required of the Crossrail project: it would not deliver 92% of Elizabeth Line services within 5 minutes at their destinations or at Tottenham Court Road.

5.21 The modelling outputs were used to support development of revised specifications with funders of passenger services. The 2tph Didcot – Paddington service, originally planned to run on the relief lines, was replanned to run on the main lines from Maidenhead (peak) or Slough (off-peak) in place of the 2tph Bristol – London “super-fast” services via Bristol Parkway (which had never fully operated since the Dec 2019 timetable change). This and other changes meant that modelling indicated a significant improvement. The expected timetable punctuality from May 2023, described by the modelling, was 91.7% (as expressed in Time-to-5 at each station). This was an improvement on previous modelled outcomes, but still represented a 1.6% reduction on the modelled performance of the November 2022 timetable.

5.22 MTR noted during ESG discussion that it expected to make up the remaining 0.3% to reach the 92% threshold for Elizabeth Line services during the timetable production process. Later iterations of timetable modelling (specified by MTR but using the same model and base assumptions) suggested that the post-production timetable would indeed exceed the 92% threshold. Industry parties decided to proceed with the implementation of this timetable option.

5.23 However, the final ESG modelling report had also highlighted continued conflicts in the Concept Train Plan where Network Rail could not find timetable solutions within the planning rules. Almost all of these were between freight and passenger services. These would lead to either fewer train services or lower performance as an outcome.

5.24 Further, the iterative modelling did not contain as many freight paths as there were trains operating each week. The December 2020 timetable was in place by then, as opposed to the December 2019 timetable that was the base for the modelling.

5.25 The modelling therefore had five fewer freight paths per day included than were operating at the time the ESG concluded. “Freight quantum” was noted as a “key risk that could change the output of this study” – and more freight was already operating daily than the modelled service.

5.26 ORR is not judging whether proceeding with this timetable represented the best available balance between performance and starting to realise the benefits of the full timetable. However, it was entirely foreseeable that performance outcomes would be worse than modelled.

5.27 In any case, even fully effective use of the timetable models would not have assessed the full likely performance effects of these changes. The numeric outcomes of the models only look at the quality of the timetable and related operational plans and are not able to holistically assess the effect changes will have on infrastructure reliability. This is an area where industry capability could be enhanced as part of the whole industry approach to major changes.

Recommendation NR4: Network Rail must carry out a retrospective review of its timetable modelling carried out for the introduction of Elizabeth Line services, to ensure it learns lessons and applies these in planning for future major changes – such as the introduction of HS2. Network Rail should consider whether its timetable modelling capability should be augmented or supplemented to take better account of the change’s impact on asset condition reliability and resilience – and therefore train performance – rather than core performance of the timetable alone.

5.28 The inherent tension in decision-making following an ESG process is evident: the specified “concept train plan” (CTP) – as at May 2021 – was modelled and would not achieve target performance outcomes; n.b. the performance modelling only considered the reliability of the timetable and not the effect of traffic changes on the infrastructure. The CTP had what, at that point, were considered by the ESG as remaining unresolvable conflicts with a freight timetable that – due to the duration of the exercise – did not include the full quantum of services already using the network. The ESG process led to a late change in the timetable specifications from two separate funders, DfT and TfL, avoiding a situation where

the infrastructure would be deemed “congested” but highlighting a lack of earlier joined-up planning.

Recommendation to industry IN1: Industry should review how it can ensure processes for planning major service upgrades fully consider the cumulative impact of successive major changes, including on asset condition and reliability, when identifying supporting work required.

Recommendation to industry IN2: Industry should consider how to provide greater clarity about the roles, responsibilities and accountabilities of the ESG and related specification processes to help drive improvements in oversight of, and planning for, major change.

5.29 Freight’s ability to work within the timetable is critical to overall success of major changes. The region worked with the Network Rail’s Freight and National Passenger Operators (FNPO) team to introduce Network Rail’s first freight corridor (Mendip to Acton) on a trial basis. Network Rail intended that the introduction of this freight corridor would provide a greater focus on freight performance issues by improving governance and asset management.

5.30 A key element of this work was to recast the freight timetable as part of the December 2023 timetable change. The results to date have been positive; Freightliner provided positive feedback on this timetable change and the effect of regular freight perturbation on passenger services has reduced.

Case study: delivering improvements to the timetable for the Mendip quarries

Freight services currently operate between the two 'Mendip Quarries' and terminals in the Southeast, moving over seven million tonnes of aggregates every year. Freight service performance from the Mendip quarries has been challenging, and traffic levels have increased to serve major construction projects including some of national importance (such as HS2).

Network Rail worked with freight stakeholders to understand their immediate and upcoming requirements and then to deliver a significant freight timetable change in December 2023. It carried out performance modelling and tested the train plan through its signalling simulator at the Thames Valley Signalling Centre. It worked with route controls, signallers, adjacent routes and operators to design and then to prepare to manage the new timetable.

The result has been a positive outcome for the industry with performance in and around the quarries improved, reduced congestion and improved journey times. Stakeholders have provided positive feedback about the co-operative way that the new timetable was delivered.

5.31 However, in keeping with our overall findings on governance, we assess that Wales & Western's overall interaction with FNPO has been operational rather than strategic.

5.32 While FNPO's Senior Route Freight Manager is embedded within the region, they tend to be reactive and troubleshoot issues arising at short notice. A good example of this is the work undertaken to mitigate operational challenges arising from speed restrictions in place after the re-opening of the Tytherington Branch – where Network Rail and the quarry operator worked collaboratively to good effect.

5.33 The wider FNPO team has also supported the region in its response to specific incidents (e.g. in the failure of the Nuneham Viaduct and the overhead line failure of 19 September 2022). However, the freight corridor concept has not been further developed.

5.34 Given freight is ordinarily an inter-regional concern, we identify there remains a significant opportunity for the central FNPO team to contribute to the strategic development of route and regional operations.

Operational and "cultural" readiness

5.35 Project Fusion was established as a joint initiative between Network Rail and train operators aimed at ensuring the network was ready for the May 2022 timetable change and the opening of the Elizabeth Line. All passenger operators on the route and two freight operators were involved. It was intended to "mitigate the key risks and issues on the critical Didcot to Paddington section of the Western Route".

5.36 An independent panel with railway expertise oversaw the project documentation. They also supported the prioritisation of action plans.

5.37 The plan included 19 critical mitigations. The actions were for both Network Rail and train operators, including MTR Elizabeth Line, and included workstreams on culture change, leadership, and accountability that reflected the introduction of 'metro-type' operations on the line.

5.38 In early 2022, Project Fusion was highlighted by Nichols' review of train performance strategies (commissioned by ORR) as "a good example of a proactive initiative driven through strong cross industry leadership in preparation for a strategic change to the operation of the railway which has significant performance risks."

5.39 However, a review of the final Project Fusion report highlights how the promise of the project was not ultimately delivered.

5.40 The project was closed as a single workstream in May 2022, which coincided with key individuals directing the collaboration having moved away from their roles. This was six months before the "Central Operating Section" of the Elizabeth Line was connected to the Western route operationally, and there was much still to do.

Case study: "Project Fusion" outcomes

Of Project Fusion's 19 critical mitigations, 12 were considered to have been fully delivered when the project was closed. There were five additional "Fusion Deep Dive" actions that were considered closed at that time.

Network Rail considered that it had completed 6 of its 8 actions at that time, with the other two assessed to be "on track".

There were residual workstreams arising from both completed and outstanding actions, which were transferred into "business as usual" activity.

We consider that some activities recorded as "complete" were not actually complete. For example:

- Project "SP01" was to "[i]identify reliability critical issues that need resolution during pre-planned maintenance only engineering access".
- This would allow Network Rail to identify physical interventions required, through completing inspection of 25 critical sets of points.
- At the time the activity was recorded as completed, the update noted that "[t]he work orders for completed inspections are due to be raised by 12th May".
- As such, neither the remedial work that would be required nor even the inspections themselves had been completed at the time the action was considered complete.

Other similar examples include:

- Identifying revised priorities in the Route Asset Manager (RAM) workbank (as opposed to completing any works required); and
- A review of the governance of incident learning, which was closed because the exercise had been carried out – even though the reported stated, "the review has identified there are ongoing concerns with the closing out of actions. Fusion will pick this up as part of the transition into BAU [business as usual]." It is notable that, later in this chapter, we highlight significant deficiencies in the ability to learn lessons (especially where these are complex and multilateral).

The two remaining "on track" workstreams included implementing improved incident response staffing arrangements and implementing a detailed freight management policy.

5.41 Closing Project Fusion does not necessarily mean the activities identified were not properly completed. However, there is notable consistency between actions we consider were not evidenced as complete at that time, or that were ongoing, and areas that we find remain deficient within this investigation. As such, it does not appear that Network Rail fully prepared for the introduction of the Elizabeth Line.

5.42 We also note that some of the actions identified were late in the day and unlikely to be beneficially resolved in time to provide a resilient network ready for full Elizabeth Line operations. For example, the SP01 project described above was designed to identify reliability critical issues that needed engineering access; as of May 2022, the status of this workstream meant it was unlikely that works would be procured and undertaken before through-running began.

5.43 As such, while Project Fusion was conceptually good, it failed to deliver fully on the promise the Nichols report identified.

5.44 Fusion was also aligned to the Elizabeth Line readiness “SPRINT” priorities, which were commissioned in 2021 following a joint Network Rail Anglia Route, Network Rail Western route, MTR Elizabeth Line and Rail for London Infrastructure (RfLI) RM3-P assessment. Some Fusion workstreams were blended with SPRINT.

5.45 The assessment had highlighted gaps in confidence about readiness. Having used document reviews, interviews, workshops and observations, the team identified some good progress but also found gaps where critical activity was not underway or insufficient resource was deployed.

5.46 There were six key workstreams:

- Capable Operations
- Consistent Fleet Management
- Resilient Infrastructure
- Effective Response
- Effective Access Planning
- Effective Performance Management

5.47 There were sixty different forums tasked with related activity, and some duplication of effort and a lack of accountability became apparent. Therefore, separate governance was set up in the form of a strategic group (One Vision Steering) and a tactical forum (End-to-End Board).

5.48 While a lot of improvements were delivered, and there is no doubt that many people put in substantial effort, ultimately the timeliness and effectiveness of some of the SPRINT mitigations has proved to be insufficient.

5.49 In October 2022, a consultant delivered Network Rail an asset-based readiness assurance "Criticality Assessment" for the Stage 5b (November 2022 and May 2023) timetable uplifts. The analysis was based on a "functional system model" developed by the Elizabeth Line Performance Based Maintenance project, and focused on the 12 miles between Paddington and Airport Junction.

5.50 Specific asset maintenance change proposals were identified within the report. However, there was a key, more generic recommendation that identified significant challenges that appear to have come to fruition since:

"Review potential performance impacts of timetable change well in advance of proposed changes; this would give greater ability to improve asset condition of change maintenance regime and may also influence the proposed timetable change."

5.51 There was insufficient time (and potentially funding) for infrastructure interventions identified at this point to be able to be completed by the time Stage 5b came into operation. In particular, any work to improve the resilience of "Line 1"/Up Main at Ladbroke Grove – identified as the most critical section – had neither track access nor a plan to resolve issues.

5.52 Given Fusion, SPRINT, and the consultant report (as well as our engagement with the route at the time) we can confidently say that Network Rail understood there were significant operational risks and challenges associated with such a significant change.

5.53 Increases in asset utilisation and the change in operational character were known and there is evidence that operational change and maintenance planning were insufficient and undertaken too late.

5.54 This is borne out in the lived experience of users of the network – and the work is still a long way from complete, requiring another project (indicatively Project Brunel) to drive further improvements needed between London Paddington and

Airport Junction. Project Brunel itself will need sufficient focus, resources and leadership to ensure successful delivery, as an enabler for broader performance improvement in this area.

5.55 However, this also highlights a wider interface risk arising from enhancements, service specifications and maintenance planning being undertaken in isolation from each other.

5.56 In this case, the Great Western Route Modernisation and Crossrail project upgraded or installed certain assets and bought new trains. The service specifications – to make beneficial use of the major capital investment – were then designed by two separate funders, neither of whom funds either freight or open access services. This highlights a significant weakness in how service designs are currently specified and overseen, on a whole system basis.

5.57 Network Rail, as the maintainer of the network, is a stakeholder in these specification processes but the evidence described above suggests that the condition of residual (unimproved) assets and work required to improve them appears to have been insufficiently thought through. Whether due to “optimism bias” or a lack of foresight, we have seen no evidence that Network Rail raised earlier concerns with specifiers about the network’s ability to cope with the proposed traffic levels.

The system-wide operational plan on Western lacks resilience. Network Rail is working to improve factors it understands and can control.

5.58 There are significantly more trains on the Great Western route out of Paddington than before its electrification, and more were introduced with the opening of the Elizabeth Line. There is therefore less space in the timetable to absorb perturbation. The route now supports a cross-London metro service alongside pre-existing long distance, commuter and freight services. This means that the route is more vulnerable to disruption, and it is more challenging to recover normal service following disruption.

5.59 In a standard off-peak hour in 2015, up to twelve trains operated on the relief lines (assuming four freight trains) and twelve trains on the main lines. A standard off-peak hour now has 14 trains on the relief lines (ten passenger trains and four freight trains) and 15.5 trains on the main lines.

5.60 The system-wide operational plan on Western is not resilient, including the timetable and the resourcing of that plan by operators. The effect of cumulative changes was underestimated in the quantified outcomes presented following modelling, as discussed earlier in this chapter. When assets (such as track and overhead wires) fail, there is little space in the plan to absorb delays to services, which are therefore magnified – by the number of trains and interaction between different traffic types in the timetable (as described in 5.59 above) and by the design of operator resource plans. As described in Chapter 2, primary delay on the route is consistently higher than it was prior to service uplifts from 2019 and the pandemic, with reactionary delay an increasing factor within the past year.

5.61 Although the timetable remains imperfect in its compliance with train planning rules, and integration of the uplifted Elizabeth Line timetable in May 2023 was a particular challenge (in part due to the planning required coinciding with industrial action), there is evidence that the region understands the issues and is taking reasonable steps to improve it. Performance incidents attributed to the timetable have reduced in each of the last four years. Network Rail remains focused on incrementally improving the resilience of the timetable to basic perturbation, within specification constraints. This needs ongoing support from passenger and freight operators.

5.62 The region has provided evidence of carrying out systematic reviews of the current timetable to understand its contribution to poor performing services, including how the timetable is constructed, how it is operated, impacts of infrastructure assets and impacts of rolling stock.

5.63 Elements of the plan are predominantly beyond Network Rail's control, such as the overall specification of timetables by funders and the resourcing plans of train operators.

5.64 However, we do not believe that Network Rail has a full and detailed understanding of all the factors involved and, as such, it is not always able to provide constructive and detailed challenge to those parties.

5.65 Taking traincrew reactionary delay as an example, Network Rail appears to have a partial understanding of challenges with the principle mainline operator, GWR. It has presented evidence of the "symptom" (increased delay, with a case study showing a chain of train delays) and proposed that greater "efficiency" in diagrams has reduced traincrew resilience. Network Rail described having "active conversations" with the operator to reach a collective resolution.

5.66 GWR has shared data with ORR showing that it has regularly increased the number of mid-route driver reliefs it rosters each day, since 2022. This is explained to be primarily for the purpose of retaining route knowledge for drivers at its different depots, with fewer train services operating on some parts of its route than in the December 2019 timetable (such as between Swindon and the Severn Tunnel). As well as timetable changes, other factors causing alterations to the driver plan included changes in longer-term fleet strategy following the earlier reduction in scope of Great Western Mainline electrification, and due to costs savings required following the COVID-19 pandemic. However, it means that drivers are more likely to be displaced during disruption, making service recovery more complex.

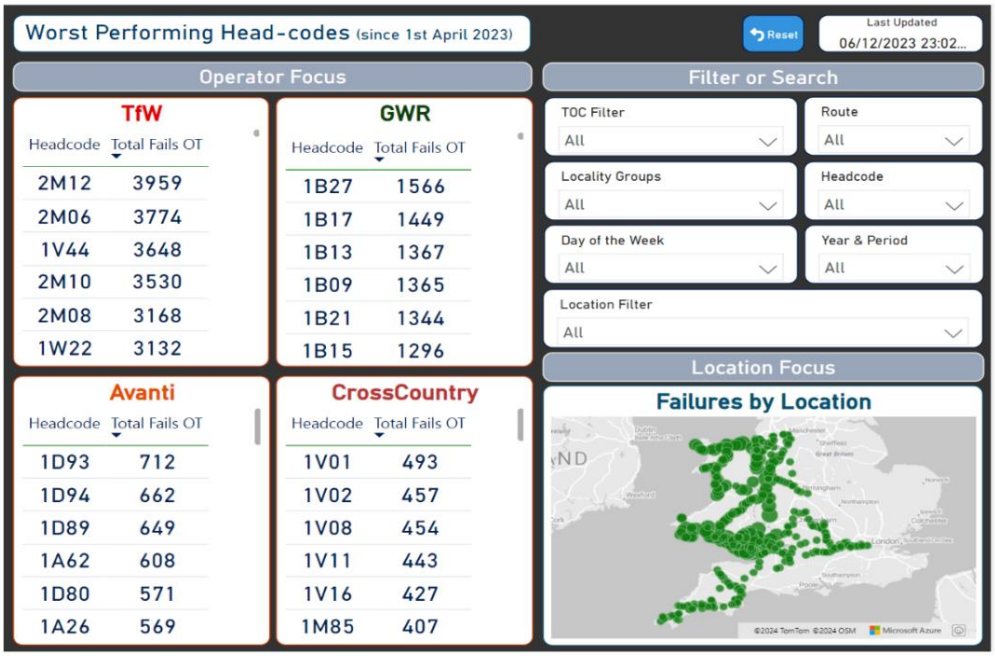
5.67 Despite the “active conversations” described, we have not seen evidence that Network Rail has a full and detailed understanding of the issue; nor of proactively adjusting its recovery processes and plans to better manage this situation.

5.68 In terms of the elements within its control, Wales & Western has shared its current list of planned Train Planning Rule changes being investigated with Capacity Planning for timetables between May 2025 and December 2026 (i.e. those not yet in full production). This details recurring errors and a number of changes to be made for TOC and FOC performance improvement, for infrastructure and for rolling stock changes.

5.69 Within this, Wales route is proposing a particular performance improvement focus across its May 2025 timetable. This is appropriate, as the route is going through major rolling stock and infrastructure changes and currently has the lowest On Time performance delivery of all routes.

5.70 Wales route has instigated On Time to 3 groups which identify and drive forward local timetable improvement opportunities. It has built dashboards to support these groups, for example as shown in Figure 5.1.

Figure 5.1 Example Wales route dashboard on worst performing headcodes



5.71 The On Time to 3 groups on the Wales route appear to be delivering benefit. They have resulted in changes to the timetable such as retiming of trains to deliver better On Time performance on the Maesteg to Cheltenham and between Wrexham and Bidston.

5.72 Taking Wrexham and Bidston, the first four periods of the December 2023 timetable have seen an improvement in punctuality (measuring every station call, within three minutes) of approximately 30 percentage points. The average result has improved from c. 50% to more than 80%.

5.73 Wales & Western should consider whether this good practice could helpfully be rolled out more widely – particularly for implementation in support of the local performance boards that we understand are now in place on the Western route.

5.74 Wales & Western should also accelerate collaborative work with Network Rail's System Operator, such as drawing in subject matter experts on ARS, timetable modelling and sectional running times, to analyse further opportunities for improvement.

Recommendation NR9: Network Rail should continue to focus on ways to maximise timetable resilience to basic perturbation within the possibilities of the existing specification, learning from best practice in other routes.

5.75 In its response to our investigation, Network Rail explained that it does not yet have robust or reliable data on time-to-site and time-to-fix asset failures.

5.76 One stakeholder has highlighted that operational response times on Western are more than double those on Anglia.

5.77 We have described in the analysis section the increased delay from the average incident, especially Network Rail-caused incidents. We have also demonstrated that increased numbers of trains are not the sole cause.

5.78 The speed and effectiveness of operational response to incidents is a key determinant of delay outcomes for passengers and freight. It is largely within Network Rail's direct control and needs to be measured routinely and robustly to be effectively managed.

5.79 The absence of reliable data has prevented Wales & Western from making robust day-to-day predictions of both response times and incident durations, both of which would help operators in planning their own response.

5.80 We note that Network Rail states the region is working to improve the "accuracy and usability" of "time to site" and "time to fix" information by adding it to the Control Centre Incident Log (CCIL) and the Historical Incident Log Data Analysis tool (HILDA), and that some elements are discussed at (for example) Western route's weekly performance visualisation. We recognise some recent acceleration in this area, as part of Project Brunel, to improve management of incidents.

5.81 To improve primary delay and overall performance outcomes, Network Rail should expand this work to reliably measure, report on and manage quantifiable elements of operational response that are within its control, across the Wales & Western region.

Performance and operational resourcing

5.82 Network Rail has taken action to improve the sufficiency of its operational and performance management resource and it should continue to improve its capability in these areas. The region has taken action to address shortages in delay attribution staff, operations managers and performance managers. We set out some examples below.

5.83 The resourcing of the region's performance teams has been strengthened. Network Rail, along with the industry has increased its Performance Management Capability in recent years. It has recognised that greater resource is needed in

performance improvement work. This involves working within and outside Network Rail to deliver performance improvement schemes. To enable this, the region has increased headcount in its performance teams. Since 2020, the Wales performance team has increased from 15 to 33, and in Western it has increased from 42 to 50. About half of these teams are delay attributors.

5.84 Network Rail experienced shortages of delay attributors in the Wales route in 2021. Delay attributors are responsible for allocating who is responsible for a delay. This enables performance improvement activity to be properly targeted. If Network Rail cannot allocate a delay to the correct reason, it is classed as 'Uninvestigated Delay' in the 'Network Management Other' category. This normally results in train operator delays being counted within Network Rail-caused delay statistics (therefore making Network Rail's own performance look worse). More importantly, Network Rail loses granular information about the real causes of delay, making targeting of its performance improvement plans more difficult.

5.85 Because of the shortage of delay attributors, Network Management Other became the biggest cause of delay in Wales. In response, Network Rail increased its delay attributors from 10 to 16, providing more resilience in times of high demand. Delay attributed to Network Management Other has since substantially reduced, being correctly attributed to asset categories and TOCs as the number of incidents attributed by default has reduced. However, the correct historic information cannot be recovered.

5.86 In 2021, the Thames Valley Signalling Centre (TVSC) suffered an unusually high level of signaller resignations – predominantly for reasons beyond Network Rail's control. This led to delays and cancellations when there was no signaller available to enable the safe movement of trains. In addition, Wales & Western had to increase signaller levels to prepare for the partial and then full opening of the Elizabeth Line in 2022 and 2023 respectively.

5.87 Western route initiated a focused recruitment and training plan to increase the number of signallers in TVSC. Despite resignations, the number of fully trained and competent signallers has increased from approximately 70 in 2021 to over 130 in a two-year period, which we recognise as a significant achievement. The effective vacancy gap at TVSC has reduced significantly, to approximately 4%, in this time.

5.88 However, we note that introducing such a large population of new signallers comes with both opportunities and risks. New signallers will be trained in up-to-date tools and the latest decision-making techniques – but when the average level

of signalling experience of each colleague is notably lower, it can take longer to make the “best” operational decisions.

5.89 We also note that Wales & Western is increasing its first line operational response teams (known as Mobile Operations Managers (MOMs)) in response to its poor performance. It is recruiting and training more MOMs for its critical locations, for example the key freight depot at Westbury. This is a welcome initiative, but the changes in traffic levels should arguably have triggered this activity to be completed much sooner.

5.90 Overall, Wales & Western has made relatively good progress in addressing staff shortages in the region. It should seek to move from this reactive approach to a more proactive one in managing resources to maintain resilience in the long-term.

5.91 As a core requirement to operate a successful railway, the Wales & Western region should ensure it has a cohesive operational workforce strategy. It should project staff numbers against expected establishment, estimating recruitment and training dates by taking into account likely attrition rates using factors such as age profiles and the anticipated effects of change programmes.

5.92 To improve outcomes for passengers and freight there should be a further step-change in the capability of the resources employed and in the ways of working on the route.

5.93 There has not yet been a cohesive business change programme for Western route operations that takes account of the cumulative operational changes since 2019, which culminated with the introduction of the May 2023 Elizabeth Line enhanced through-running timetable. Operational measures are a key element within Project Brunel and must be further developed (see recommendation NR2).

5.94 At our industry roundtable, multiple stakeholders questioned resource capability and, specifically, the Western route’s ability to work to the pace and attention-to-detail required in a railway with such high traffic density (drawing on comparisons to other Network Rail routes/regions). Network Rail should take this feedback on board and ensure that operational culture on the Western route is appropriately developed.

Improving operations capability: 21st Century Operations and the use of operations decision support tools and technology

5.95 Network Rail has set up a programme called 21st Century Operations, intended to professionalise operations, increase operational competence and enable effective day-to-day operations and recovery from incidents. The programme aims to respond to these challenges by developing and delivering tools, technology, and organisational change. The programme is being run by Network Rail's System Operator, working collaboratively with regions and routes to embed changes.

5.96 Wales & Western is currently taking forwards improvement under the 21st Century Operations programme and should review whether it can accelerate its adoption of the programme, including drawing on the experience of other Network Rail regions which appear to be more advanced (such as Anglia, whose pilot of a 21st Century Operations "Ops Management Trial" was highlighted by the Nichols review of joint performance strategies in 2022 and whose operational performance is currently seen as positive).

5.97 Stakeholders have expressed concerns about operational capability, and in particular the need to ensure effective and consistent use of technology and tools to support effective decision making. Operators have been critical of Western route's understanding of train crew and rolling stock needs in times of perturbation. They have observed, for example, that signallers have an overreliance on automatic route setting.

5.98 The region has adopted "traffic management" technology to help it manage trains during disruption. Luminate is its chosen tool to assist train running controllers and signallers to better manage the network during perturbed operation. Depending on which modules are installed, Luminate can be integrated with TOC systems to provide a single source of truth for Network Rail and operator across train running, stock and crew diagrams. Its core functionality integrates with key operational systems, including "automatic route setting" ("ARS" - an automated decision-making tool designed to help signallers deliver the timetable, which is linked to the signalling system and chooses the order in which trains should proceed), and the system monitors the delivery of the timetable, flagging expected lateness and allowing integrated replanning of services when required. It can also aid signallers making re-platforming decisions in advance of trains arriving, to ease congestion around stations.

5.99 Working with GWR, the Western route uses Luminate at its Thames Valley Signalling Centre; its deployment includes all of the modules listed above, although from our discussions with Network Rail and GWR it is clear that not all functionality is currently being used effectively to manage disruption.

5.100 A preview of the expected benefits, carried out for GWR and Network Rail by Steer, estimated an “annual revenue” benefit from improved performance of between £0.5m and £4.4m per annum (which we understand to be derived from “Schedule 8” performance payment savings).

5.101 Network Rail states that it has taken a managed approach to increasing the use of Luminate on the Western route, training staff so that they can adopt it once they are confident to do so rather than requiring its use. Data supplied by Network Rail shows a steady use of Luminate with 8-10% of schedules in Luminate edited daily. Weekly usage by role shows there has been an increase in signallers using Luminate over the last 12 months. The number of train running controllers using it has remained steady.

5.102 With Luminate as an obvious example, we find there is inconsistent use of technologies in place that are designed to help manage minor perturbation on the railway.

5.103 In large part this is because they have been approached as add-ons rather than business changes. For Luminate we understand that basic training was provided, with the tool treated as an add-on within existing organisational structures. Western route volunteered during our detailed investigative discussions that, for effective implementation, it should have introduced Luminate as part of a broader business change project. This could have examined the concept of operation, testing and refining the way it was being used between different organisation roles.

5.104 The same issues will have prevented the route from best integrating the new Incident Controller and Freight Running Controller roles, which have been introduced since 2022 and should ultimately provide a significant uplift in operational capability.

5.105 It was also unhelpful that, as described previously, there were shortages of signallers in the Thames Valley Signalling Centre in 2021 to 2023 as this technology was introduced. Even had there been a change programme, this shortfall would have meant that signallers were not able to be released from duty for longer training and development periods. We recognise that current resourcing levels should allow for more training and development opportunities to be realised.

5.106 Western described that the operations workstream within Project Brunel will rectify the prior absence of a change programme, with advanced training in the use of Luminate functionality and cultural workstreams that recognise the need for team members to buy in to the system to realise the expected benefits.

5.107 The Wales route has been training its staff to enable the introduction of the Luminate tool in 2024. This deployment does not include the TOC elements of the system (i.e. the stock and crew diagrams), which for now will limit the potential effectiveness of joint working with the lead TOC (TfW Rail). However, Network Rail appears to have learned the lesson from Western and has organisational development as a part of its deployment plan.

5.108 Network Rail should ensure that future significant operational changes have appropriate cultural change programmes to ensure that human factors are reflected in their introduction and that their people and tools interface to support better operation and performance (as set out in recommendation NR3).

Recommendation NR11: Network Rail should continue to deliver improved operational and signalling capability, establishing and delivering against a clear timebound plan and developing a suite of indicators to measure capability. To support development of its operational capability and realise value from significant investments made, Network Rail should ensure that future significant operational changes – such as the adoption of new decision support technologies – have appropriate business change programmes (including consideration of human factors and revised role definitions) to support their introduction.

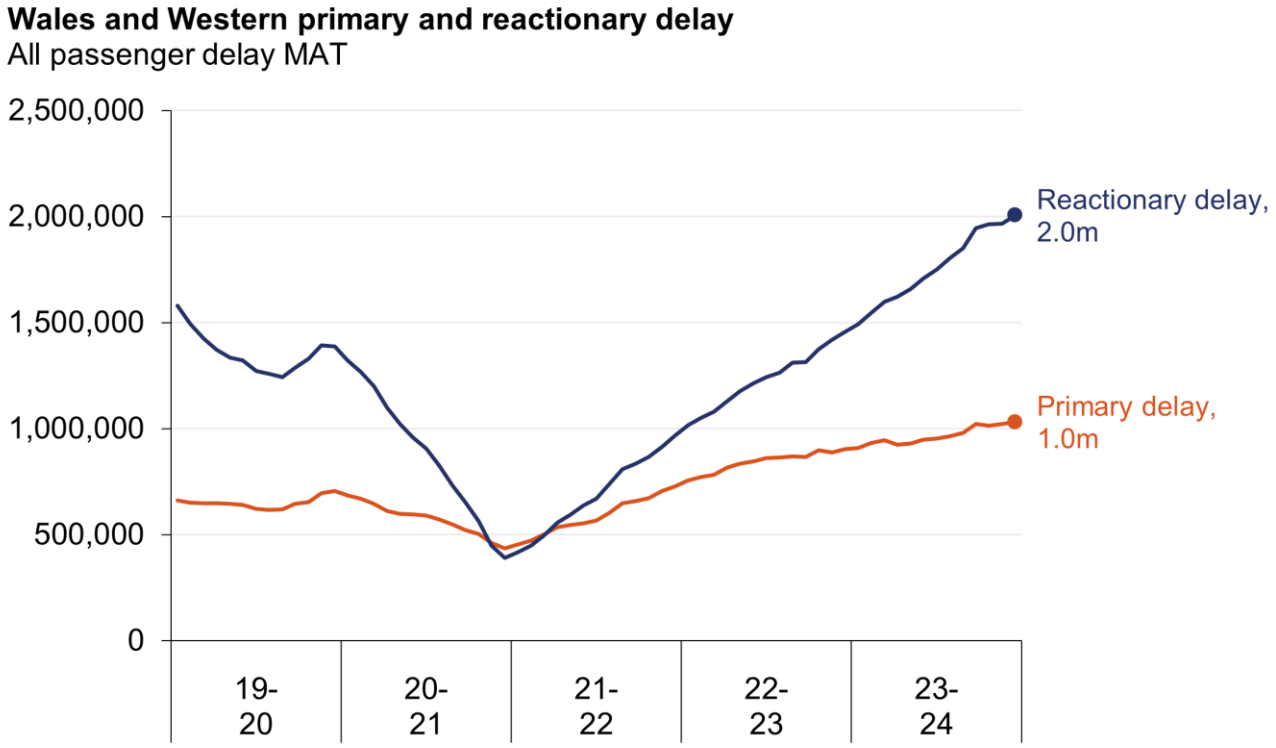
Service recovery

5.109 Network Rail leads and coordinates the recovery of services following any disruptive incident. Train operators also have a key role to play in getting services back up and running quickly and effectively.

5.110 Being able to recover service effectively following perturbation means that the effect of incidents on operations are shorter lived. Even if technical response to an incident is good, if the system is unable to recover effectively then delays associated with each incident will increase, and so will the knock-on ‘reactionary’ delays to wider services.

5.111 Primary and reactionary delays have increased in the Wales & Western region as shown in Figure 5.2.

Figure 5.2 Wales and Western primary and reactionary delay



5.112 We described in Chapter 2 that primary delay for Network Rail-attributed incidents has been largely stable since the end of 2021-22, despite increases in service levels. However, an average Network Rail-attributed incident on the Wales & Western region today results in significantly more delay than was typically the case historically and this is particularly marked on the Western route: each Network Rail attributable incident on Western route caused on average 109% more delay minutes in 2023-24 than in 2018-19.

5.113 Effective service recovery requires:

- A base plan with sufficient resilience to be able to recover from perturbation;
- Sufficient TOC and FOC resources available (rolling stock and traincrew) to aid recovery;
- Good communication between the site of a failure/issue and the control room, to allow operators to plan the first phases of recovery with a degree of certainty;
- Good communication between Network Rail and TOC/FOC controls, with proactive and collaborative decision-making;

- Skilled operators with appropriate decision support tools;
- Ability to measure the outcomes, to allow for continuous learning and improvement.

5.114 As we described previously, the current timetable has more trains operating on the network than historically and is naturally less resilient. As such it was highly likely that service recovery would be more difficult than prior to the December 2019 timetable change, where journey times were markedly improved to make use of electrification benefits and drive increased usage of the network. The increased traffic from the introduction of the full Elizabeth Line timetable with interwoven freight paths introduced further pressure when operations deviated from “normal” running.

5.115 However, our investigation has highlighted that the management of service recovery has not been optimised, with opportunities for improvement in all of the areas highlighted in paragraph 5.113 above.

5.116 In explaining the impact of operator contributions to train service recovery, Network Rail has provided high-level case studies describing the impact of traincrew issues, and explanations (though unquantified) of the relationship between increased numbers of services on the network and increased reactionary delay. It has also provided explanations of its understanding of the impact of fleet issues on service recovery.

5.117 From our review, we understand that changes have been made to operator resourcing plans which are not optimised to assist service recovery when issues arise.

5.118 Trains are significantly more likely to have to wait for a displaced driver than two years ago. In addition, GWR highlighted to us that recent reductions in its fleet size meant that trains’ lengths vary significantly – which means that departures from London Paddington in disruption have to be more carefully matched to passenger flows than previously.

5.119 Service management and recovery priorities on the Western route are complex for passengers and for freight. Due to the nature of the markets they serve, different stakeholders have different priorities at different times of day. Despite plans such as Project Fusion and the Elizabeth Line SPRINT, the route has proven to be insufficiently prepared to manage the magnitude of operational change that was coming.

5.120 Written stakeholder feedback and the industry roundtable bore out that, while some progress is now being made, the communication on the region can fall short.

5.121 Specifically, operating parties in the region do not have visibility of a common incident log, and communication between parties that are not physically co-located remains sporadic. There are inconsistent types and uses of tools between parties. For example, although traffic management systems are capable of providing an holistic overview that assists decision-making, each separate party has its own unique system or combination of systems.

5.122 While it is mentioned in Project Brunel and we have had some verbal reassurance that key individuals understand the challenge, Network Rail has provided limited evidence demonstrating that it can quantify, explain and manage the balance of factors within its control that may also be contributing to increases in delay per incident and reactionary delay.

Recommendation NR1: Network Rail must improve its understanding of why the impacts of incidents are increasing (with more delay for each incident) and then review its plans to ensure they target relevant factors within its control. To improve primary delay and overall performance outcomes, it should measure, report and manage quantifiable elements of operational response that are within its control across the Wales & Western region.

5.123 Network Rail does not currently have a clear way to measure – and therefore manage – the quality of its service recovery. Response and recovery times are particularly important where service frequencies are high.

5.124 At the beginning of 2024, Network Rail's System Operator launched a project to develop service recovery metrics. This builds on previous work done in other parts of the network, but that has not been fully adopted.

5.125 Recent years have seen the Western route transition to full mixed-use operation (including through introduction of the Elizabeth Line and increased freight traffic). Although Wales & Western was aware of the importance of implementing cultural and operational change, and took some of the steps required, we find that it underestimated the overall programme of change required.

5.126 Service management and recovery priorities on the Western route are complex and different stakeholders have different priorities at different times of day. Despite plans such as Project Fusion and the Elizabeth Line SPRINT, the route was not sufficiently prepared to manage sometimes competing needs.

5.127 We have started to see some benefits from recent learning and from interactions between Network Rail and its operators. Project Brunel includes specific resources focused on delivering culture change in operations. Improving the use of the integrated traffic management system, Luminate, is a key workstream.

5.128 In an investigative detailed discussion with Network Rail, it acknowledged the complexity involved and the need to continuously learn about how to manage this level of service. Progress is being made, and Network Rail shared a case study of managing coinciding incidents successfully on 26 February 2024: a landslip at Twyford and a tree on the overhead lines at Maidenhead. The signaller used Luminate to edit the way 284 services over the following eight hours would be routed; as well as improving predictability, this allowed the signaller to focus on issues as they arose rather than rerouting each one manually. Consequently, the signaller had capacity to manage the incident involving the tree.

5.129 We note this positive example, although this again highlights the importance of undertaking an organisational change exercise to ensure that roles and responsibilities of incident controllers, train running controllers and signallers are fully understood in light of operational and systems changes (as described earlier in respect of Luminate).

5.130 On Wales route, reactionary delay around Cardiff is a significant factor and recovering from perturbation here is a key challenge. The route has specific plans to improve this. Additionally, our industry roundtable highlighted the benefits of close working relationships between control and signallers or even integrated control rooms with train running, engineering and information in one room (such as at Core Valley Lines Control at Taff's Well, with other examples on different parts of the network where this works well).

5.131 We consider that plans put in place by the region over the past twelve months may be starting to show benefit to Network Rail's outcomes, supported by some data trends.

Contingency plans

5.132 The Network Code highlights that Network Rail should maintain contingency plans which should facilitate expedient management of more substantial operational incidents. We note that it has developed and maintained contingency plans, including working with operators to update these from time to time. Network Rail has provided evidence which demonstrates that it consults with operators on contingency plans.

5.133 Network Rail states that it has a range of contingency plans that are fit for purpose and points to ongoing improvements being made. It has also highlighted through case studies (at high level) that traincrew and fleet issues can have an effect on speed of recovery.

5.134 On the basis of the evidence we have seen, we are currently less concerned in this area with the Wales route, although this is a rapidly-changing operating environment and Network Rail should remain alert.

5.135 For Western route, we have been able to confirm that the most recent service contingency plans, for the December 2023 timetable period, were developed with all relevant passenger operators and signed off by each one on 6 December 2023, in advance of the timetable change. Network Rail has detailed to ORR the engagement it undertook to develop these, through:

(a) three multilateral meetings in October 2023;

(b) issuing draft revised plans in mid-November; and

(c) an additional meeting with MTR Elizabeth Line in late November.

5.136 For freight contingency, Network Rail's evidence describes that, in 2022, it introduced a Freight Running Controller in Western route control. Their role is to proactively manage freight on a train-by-train basis, in line with management policies. However, Network Rail has not provided the policies and it is therefore not clear that the detailed freight management plans promised by Project Fusion have been implemented.

5.137 Network Rail has highlighted that it continues to improve contingency plans and recovery. This includes further roll out of tools, technology and revised practices to assist in making service regulation decisions and minimising delay (such as Luminate traffic management, Integrated Train Service Recovery (ITSR), Train Running Controller huddles, RAPPORT system real-time tracking, and Rescue and Recovery Plans on coupling capability of different stock).

5.138 It appears that Network Rail is compliant with the Network Code requirements (control arrangements) in respect of designing contingency plans.

5.139 However, in respect of the Western route in particular, stakeholders have expressed concern with inconsistencies in when and how contingency plans are implemented "on the day". This forms part of a more general concern from operators about control and communication during response and recovery phases.

5.140 It was apparent at the industry roundtable that, regardless of Network Rail views, senior stakeholders of TOCs and FOCs retain different views on how services should be prioritised. Some operators desire a rigid implementation of the contingency plans while others look, despite agreement of the plans, for more nuanced flexibility (for example by time of day/day of week).

5.141 All parties agreed that progress had been made at the end of 2023. In our investigative detailed discussion on this area, Network Rail further described some of the progress being made and we recognise that (for example) contingency plans are now built into Luminate, allowing easier implementation when required. There was discussion at the roundtable about how to ensure a common picture across different routes and operators that do not share service management, logging and communication technology (including between routes, as the Elizabeth Line makes is easy for decisions made on Western route to affect Anglia and vice versa).

5.142 To improve maturity further, Network Rail should lead the various operators on the route to align recovery principles. It will need to assess the best way to do this (for example whether modelling plays a role in determining how to achieve the best outcomes). However, a senior stakeholder forum for the route appears to be a prerequisite to allowing operating staff to implement effective solutions.

Incident learning

5.143 Stakeholders have expressed concern about whether Network Rail truly learns from its incident learning reviews. They described concerns including perceived lack of transparency in tracking actions, lack of visible accountability and apparent failure to learn lessons where mistakes have been repeated.

5.144 We have seen evidence from Network Rail that it conducts Incident Learning Reviews (ILRs) and Significant Performance Incident Reviews (SPIRs), in collaboration with operators, and that it has processes in place that track the implementation of lessons identified.

5.145 The sample that we have reviewed shows these reviews generally being conducted to a good standard with clear actions and recommendations. Network Rail has provided good examples of certain actions being incorporated into its risk management process and others resulting in specific actions (such as the replacement of failed hydraulic hoses).

5.146 However, from our review of the actions identified in the ILR of the overhead line failure of 19 September 2022, we consider that lessons were not fully implemented and similar issues and actions were therefore identified in the Ladbroke Grove de-wirement of 7 December 2023.

5.147 For example, following the 19 September 2022 incident, a recommendation was made: “The Western route are to introduce a stranded trains board and to introduce policies that support the delivery of management of mass stranded train events.” On 4 December 2023 Network Rail reported to us that the action to “identify, make improvements and practice the management of mass evacuation and unit rescue process” was complete.

5.148 The 7 December 2023 incident again resulted in stranded trains. The recommendation following that incident stated “NR [Network Rail] Western and Thames Valley operators need to agree a joint Stranded Train Strategy which prioritises the urgent rescue of stranded passengers starting with those on electric trains”.

5.149 In response to our questioning during this investigation, Network Rail told us that its 2022 recommendation was narrowly focused on Network Rail, whereas the 2023 recommendation focused on whole industry actions, including the emergency services. However, we consider that the similarity between the recommendations indicates weaknesses in truly learning the lessons from the first incident.

5.150 A further example where lessons do not appear to have been fully learnt in a timely way was the incident where a location cabinet caught fire at Marshfield in May 2023, resulting in disruption to the railway for several days. The incident was caused when a plastic cable tie broke, allowing a signalling cable to come into contact with the overhead line system. The same root cause (degradation of plastic cable ties exposed to sunlight) had led to previous failures at Uffington in Western (February 2020) and Ledburn Junction in North West & Central region (May 2021). While the Wales signalling Route Asset Manager (RAM) had initiated a project to replace relevant plastic cable ties with metal ones, Network Rail reported in its review of the Marshfield incident that, “it is clear that not all scope was delivered in a manner that addresses the risk”.

5.151 As stated earlier in the report, in Network Rail’s review of the closure of Nuneham Viaduct, it instigated reviews of the emergency engineering remedial works and safety decisions but did not commission a review of wider lessons that could be

learnt – such as improvements to decision-making, governance, stakeholder communications and operational decisions.

5.152 Nevertheless, Network Rail has shown that there are instances where it can effectively embed learning on a multilateral basis. In response to a fatality at Pangbourne in January 2024, it set up a tactical working group on fatality management with British Transport Police. This approach has been shared across industry [REDACTED]. However, we have not seen the region follow this approach to multilateral learning on a consistent, systematic basis.

5.153 Network Rail must improve its governance around learning lessons from incidents and ensure that it is consistently applying best practice, including learning from other routes and regions. The number of ILRs and associated actions is large – and a robust approach is needed to track them through to delivered benefits. The Rail Safety and Standards Board (RSSB) is conducting a research project on best practice associated with ILRs. Beyond immediate actions required for this region, we recommend that Network Rail works with RSSB to deliver improvements. We also recommend that Network Rail considers carrying out a 'meta' review looking across ILR actions and recommendations to identify common and/or systemic issues that require prioritisation.

5.154 We also highlight that, despite internal tracking, the number of reviews/actions shared on the Industry Performance Knowledge Hub is limited. If these are not shared, other regions or parts of the industry are unable to learn from the incidents and will repeat errors which could have been avoided. While not unique to Wales & Western, this emphasises again the importance of sharing knowledge in line with good practice proposed in PIMS.

Recommendation NR10: Network Rail must review how it leads learning from complex and multilateral delay incidents to make sure that recommendations are fully and effectively implemented, and knowledge is shared across the industry. The process must include reviewing common themes across the portfolio of incident reviews.

6. Wales & Western's plans to recover deteriorating train performance

6.1 We have considered the region's delivery of asset management and train operations in the preceding chapters. In this section, we consider how the region has responded to deteriorating train performance and its effectiveness in recovering train performance.

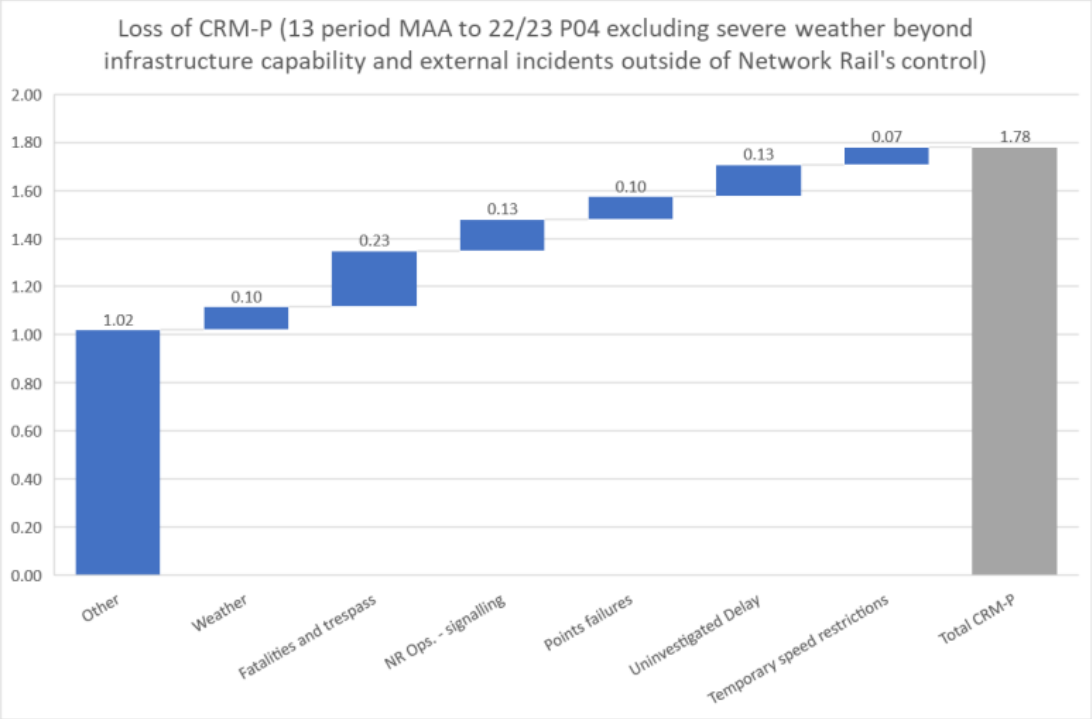
6.2 We have focused our investigation on the region's performance recovery plan (PRP) which it developed in response to our escalation of concerns with train performance in 2022. The region has used the PRP to bring together and articulate to us the ongoing and additional work it has undertaken to improve performance. We are therefore using the PRP as the primary lens through which to view the additional steps that the region has taken to reverse poor performance.

Wales & Western's review of the key factors that have contributed to deteriorating train service performance

6.3 The region's first full version of its PRP (August 2022) relied on its routinely collected delay attribution data to identify the factors contributing to a loss in CRM--P, our regulated passenger train performance measure. In descending order, it identified these factors as 'other', fatalities and trespass, Network Rail operations – signalling, uninvestigated delay, weather, points failures, and temporary speed restrictions (Figure 6.1). It accompanied this analysis with narrative details of recent events that impacted train performance for each factor, linking them to recovery actions that it had taken or had planned.

6.4 However, it initially provided very limited explanation for its 'other' category which encompassed the majority of delay and covered a disparate range of issues including route control, technology and signalling.

Figure 6.1 Network Rail's first assessment of factors behind deteriorating train performance (CRM-P) (August 2022)



Source: Network Rail

6.5 The region continued to update its analysis of factors impacting train performance in subsequent four weekly iterations of its PRP. Its analysis further developed in both its detail and maturity. Its analysis in its September 2022 update was extended to provide a more detailed breakdown of factors contributing to train performance loss, along with a separate breakdown of factors impacting freight train performance (freight delivery metric by region (FDM-R), our regulated measure for freight). From that update onward, the region also began to report delay minutes for each major category, set against forecast. Subsequent updates set out further analytical detail including a breakdown of factors contributing to train performance for each route.

6.6 While Network Rail became progressively more detailed in its analysis, it continued to focus its explanation of factors contributing to poor train performance on immediate events, fragmented by delay categories. Its review of factors impacting train performance has been thorough but was not consistently taken further into root cause analysis which could have better informed the region's development of its performance recovery.

6.7 We would also note that when the PRP was originally initiated the Wales route was short of delay resource attributors. As a result, the Wales route did not have an accurate understanding of its causes of delay, and the route's Network Rail-attributed delay was overinflated. The region took action to hire and train new delay attributors, but it was only in March 2023 that it was able to eliminate all uninvestigated delay. This improved both its reported train performance and its understanding of poor train performance.

Development of a train performance recovery plan

6.8 In this section, we review whether Wales & Western has developed a suitably evidenced and resourced improvement plan, and whether that plan reflects and seeks to address the key drivers of deteriorating train performance.

6.9 In response to our escalation of concerns with train performance, the region provided us with the PRP in August 2022. The region has used the PRP to bring together and articulate to us the on-going and additional work it has undertaken to improve performance.

6.10 The PRP has grown iteratively since it was first developed, and by December 2023 a further 72 recovery actions had been added to the original 68 actions. The region has met with us to provide us with updates to this plan every four weeks.

6.11 The PRP is structured to provide a summary of the latest period's performance and the progress that the region has made in completing key actions. It sets out what improvement actions have been recently completed and which ones are due in the next period. It provides individual examples of the benefits of performance improvement and sustaining activities for each route, for example work on removing temporary speed restrictions or vegetation management. It tracks how the region is performing against regulated train performance metrics at a regional and route level with forecasts of future performance against a range of scenarios. The region also set out the key risks to performance within its PRP.

6.12 The PRP is further split into separate sections for Wales performance, Western performance and freight performance. This has provided transparency about the different challenges each route has faced and allowed us to maintain sight of the distinct actions that are being taken to seek to improve freight performance. The PRP is accompanied by a detailed list of recovery actions and their completion status of which Figure 6.2 provides an example.

6.13 The Wales route focused its performance recovery on what it terms ‘the 7Rs’. These are reliability, restrictions, repetition, resilience, resource, risk and research (switching to ‘freight’ once delay attribution was remedied). The Wales route has demonstrated to us that the 7Rs are aligned with the route’s main performance priorities. Key features of the route’s plan included:

- Eliminating uninvestigated delay to provide an accurate understanding and position on delay;
- Targeting its worst performing assets and most important assets for train performance;
- Removing long-standing temporary speed restrictions; and
- Accelerating vegetation management.

6.14 The Western section was based on three pillars of service improvement that it identified: asset management, incident management and incident response. It sequenced its approach in its most recent updates into three phases, reflected in the subsequent phasing adopted by Project Brunel: stabilise (0-6 months); short to medium term fix (6-18 months); and sustain (18 months +). Key features of the route’s plan included:

- Resourcing and training operational staff;
- Focussing on the key areas responsible for most delay in the Thames Valley (track, points, overhead wires, axle counters, trespass & fatality and network management); and
- Removing temporary speed restrictions.

6.15 The freight section contains detailed analysis of freight performance. It sets out the actions that are being taken to improve freight performance. In its most recent update the region has set out its action plan to remove temporary speed restrictions on its main freight branches, namely Tytherington, Merehead and Whatley.

6.16 Figure 6.2 provides a snapshot of actions for the Western route.

Figure 6.2 Example of Western route's Performance Recovery Plan action log

Added	Improvement Category	Route	Details of action taken	Due Date	Status
Original	Axle Counters	Western	Axle counters commissioned at Paddington resulting in increase from 8 years to 15.8 years between service affecting failures	26/12/2021	Complete
Original	Train detection	Western	Track circuit upgrades on the Berks and Hants to replace obsolescent equipment with modern equivalent form providing an improved reliability	31/03/2022	Complete
Original	Weather	Western	For Autumn: Review prior year plans and securing necessary equipment to deliver appropriate treatment.	31/03/2022	Complete
Original	Train service delivery	Western	Introduction of GWR & HEx Train Service Management Plans, with agreed low level interventions.	15/05/2022	Complete
Original	Weather	Western	Completion of summer preparation actions including installing forced air-condition cooling systems and raising CRT temperatures on Barks and Hants.	31/05/2022	Complete
Original	Weather	Western	Process for inspecting track through rear cab ride to avoid disruptive blocks	31/05/2022	Complete
Original	Weather	Western	Understand key passenger and freight flows to be prioritised during periods of disruption	31/05/2022	Complete
Original	Weather	Western	Develop region wide decision making process to deploy support staff to support operations and maintenance	31/05/2022	Complete
Original	Temporary Speed Restrictions	Western	7 out of 11 TSRs on BHL removed, these long imposed speeds are most disruptive, especially to freight.	24/06/2022	Complete
Original	Weather	Western	Review into period of extreme heat (17-19th July)	05/08/2022	Complete
Original	Temporary Speed Restrictions	Western	Blatchbridge speed removed for freight	31/08/2022	Complete

6.17 The PRP sets out actions to address all the main delay categories. For the Western route the plan relates closely to the biggest causes of asset delay. Of its 94 actions, 39 of them relate to axle counters and train detection systems, track faults, overhead line faults and points failures. A further nine actions target temporary speed restrictions. Most of the rest of the actions are focused on areas such as Network Rail operations, trespass & fatality and train service delivery.

6.18 The Wales plan displays a similar adherence to the biggest causes of delay. Of the route's 46 actions 11 of them relate to weather, eight were directed at temporary speed restrictions, eight focused on uninvestigated delay, five on signalling and five on train service delivery. Other actions are focused on points failures, trespass & fatality, Network Rail operations, points failures, signalling and overhead line equipment.

6.19 We have assessed that the actions that the region has identified in its PRP were appropriate to improve train performance, but were primarily tactical and short-term in their nature, intended to have an immediate impact. The region could credibly complete those actions, as demonstrated by the good progress it made in delivering them and it had the necessary means and resources to carry them through, as evidenced by it increasing the size of its routes' performance teams.

Delivery of the performance recovery plan

6.20 While the individual performance recovery actions contained in the PRP have target end dates, the region has not set an end point for the PRP. Wales & Western has intended the PRP to act as the lens through which we can view its collective actions to address train performance and for the plan to continue until train performance has sufficiently improved and stabilised such that all performance management is carried out on a business-as-usual basis. As train performance has not recovered, the PRP has continued to operate.

6.21 The region has taken a continuous improvement approach and as the originally identified activities have been completed, further recovery actions have been identified and added to the PRP. Nevertheless, a substantial number of performance improvement activities are now complete. As of December 2023, 116 out of 140 actions had been completed.

6.22 Given the range and number of different actions that the region has set itself to complete, it would be unusual if the region had met the original target dates for each individual action. Overall, the region has shown good discipline in delivering its actions. Levels of delivery slippage have been low, have been accounted for and transparently communicated to us. The status of PRP actions as most recently updated at the outset of the investigation is set out in the table below:

Table 6.1 Performance recovery plan – status of recovery actions as of December 2023

	Western route	Wales route	Region
Action complete, part complete or closed	76	40	116
On target	13	0	13
Missed or re-dated	5	6	11
Total	**94**	**46**	**140**

Source: Network Rail action log December 2023

6.23 Prior to the investigation, the region provided us with written updates every period on actions that it has completed, and the region's two route directors met with us each period to explain in greater detail how those actions had been completed. We are generally satisfied that the actions that the region has declared as

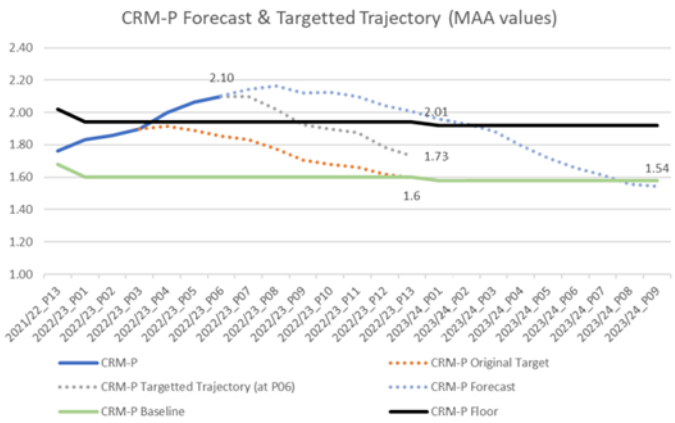
completed have been successfully delivered, although by their nature, some actions are ongoing rather than one-off.

Review of the performance recovery plan, its delivery and the realisation of benefits

6.24 Wales & Western has continuously tracked its actual performance against improvement forecasts to enable it to understand the benefits that the plan was delivering. Its forecast centred on its two regulated performance measures CRM-P and FDM-R. However, the region consistently overestimated the performance improvement it would achieve.

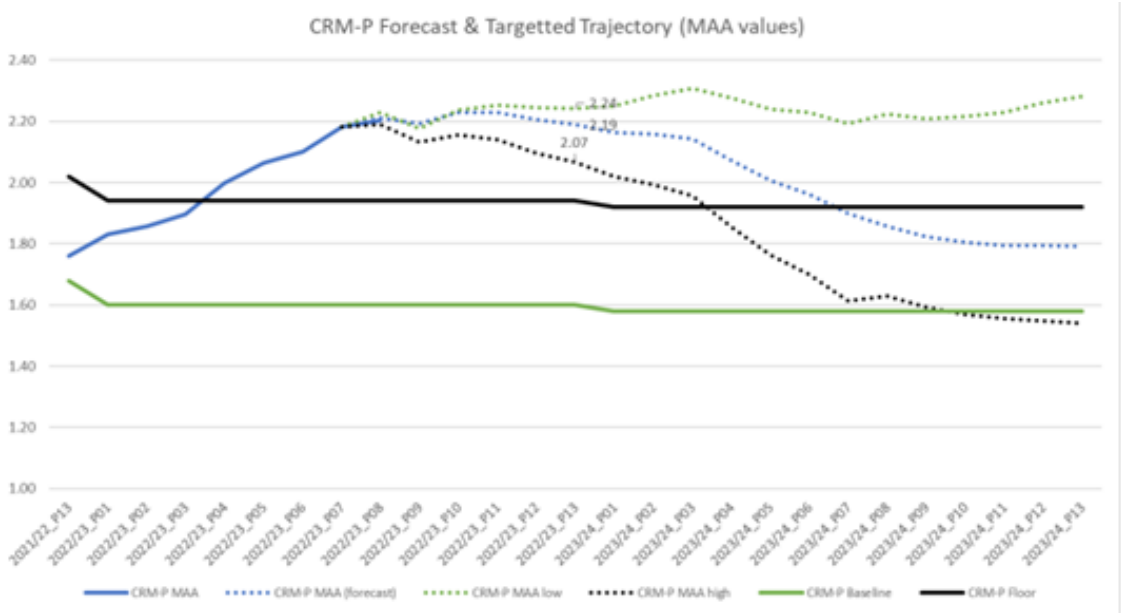
6.25 In its October 2022 PRP update, the region targeted an immediate improvement in CRM-P (a moving annual average measure) and forecast that it would return CRM-P to the regulatory floor by early 2023-24 (Figure 6.3). As subsequent performance and revisions to the forecast would show, this reflected both an over-optimism of the impact that its performance recovery actions would have and an under-estimate of the impact that contributory factors to poor performance would have, including new services and increased network busyness.

Figure 6.3 Wales & Western Performance Recovery Plan – 3rd update, October 2022



6.26 When the region updated its forecast three months later in December 2022, it extended its forecast for when it would return CRM-P to the regulatory floor by four months (Figure 6.4). It also introduced ‘low’ and ‘high’ forecasts which provided a range of outcomes and better reflected uncertainty in the forecasting process. However, these forecasts remained overoptimistic and subsequent poor performance outstripped the region’s worst forecast (‘low forecast’).

Figure 6.4 Wales & Western Performance Recovery Plan – 5th update, December 2022



6.27 The region carried out a fundamental revision of its forecasting in February 2023 and sought assurance from Network Rail's national performance analysis team who identified an inherent optimism bias which had led to risks being insufficiently overlayed in the forecasts. The February 2023 update set out a range of possible performance outcomes, with the regulatory floor for CRM-P only forecast to be recovered in its most positive scenario (Figure 6.5).

6.28 In addition to a significantly more negative worst-case scenario which set out the possibility of substantial and continued further deterioration, the region set out a range of 'midpoint forecasts'. The worst of its three midpoint forecasts set out a continued deterioration of CRM-P throughout the control period and actual performance tracked just below it in December 2023, at the outset of our investigation (Figure 6.6). CRM-P ultimately ended 2023-24 at 2.79, above (worse than) its most negative midpoint forecast of 2.67.

Figure 6.5 Wales & Western Performance Recovery Plan – 8th update, February 2023

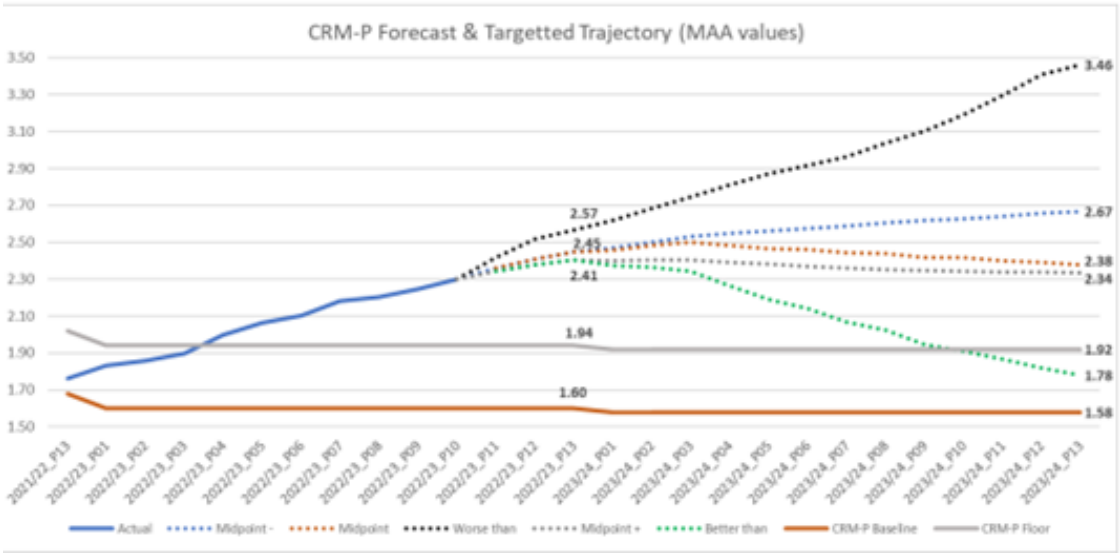
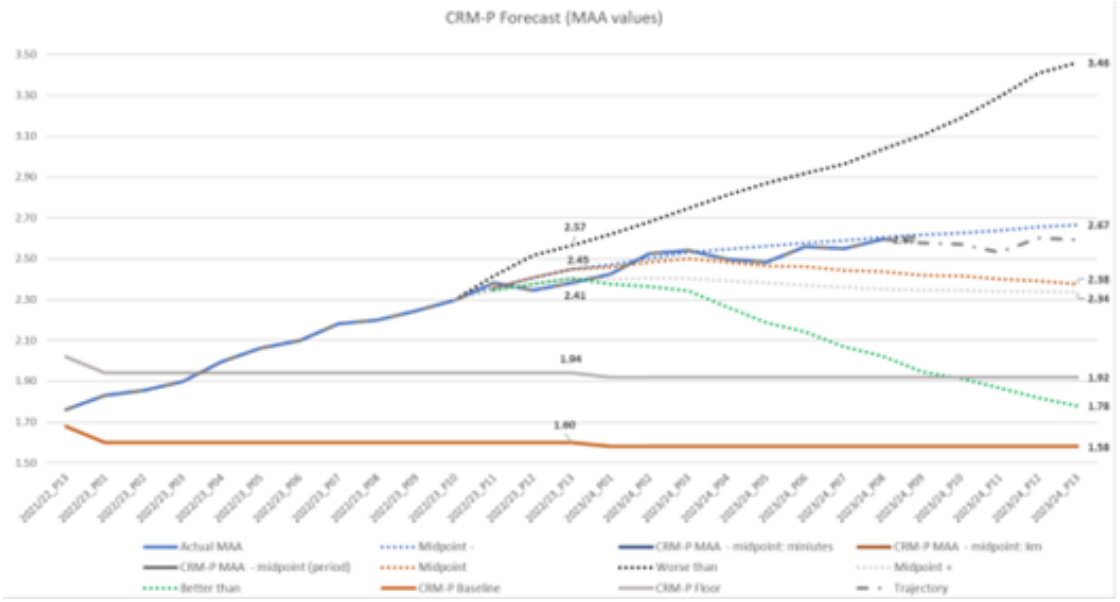


Figure 6.6 Wales & Western Performance Recovery Plan – 18th update, December 2023



6.29 In addition to forecasting future performance and tracking the overall impact of the plan against performance, the region has also sought to look back and evaluate the benefits of individual interventions.

Figure 6.7 Examples of completed actions on the Western route with associated benefits

6.30 Although Network Rail has provided evidence that individual actions have delivered benefits, it has not been able to disaggregate the effect of its plan on overall performance. Delays have increased and the PRP has not yet improved overall performance at a regional level.

Review of the plan where it has not led to improvement

6.31 The region has been pro-active since the inception of the PRP to identify further interventions that could be made to improve train performance, recognising that more needed to be done to improve performance.

6.32 As detailed above, in February 2023, the region carried out a major review of the benefits it expected the plan to deliver. While this re-forecast reflected an improving understanding of the underlying causes of increased delay, the further recovery actions that it subsequently included in the PRP were not fully commensurate to the starker performance improvement challenge that it had identified. At that point it had completed 65 out of 106 actions. The region identified a further 34 actions in the ten months that followed. Further insight that the region was gaining from understanding the causes of delay as a result of observing rather than predicting train performance did not change a fundamentally tactical approach to iterating its performance plan. The region responded to the

increasing pressures caused by deteriorating train performance on the Western route through reactive interventions.

6.33 With 83% of actions completed as of December 2023, the region was still projecting worsening passenger train performance as measured by CRM-P. Following the initiation of our investigation, the region announced Project Brunel, a new project to address longer-term asset sustainability and reliability on the Western route out of Paddington. Through this 18 months, £140 million project, Network Rail is seeking to stabilise performance by June 2024, improve performance by December 2024 and stabilise performance through to June 2025. The plan also aims to provide HS2 readiness for assets and operations. The region has secured additional staff and expertise for the project, operating under a Programme Director.

6.34 Project Brunel has a four-fold approach to delivering improved performance:

(a) Accelerating targeted interventions to quickly raise the base performance of the Western route's infrastructure assets;

(b) Developing its performance improvement processes and developing its people;

(c) Implementing a process improvement approach to drive each incident and asset failure to root cause so that lessons are learnt and corrective actions implemented; and

(d) Developing asset management plans which are directly linked to asset degradation, with access provided to deliver those plans.

6.35 While Network Rail is delivering immediate infrastructure interventions, its plan is still maturing and Network Rail intends to use knowledge gained from implementing short-term improvements to improve and refine its programme of works.

6.36 Alongside asset interventions, Project Brunel also has a number of operationally focused actions, including a control operations leadership academy, a training programme on Luminate, an OLE training facility and review of the asset recovery management process. Network Rail has not yet specified the impact or quantified the benefits that it expects from these future actions. Network Rail must make sure that appropriate operational measures continue to be developed and implemented.

6.37 The region should make use of Project Brunel to adopt and communicate a more strategic approach accompanied by effective project discipline to deliver and track improvements against clear and timebound milestones for both sustainably improved asset reliability and operations on the Western route (see recommendation NR2). It should make sure that that its PRP incorporates the more holistic approach of Project Brunel, to deliver sustainable improvements across the region.

6.38 Network Rail has evidenced that it has analysed and has developed its understanding of the factors driving increased delay. It has reflected this in the additional improvement actions it has identified to address delay. However, there is scope for Wales & Western to deepen its analysis of the root causes of delay and as noted in our analysis chapter, it should enhance its understanding of why the impacts of incidents are increasing so that it can better target factors within its control. This is the subject of recommendation NR1. The work that it is undertaking to improve its data on time-to-site and time-to-fix assets will help to improve its understanding. We also note that one of the key approaches of Project Brunel is to investigate each incident and asset failure through to root cause.

7. Network Rail's stakeholder engagement

7.1 In this chapter, we review whether Wales & Western has engaged with relevant stakeholders in the development of the improvement plan to ensure it meets their reasonable requirements.

Wales & Western's approach to stakeholder engagement

7.2 Wales & Western has engaged extensively with stakeholders on train performance and we have established that its PRP seeks to address most of the issues that stakeholders have identified. Nevertheless, some themes of criticism that emerged from stakeholder feedback to us included a lack of understanding of the strategy behind performance recovery, lack of confidence that the region understood the root causes of poor performance, lack of clarity as to when improved train performance will be delivered on the Western route and as a result, lack of confidence that the improvement plan will meet their expectations.

7.3 We produce an annual assessment of the quality of Network Rail's stakeholder engagement, assessing each of its business units, including Wales & Western. We assess Network Rail against four principles of stakeholder engagement: inclusive, transparent, well-governed and effective. In our most recent assessment, covering April 2022 to March 2023, we scored Wales & Western consistently well across the four principles of stakeholder engagement. We noted that the region had sought to improve responsiveness to stakeholders, however we recommended that the region should consider how to evidence and articulate the impact of stakeholder engagement activities more effectively, including how stakeholder feedback influenced plans and how this impact was communicated to stakeholders.

7.4 Wales & Western, in line with practice in other Network Rail regions, engages with train operating companies to agree annual customer scorecards against which it measures its performance against a range of metrics. These metrics include train service performance and safety, but can also include passenger satisfaction, project delivery, asset management and financial targets.

7.5 In 2022-23, Wales & Western achieved 88% for Great Western Railway, 52% for Transport for Wales and 0% for Heathrow Express. In that year, the region also agreed specific metrics with two other operators, achieving 55% for MTR public

performance measure (PPM – a combined figure for punctuality and reliability) and 200% for CrossCountry On Time to 3 passing Awre from Cardiff.

7.6 In 2023-24 Wales & Western achieved 69% for Great Western Railway, 47% for Transport for Wales, 30% for Heathrow Express, 78% for MTR and 71% for Wales route delay minutes impacting CrossCountry.

7.7 We have established that the region has engaged with train and freight operating companies in the region on an iterative basis to inform the development and updating of its PRP. It has fed back to train operators the actions that it is taking as a result of their requirements. Network Rail has kept Transport Focus informed of what it is doing to improve performance. It has also held twice yearly drop in-events in Parliament and the Senedd together with train operators to understand the issues that parliamentarians see and inform them of the action that they are taking.

7.8 As part of Network Rail's Performance Improvement Management System (PIMS), the region has benefited from pre-existing approaches through which to jointly work with train operating companies to identify performance priorities. This has been done at a strategic level through the agreement of Joint Performance Strategies (JPS) and the conduct of joint Risk Management Maturity Model for Performance (RM3P) audits.

7.9 The region has agreed JPSs with Great Western Railway, MTR Elizabeth Line and Transport for Wales on an annual basis in order to identify priorities and performance improvement actions for the following year. The region is also included in CrossCountry's performance strategy. It has carried out joint RM3P audits with all train operating companies with which it has a JPS to identify areas where performance delivery needs to be improved.

7.10 The region has also used and developed an extensive range of regular and bespoke forums with train operators to track progress in addressing performance issues and to develop responses to new issues. These forums have included a periodic regional freight performance meeting, a freight board, periodic GWR Alliance Board, a periodic joint performance executive with GWR, a periodic MTR performance board, a regional CrossCountry meeting, the Devon and Cornwall Local Delivery Board, 2021 SPRINT on Elizabeth Line readiness, the GWR led Fusion project in 2021 and 2022, and joint leadership conferences with GWR, and Wales and Borders Leadership Group. Both routes have also benefited from externally chaired route supervisory boards bringing together train operators and other stakeholders.

7.11 This engagement has provided Wales & Western with an effective basis from which to understand train operators' requirements, which we have seen reflected in the region's Performance Recovery Plan in 2022. Following the development of that plan it has introduced other performance focused touchpoints such as route-level weekly performance visualisation meetings with participation from train operators. These visualisation meetings were introduced to enable a joint review of performance and to provide operators with the opportunity to escalate performance issues.

7.12 The region's performance recovery plan reflects the majority of individual stakeholders' priorities and requirements. While the region has not labelled individual actions as resulting from stakeholder requirements, there is a clear line of sight between priorities that stakeholders have informed us of and the content of the region's Performance Recovery Plan. Axle counters, overhead line equipment, points, track and vegetation management have all been highlighted by stakeholders as areas for focus for the region and feature prominently in the improvement plan.

Stakeholder feedback

7.13 As part of our review of Wales & Western's engagement with stakeholders we have sought the views of a range of stakeholders including train and freight operating companies active in the region, Welsh Government, Amey Core Valley Lines, Transport for London, Transport Focus and London TravelWatch. According to their various remits, we have sought their views on:

- the impact on passengers of poor train performance;
- stakeholders' experience of engagement with the region in relation to improving train performance;
- how stakeholders' requirements are reflected in the region's improvement plans;
- how Wales & Western works with stakeholders when incidents occur;
- how Wales & Western learns from incidents;
- Wales & Western's operational management; and
- factors outside of Wales & Western's direct control.

7.14 We received feedback from Great Western Railway, Heathrow Express, MTR Elizabeth Line, Transport for Wales Rail, Avanti West Coast, DB Cargo, GB Railfreight, Freightliner, Transport for London, Welsh Government, Amey Core Valley Lines, Transport Focus and London TravelWatch. The key themes raised are summarised below:

Quality of engagement

7.15 Stakeholders generally had a positive view of the region's engagement with them on train performance, with established touchpoints at all levels. A number of stakeholders noted that engagement has markedly improved, particularly over the last two years. However, there were areas of exception.

7.16 Freight operating companies stated that engagement displayed a good focus on local level issues. One operator highlighted that they had more touchpoints relating to performance with Wales & Western than any other Network Rail region. However, freight operating companies commented that there was a need for engagement to be more strategic, for it to cover forward freight requirements, join up plans between the local and national level and make greater inclusion of intermodal services.

7.17 Train operating companies and other stakeholders on the Wales route highlighted the strength of engagement with Network Rail, with a tripartite performance strategy in place between Network Rail, Transport for Wales and Amey, the infrastructure manager for the Core Valley Lines. The local railway partnership was flagged as a positive step.

7.18 Train operating companies and other stakeholders on the Western route highlighted that there are good engagement opportunities at all levels and that collaboration on performance has improved over the last 24 months with greater transparency and an effective weekly visualisation meeting. Nevertheless, two stakeholders stated that there was scope for closer collaboration at a senior level. Other comments included a desire for greater engagement on the region's investment decisions, including maintenance and renewal; better communication on the delivery of outcomes; and improving on areas of low score identified by RM3P.

Improvement plan

7.19 A number of stakeholders highlighted that the region was demonstrating an overly tactical focus to addressing performance issues. While these immediate initiatives were understood by stakeholders, they did not understand the region's

performance improvement strategy. Concern was expressed that the region's actions were overly reactive and not based on an analysis of root causes.

7.20 Connected to this, concerns were raised that the region did not properly understand its assets at system level, nor was there sufficient understanding of strategic assets in planning. A danger was highlighted that short-term needs had been prioritised and longer-term thinking was lacking. Overall, stakeholders lacked confidence that improvement plans would deliver the necessary levels of improvement, with a particular concern that in the Thames Valley poor performance might become normalised.

7.21 Freight operating companies fed back that freight was not sufficiently factored into performance improvement, though one freight operating company noted that freight performance was improving on the Wales route. Freight operating companies were concerned that delivery plans were overly weighted to the Thames Valley at the expense of other areas of the region. The need to improve reliability of the Tytherington freight branch was collectively highlighted. However, stakeholders expressed opposing views on the correct prioritisation of the competing demands of freight, metro services or long-distance passenger services for performance improvement, with these views also applying to prioritisation during incident response. Some stakeholders stated that they were imposed upon when it came to performance improvement and incident response decisions.

Operational management

7.22 A range of concerns were raised about the loss of operational knowledge and expertise in the region. A concern was expressed that the consolidation of the Thames Valley Signalling Centre had led to the loss of signalling expertise. Operationally, stakeholders expressed a view that there was an over-reliance on a small number of capable people and Network Rail needs greater depth of operational expertise. Similar feedback was provided about the inconsistent use of performance management processes and tools.

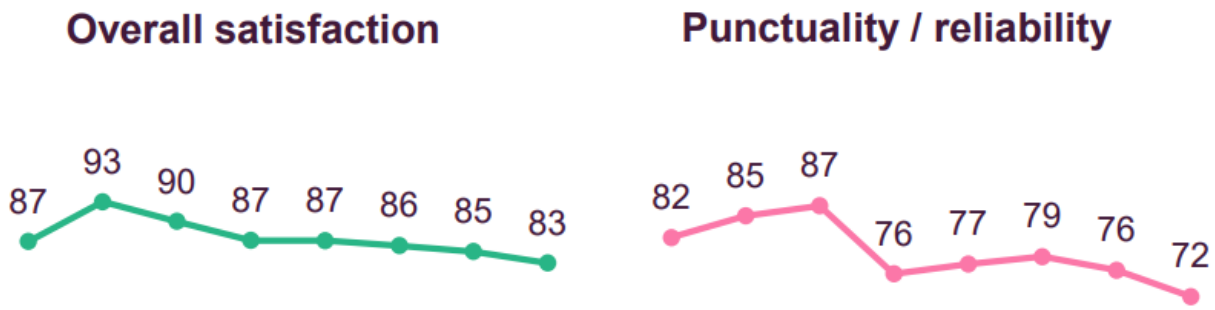
7.23 Stakeholders drew attention to the impact that poor quality delay attribution and delay attribution under-resourcing has had, with a particular concern caused by a gap in historical delay attribution on the Wales route, which has impacted the ability to accurately direct performance improvement activity and plan future performance levels.

Passenger impact

7.24 Transport Focus set out that performance is the second highest priority for passengers in the region and plays a significant role in passengers' perception of value for money and likelihood of travelling. Its Rail User Survey shows a decline in overall satisfaction, and punctuality and reliability from 6 October 2021 to 4 February 2024 for two of the major train operating companies in the region, Great Western Railway and Transport for Wales Rail (see Figure 7.1). London TravelWatch highlighted that with over 700,000 journeys made on the Elizabeth Line each day, poor performance on the Elizabeth Line has a big impact on many passengers.

Figure 7.1 Passenger satisfaction and punctuality/reliability, 6 Oct 2021 to 4 February 2024

Great Western Railway

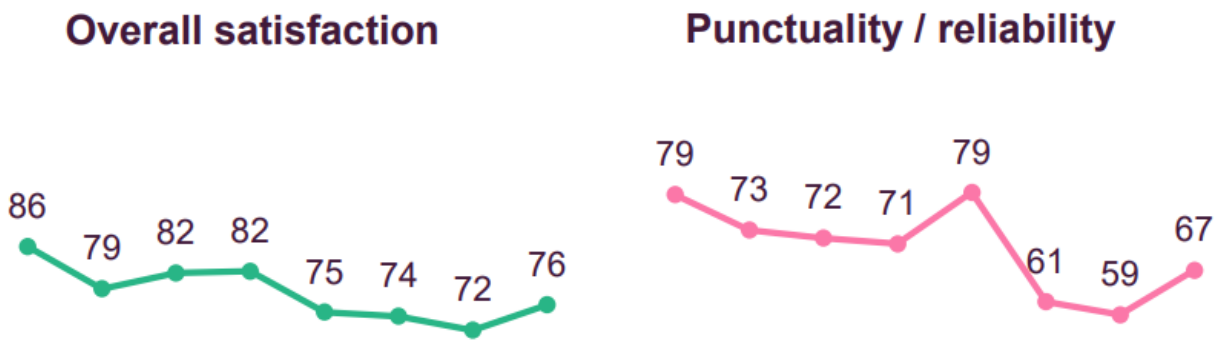


Time period dates (left to right): 6 Oct 2021 to 9 Jan 2022, 12 Jan to 3 Apr 2022, 8 Apr to 26 June 2022, 1 July to 18 Sep 2022, 23 Sep to 11 Dec 2022, 16 Dec 2022 to 19 Mar 2023, 26 Mar to 20 Aug 2023, 1 Sep 2023 to 4 Feb 2024.

Sample size overall satisfaction: 327, 286, 187, 243, 259, 214, 265, 278

Sample size punctuality, reliability: 325, 286, 187, 243, 258, 214, 265, 278

Transport for Wales



Time period dates (left to right): 6 Oct 2021 to 9 Jan 2022, 12 Jan to 3 Apr 2022, 8 Apr to 26 June 2022, 1 July to 18 Sep 2022, 23 Sep to 11 Dec 2022, 16 Dec 2022 to 19 Mar 2023, 26 Mar to 20 Aug 2023, 1 Sep 2023 to 4 Feb 2024.

Sample size overall satisfaction: 103, 113, 77, 69, 83, 89, 81, 95

Sample size punctuality, reliability: 102, 113, 77, 69, 82, 89, 81, 95

(Some base sizes are below 100, which would be the ideal minimum for analysis)

Transport Focus Rail User Survey, February 2024

Incident management and learning

7.25 Stakeholders stated that incident management on the Wales route is well coordinated with a good joint command structure in place for major incidents, however, with room for improvement for less significant incidents. Stakeholder feedback for the Western route was less positive. Train and freight operating companies variously highlighted an over-reliance on a small number of people, inconsistencies in the implementation of contingency plans, lack of strategic leadership during incident response and management of large incidents, lack of consultation, issues arising from not all train operating companies being co-located with Network Rail, timeliness of coordination, and understanding crew and traction diagrams.

7.26 A number of stakeholders also stated that a greater focus and joined up approach is needed for incident learning reviews, flagging issues with attendance (either not being invited or limited attendance at reviews). Some concerns were expressed as to the extent to which learning reviews led to positive change.

Communication

7.27 While stakeholders had a good grasp of individual performance improvement initiatives, they were less clear about the region's strategy for performance improvement. A number of stakeholders also highlighted that outcomes needed to be better tracked and communicated to them.

7.28 In their response, passenger representative organisations highlighted that Network Rail had not issued a public acknowledgement or explanation of continued poor train performance, had not publicised the measures taken to address underlying causes, nor set out when improvement may be seen. Following the launch of the investigation and a spate of high profile delay incidents in December 2023 and January 2024, the region has been more forthcoming in describing the extent of its performance challenges and the steps that it is taking to address them. In February 2024 the region publicly shared some additional detail on the actions it was taking to improve the Thames Valley corridor along with an expectation that it would take eighteen months for the route's maintenance and infrastructure renewals to be back on track, at which point good performance would become business as usual. In light of a significant OLE incident on 7 December 2023, the need for improved stranded train management and communications was raised by passenger representative organisations.

Assets of greatest concern

7.29 Stakeholders highlighted that the condition of track, axle counters, points and overhead line were the assets of greatest concern. The head span overhead line between Paddington and Airport Junction was of particular concern due to its age and the high profile of incidents that have occurred with that overhead line. While there are plans to replace the overhead line headspans during CP7, stakeholders did not know when this would be.

7.30 There were also concerns expressed about vegetation management, with this being a particular priority on the Wales route. While there was recognition of the work done to improve the position on vegetation management, there were concerns that it would not be sufficient to meet stakeholders' expectations.

7.31 A few stakeholders also provided feedback that they had observed that both planned and ad hoc maintenance has become less timely.

Future risks

7.32 Stakeholders flagged concerns about the impact of the construction of Old Oak Common station on train performance, together with the region's level of funding in

CP7 (April 2024 to March 2029). Resilience to the impacts of climate change was also identified as a key issue, with repeat flooding events highlighting the impact adverse weather is having on the network.

Recommendations

7.33 Earlier in our report we made recommendations that have a particular bearing for stakeholders given the feedback that they have provided us, namely that Wales & Western:

(a) Must improve its understanding of why the impacts of incidents are increasing (with more delay per incident) and then review its plans to ensure they target relevant factors within its control. To improve primary delay and overall performance outcomes, it should measure, report and manage quantifiable elements of operational response that are within its control across the Wales & Western region (recommendation NR1);

(b) Must establish clear timebound milestones for its plan to sustainably improve asset reliability and sustainability on the Western route out of Paddington (Project Brunel) and must track and report delivery against these. It must incorporate the more holistic approach being proposed for Project Brunel into its Performance Recovery Plan to deliver sustainable improvements across the region (recommendation NR2);

(c) Should consider how best to drive greater cross-industry engagement on delivering system-wide performance, including consideration of a cross-industry forum senior governance forum to improve alignment on desired industry outcomes and resolve disputes (recommendation NR5); and

(d) Must review how it leads learning from complex and multilateral delay incidents to make sure that recommendations are fully and effectively implemented, and knowledge is shared across the industry. The process must include reviewing common themes across the portfolio of incident reviews (recommendation NR10).

7.34 In its response to these recommendations, Network Rail should make sure that its strategy for train performance improvement is fully understood by train and freight operating companies, grounded in root cause analysis and clearly linked to individual improvement actions.

7.35 It is essential that Network Rail enables train and freight operating companies to better hold it to account for delivery of train performance improvement through

improved visibility of its plan and regular communication of outputs and outcomes. This is particularly pertinent for Project Brunel and performance improvement in the Thames Valley corridor.

7.36 Network Rail has described a wide range of engagement touchpoints with its stakeholders. It is clear Wales & Western takes stakeholder engagement seriously with significant time commitment dedicated to it. As part of our recommendation to Network Rail to take a lead in seeking to drive greater cross-industry performance improvements, it should also reflect on its stakeholder engagement touchpoints to make sure that they are structured to most effectively govern performance improvement (NR5).

7.37 Stakeholders have highlighted incident learning as a significant area for Network Rail to improve on. In addressing our incident learning recommendation (NR10), Network Rail should make sure that it takes a joined-up approach to incident learning with train and freight operating companies, to achieve appropriate participation in each other's incident learning reviews and transparency in tracking delivery of improvement actions.

7.38 Lastly, we would urge Network Rail to adopt a renewed focus on passenger communication to make sure that passengers understand what is driving poor performance, what the region is doing to remedy this and when passengers can expect improved reliability and punctuality. Network Rail should continue to work with train operating companies to achieve timeliness and transparency of communications to passengers during delay incidents.

8. Cross-industry opportunities

8.1 On 14 February 2024, we convened an industry roundtable meeting as part of the investigation. The purpose was to take a cross-industry, cross-system view of performance in the Wales & Western region, identifying areas that industry can collectively work on.

8.2 As a result of industry discussion at that meeting, we asked rail industry participants that they collectively consider:

(1) **Operational communication:** Industry should explore an integrated information system for use by train operating companies and freight operating companies when deviations from the plan occur

(2) **Contingency planning:** Industry should take steps to develop a simple industry framework to assist operational decision makers about when to prioritise recovery to “timetabled service” vs moving passengers & freight

(3) **Incident learning**: Industry should take steps to embed and track the implementation of lessons identified - the use of PIMS resources and the Industry Performance Knowledge Hub may help

Recommendation to industry IN3: Industry should consider how to drive forwards improvements to train performance in Wales & Western which rely on cross-industry collaboration. This should include securing greater strategic alignment and shared objectives that can be cascaded to those delivering day-to-day service, strengthening contingency plans for dealing with delays while retaining flexibility in their application, further roll out of technology to improve incident response and service recovery and improving cross-industry learning from incidents.

8.3 A summary note of the roundtable is included at Annex C.

9. Recommendations

9.1 We have set out below a consolidated list of our recommendations:

Network Rail

9.2 **Recommendation NR1:** Network Rail must improve its understanding of why the impacts of incidents are increasing (with more delay per incident) and then review its plans to ensure they target relevant factors within its control. To improve primary delay and overall performance outcomes, it should measure, report and manage quantifiable elements of operational response that are within its control across the Wales & Western region.

9.3 **Recommendation NR2:** Network Rail must establish clear timebound milestones for its plan to sustainably improve asset reliability and sustainability on the Western route out of Paddington (Project Brunel) and must track and report delivery against these. It must incorporate the more holistic approach being proposed for Project Brunel into its Performance Recovery Plan to deliver sustainable improvements across the region.

9.4 **Recommendation NR3:** Wales & Western's leadership must focus on strong performance governance and accountability to drive a performance-led culture. In particular, it must review whether its current structure, with infrastructure management separated from route accountability, supports effective decision making and performance management. In the past, Western has primarily been focused on long distance passenger and freight flows – in recognition that there are now more regional stakeholders with different priorities (including metro-style services), Wales & Western should drive an organisational and cultural change programme to ensure it better manages its stakeholders' varied and potentially competing needs.

9.5 **Recommendation NR4:** Network Rail must carry out an ex-post review of its timetable modelling carried out for the introduction of Elizabeth Line services, to ensure it learns lessons and applies these in planning for future major changes – such as the introduction of HS2. Network Rail should consider whether its timetable modelling capability should be augmented to take better account of the change's impact on asset condition, reliability and resilience – and therefore train performance – rather than core performance of the timetable alone.

9.6 **Recommendation NR5:** Network Rail should consider how best to drive greater cross-industry engagement on delivering system-wide performance, including consideration of a cross-industry senior governance forum to improve alignment on desired industry outcomes and resolve disputes.

9.7 **Recommendation NR6:** Network Rail must review its ongoing access requirements and arrangements for delivering inspection, maintenance, renewal and repair works (building on the approach being developed for Project Brunel) to ensure it can manage its assets in a sustainable way while meeting the needs of its customers. This should include looking at best practice being adopted in other routes which are similarly heavily-trafficked and assessing the scope for better use of tools and technology.

9.8 **Recommendation NR7:** Network Rail should deliver on its plans to minimise causes of delay arising from poor asset reliability. This should include continuing to target the root causes that lead to temporary speed restrictions on any line of route and to ensure it is maximising its use of leading indicators of future problems.

9.9 **Recommendation NR8:** In support of its strategic plan to improve asset reliability and sustainability on the Western route out of Paddington (Project Brunel), Network Rail must provide a clear, timebound plan for renewing the overhead line headspans from Paddington to Heathrow Airport Junction and a mitigation plan to ensure reliability until that work is complete.

9.10 **Recommendation NR9:** Network Rail should continue to focus on ways to maximise timetable resilience to basic perturbation within the possibilities of the existing specification, learning from best practice in other routes.

9.11 **Recommendation NR10:** Network Rail must review how it leads learning from complex and multilateral delay incidents to make sure that recommendations are fully and effectively implemented, and knowledge is shared across the industry. The process must include reviewing common themes across the portfolio of incident reviews.

9.12 **Recommendation NR11:** Network Rail should continue to deliver improved operational and signalling capability, establishing and delivering against a clear timebound plan and developing a suite of indicators to measure capability. To support development of its operational capability. Network Rail should ensure that future significant operational changes – such as the adoption of new decision support technologies – have appropriate business change programmes (including consideration of human factors) to support their introduction.

Industry

9.13 **Recommendation to industry IN1:** Industry should review how it can ensure processes for planning major service upgrades and fully consider the cumulative impact of successive major changes, including on asset condition and reliability, when identifying supporting work required.

9.14 **Recommendation to industry IN2:** Industry should consider how to provide greater clarity about the roles, responsibilities and accountabilities of the ESG and related specification processes to help drive improvements in oversight of, and planning for, major change.

9.15 **Recommendation to industry IN3:** Industry should consider how to drive forwards improvements to train performance in Wales & Western which rely on cross-industry collaboration. This should include securing greater strategic alignment and shared objectives that can be cascaded to those delivering day-to-day service, strengthening contingency plans for dealing with delays while retaining flexibility in their application, further roll out of technology to improve incident response and service recovery and improving cross-industry learning from incidents.

Annexes

Annex A: Network Licence conditions of focus for the investigation

In our letter to Network Rail initiating the investigation, we stated that the investigation would focus on the following Network Licence conditions 1 (network management), 3 (sufficient resources) and 5 (asset management). These conditions are listed below:

1 Core Duties

Network Management Duty

1.1 The "Network Management Purpose" is to secure:

(a) the operation and maintenance of the Network;

(b) the renewal and replacement of the Network; and

(c) the improvement, enhancement and development of the Network,

in each case in accordance with best practice and in a timely, efficient and economical manner so as to satisfy the requirements set out in Condition 1.2.

1.2 For these purposes, the requirements are the reasonable requirements of persons providing services relating to railways and Funders, including Potential Providers or Potential Funders, in respect of:

(a) the quality and capability of the Network; and

(b) the facilitation of railway service performance in respect of services for the carriage of passengers and goods by railway operating on the Network.

1.3 The licence holder shall achieve the Network Management Purpose to the greatest extent reasonably practicable having regard to all relevant circumstances including the ability of the licence holder to finance its Licensed Activities (the "Network Management Duty").

1.4 In complying with the Network Management Duty, the licence holder shall in particular ensure that it duly takes into account the interests of all classes of passenger operator and freight operator in satisfying the requirements set out in Condition 1.2.

Stakeholder Engagement Duty

1.7 The "Stakeholder Engagement Purpose" is to ensure that the licence holder treats Stakeholders in ways appropriate to their reasonable requirements in their capacity as Stakeholders.

1.8 The licence holder shall achieve the Stakeholder Engagement Purpose and, in particular, shall, to the greatest extent practicable:

(a) deal with Stakeholders with due efficiency and economy, in a timely manner and with the degree of skill, diligence, prudence and foresight which should be exercised by a skilled and experienced network facility owner and operator; and

(b) ensure that its engagement with Stakeholders is:

(i) effective in supporting the licence holder's achievement of the Network Management Purpose and the Passenger Information Purpose, including by ensuring Stakeholders' views are duly taken into account;

(ii) inclusive, in that the licence holder seeks to involve all relevant Stakeholders in a fair and proportionate manner, including by adopting different approaches to reflect Stakeholders' different capabilities and interests;

(iii) well-governed, in that it is underpinned by effective processes and governance arrangements; and

(iv) transparent, in that sufficient information is made available to enable effective engagement with Stakeholders

(the "Stakeholder Engagement Duty").

Route Business and System Operator responsibilities

1.9 Each Route Business and the System Operator shall comply with the Core Duties in the performance of their functions.

3 Sufficient Resources

3.1 The licence holder shall at all times act in a manner calculated to secure that it has available sufficient Resources, on such terms and with all such rights as shall:

(a) enable it to properly and efficiently carry on the Permitted Business, including properly taking into account the interests of freight operators and the interests of passenger operators in respect of services which cross more than one Route Area;

(b) enable the Route Businesses and the System Operator to properly and efficiently perform their functions; and

(c) enable it to comply in all respects with its obligations under the Act and this licence.

Route Business and System Operator responsibilities

3.2 Each Route Business shall at all times act in a manner calculated to secure that it has available sufficient Resources, on such terms and with all such rights as shall enable it to:

(a) properly and efficiently carry on its Route Functions, including complying in all respects with its obligations under this licence; and

(b) comply in all respects with the licence holder's obligations under the Act in the performance of its Route Functions.

5 General network management responsibilities

Asset management policies and criteria

5.5 In complying with the Network Management Duty, the licence holder shall:

(a) adopt policies and criteria in respect of the maintenance, renewal, replacement, improvement, enhancement and development of the Relevant Assets, which demonstrate how the licence holder will comply with the Network Management Duty (including satisfying the reasonable requirements of freight operators and the reasonable requirements of passenger operators in respect of passenger services which cross more than one Route Area);

(b) from time to time and whenever directed by ORR review and, if necessary, revise any such adopted policies and criteria to ensure that they continue to demonstrate how the licence holder will comply with the Network Management Duty;

(c) in its development and revision of those policies and criteria, consult each Route Business and the System Operator; and (d) make appropriate information about the policies and criteria which it has adopted readily accessible to persons providing services relating to railways and Funders, including Potential Providers and Potential Funders.

5.6 The licence holder shall apply the policies and criteria which it has adopted.

6 Route Business network management responsibilities

Asset management policies and criteria

6.6 Each Route Business shall apply the policies and criteria adopted under Condition 5.5 in the performance of its Route Functions.

Maintaining asset information

6.7 Each Route Business shall maintain appropriate information about the Relevant Assets which have been allocated to it by the licence holder, including information about their condition, capability and capacity.

6.8 The information maintained under Condition 6.7 must be accurate and readily accessible.

Annex B: Holding to account

B.1 ORR's core purpose is to protect the interests of rail and road users, improving the safety, value and performance of railways and roads today and in the future.

B.2 ORR will monitor and hold Network Rail to account against its network licence. Network Rail has three central obligations within the licence.

- Securing the operation, maintenance, renewal and enhancement of the network in order to satisfy the reasonable requirements of its customers and funders.
- Engaging with all stakeholders in ways appropriate to their reasonable requirements.
- Providing information to enable train operators to meet their obligations to passengers, so that passengers can plan and make their journeys with confidence.

B.3 ORR's Holding to Account policy sets out how we monitor performance to identify if we need to act and sets out the steps we may take to secure improvement. This could include both early intervention and the use of our formal enforcement powers. Our approach is outcomes-focused, recognising the need for any actions to be risk-based, targeted, proportionate and transparent.

Annex C: Industry Roundtable Meeting

On 14 February 2024, ORR convened an industry roundtable meeting in Bristol as part of the investigation. The purpose was to take a cross-industry, cross-system view of performance in the Wales & Western region, identifying areas that industry can collectively work on. A summary of the meeting is provided below.

Attendees: ORR (chair), Network Rail (Wales & Western and System Operator), MTR Elizabeth Line, Great Western Railway, Heathrow Express, CrossCountry, Transport for Wales Rail, DB Cargo, GB Railfreight, Freightliner, and Transport for London

Item 1 WELCOME

1. The Chair welcomed all the participants.

2. He explained that ORR had initiated an investigation into Wales & Western because train performance in the Wales & Western region was not where it is expected to be and continuing to show a negative trend. The purpose of the roundtable was to take a cross-industry, cross-system view of performance, identifying areas that industry can collectively work on.

Item 2 CHALLENGES IN THE SHORT TERM

Identification of industry challenges

3. Roundtable participants discussed the key industry challenges in the region. The following challenges were identified:

- **Change management –** the magnitude and effect of major change on the network and operational assets across the region.
- **Climate resilience –** the imbalance between the scale of the climate challenge and funding on operations, maintenance and renewal; managing vegetation, particularly across Wales' coastal railway.
- **Network assets –** underlying asset reliability; the extent to which the capacity and capability of assets were being maximised.
- **Whole system approach –** the competing demands of satisfying different markets on the railway; tension between the operational priorities of stakeholders in the region and the need for a more customer-centric approach; greater consideration of the effect of late notice access requests and the use of temporary speed restrictions; the requirement for sufficient focus on areas outside of the Thames Valley while recognising the importance of that location for the network.
- **Regional operating culture:** other regions were identified as having a greater focus on getting trains moving again following incidents, quicker

and more effective incident response; other route directors may have more direct decision-making levers for asset management and engineering at their disposal due to historic organisational differences, as in Wales & Western these have been set up as a regional activity; frontline staff need to feel more empowered to make good operating decisions.

- **Specific local operating challenges:** Network Rail identified challenges with recent high signaller turnover in the region and described its approach to forward resource planning; a possible lack of alignment between signallers' and controllers' approaches at the Thames Valley Signalling Centre and Swindon Control Centre. Examples highlighted smaller and more integrated control centres, including in Wales, where information-sharing and immediate communication supported getting trains moving more quickly. A participant observed that there was scope for greater coordination between control systems across the industry.

4. There was general agreement that new senior Network Rail staff in the region were having a positive impact so far.

Item 3 INDUSTRY COLLABORATION

Lessons drawn from Control Period 6 and opportunities for cross-industry improvement

5. The Chair introduced the session by asking what cross-industry improvement measures could be taken forward in light of the challenges participants had identified. Participants identified the following immediate opportunity areas:

6. **Local railway initiatives:** examples such as the Cambrian Coast and Devon & Cornwall Local Railway initiatives (multi-organisation with shared targets and P&L) have shown the benefits of developing location-specific management units for performance, customer service and financial efficiency. However, scaling this to a multi-operator, multi-funder railway was likely to be more challenging.

7. **Operational communication:** there is an opportunity to develop shared/open systems to enable stakeholders to have common visibility of network status and problems on the network, which could assist better joint decision-making.

8. **Contingency planning:** Participants highlighted the importance of design and implementation of contingency plans. Key points that emerged were:

- **Right outcome:** the best approach depends on circumstances such as incident time of day; greater consideration for how to assess the best outcome for contingency plans – whether moving passengers, particular performance measures or overall delay. Could modelling be used to understand likely outcomes better.
- **Flexibility:** There should be sufficient flexibility in contingency planning and empowered decision-making within a framework.

9. **Management of access:** while recognising short-term need for additional access during asset recovery, participants highlighted opportunities for better management and more effective use of engineering access.

- **Using access differently:** such as putting more activities into granted access, or looking differently at the days of the week/hours of the day for disruptive possessions;
- **Late notice changes to possessions:** late notice changes are highly disruptive. Compliance with the Draft Period Possession Plan timescales can help deliver a well-planned, predictable and high performing railway.
- **Demonstrating the benefits of possessions:** improved explanation of the benefits of series of possessions, to help inform any compromises that may be needed to grant access to Network Rail and support stakeholder management. This should include raising awareness that some access requests are required to maintain asset compliance and are not evaluated on a performance merits basis. Objections of one party should not impede critical interventions if it is shown objectively to be the best way to deliver.
- **Dispute resolution**: parties should be prepared to use the dispute resolution processes through to conclusion to resolve conflicts, if appropriate.

Incident learning reviews (ILRs): there must be processes to ensure learning from incidents (inside and outside the region) is built in to operational and engineering processes. These should move from specifics to consider wider applications for improvement. The industry peer review in 2023 provided a useful foundation, but further work is required.

Role of ORR: ORR may be able to assist by looking at how to make sure any metrics and incentives (such as On Time, schedule 8 or schedule 4) do not drive unintended consequences for passengers and freight customers.

Annex D: List of acronyms

Acronym	Definition
ARS	Automatic Route Setting
CP	Control Period (control period 6 (CP6) and control period 7 (CP7)
CRI	Composite Reliability Index
CRM-P	Consistent Region Measure - Performance
DfT	Department for Transport
DPI	Delay Per Incident
E&P	Electrification and Plant
ESG	Event Steering Group
ESR	Emergency Speed Restriction
FDM-R	Freight Delivery Metric by Region
FNPO	Freight & National Passenger Operators
FOC	Freight Operating Company
GWEP	Great Western Electrification Project
GWR	Great Western Railway
HST	High Speed Train or InterCity 125
ILR	Incident Learning Review
ITSR	Integrated Train Service Recovery
JSP	Joint Performance Strategies
MOM	Mobile Operations Manager

Acronym	Definition
NR	Network Rail
OLE	Overhead Line Equipment
ORR	Office of Rail and Road
PIMS	Performance Improvement Management System
PMO	Programme Management Office
PRP	Performance Recovery Plan
PSR	Permanent Speed Restriction
RAM	Route Asset Manager
RAPT	Reliability and Performance Tool
RBM	Risk-based Maintenance
RfLI	Rail for London Infrastructure
RM3P	Region Management Maturity Model for Performance
RSSB	Rail Safety and Standards Board
SAF	Service Affecting Failures
SIP	Strategic Improvement Platform
SPIR	Significant Performance Incident Review
TfW	Transport for Wales
TOC	Train Operating Company
tph	Trains per hour
TRI	Track Reliability Index

Acronym	Definition
TSR	Temporary Speed Restriction
TVSC	Thames Valley Signalling Centre
WRCCA	Weather Resilience and Climate Change Adaptation

Annex E: Comparison of Wales & Western asset base to network wide

Network-wide or region	Asset base and measure description	Year 2019/20	Year 2020/21	Year 2021/22	Year 2022/23
Network-wide	Track - % Used Life – Rail	54%	55%	56%	56%
Wales & Western	Track - % Used Life – Rail	51%	52%	53%	53%
Network-wide	Track - % Used Life - Switches & Crossings	51%	51%	50%	51%
Wales & Western	Track - % Used Life - Switches & Crossings	50%	50%	50%	51%
Network-wide	Track - % Used Life – Sleepers	67%	68%	69%	69%
Wales & Western	Track - % Used Life – Sleepers	65%	66%	66%	67%
Network-wide	Track - % Used Life – Ballast	52%	53%	54%	55%
Wales & Western	Track - % Used Life – Ballast	51%	52%	53%	54%
Network-wide	EP - Remaining Life - Overhead Line Equipment (OLE) (%)	60.30%	59.17%	58.03%	57.09%
Wales & Western	EP - Remaining Life - Overhead Line Equipment (OLE) (%)	91.93%	90.56%	89.18%	87.81%
Network-wide	EP - Remaining Life - Signalling Power Cable (%)	49.80%	48.08%	46.79%	45.14%
Wales & Western	EP - Remaining Life - Signalling Power Cable (%)	60.55%	58.88%	57.22%	56.30%
Network-wide	Average condition of minor deck elements (PLBE)	64.57	66.25	66.36	66.3
Wales & Western	Average condition of minor deck elements (PLBE)	60.42	63.07	63.01	62.71
Network-wide	Total Signalling Condition Index (SICA Remaining Life)	14.9	14.8	14.6	14.5

Network-wide or region	Asset base and measure description	Year 2019/20	Year 2020/21	Year 2021/22	Year 2022/23
Wales & Western	Total Signalling Condition Index (SICA Remaining Life)	14.3	13.7	13.7	13.3
Network-wide	Mechanical Signalling Condition Index (SICA Remaining Life)	10.4	10.1	9.8	9.9
Wales & Western	Mechanical Signalling Condition Index (SICA Remaining Life)	-	7.3	7.9	8.7
Network-wide	Relay Signalling Condition Index (SICA Remaining Life)	12.3	12.4	11.9	11.7
Wales & Western	Relay Signalling Condition Index (SICA Remaining Life)	-	9	9	9.2
Network-wide	Electronic Signalling Condition Index (SICA Remaining Life)	17.7	17.3	17.3	17.1
Wales & Western	Electronic Signalling Condition Index (SICA Remaining Life)	-	18.2	17.6	16.6

*Source: Network Rail Annual Return 2023 (*Network-Rail-Infrastructure-Limited-annual-return-2023-data-tables.xlsx (live.com)*)*

Explanation of table

E.1 As with any portfolio analysis there will be assets within each asset family that are at the extreme edges of the age / condition distribution.

Track

E.2 The sustainability of track assets is measured by the percentage of used life for plain line rail, switches and crossings (S&C), sleepers and ballast. Used life for track assets is based on the average service life established from the type of asset. In reality, there are other influences on track deterioration such as the local environmental and geological conditions, train designs and wheel set conditions. There are also variable requirements for the useful life of the asset, such as line performance requirements and track access for maintenance. This means that the actual track service life can vary.

E.3 The calculation of the average service life for plain line rail, S&C and sleepers is based on the annual tonnage that has passed over the asset through its lifetime

and the assets' characteristics that affect the rate of wear and fatigue on the asset. The used service life for each asset is accumulated year on year from its installation, dependent on the traffic running over it. Ballast sustainability is defined by the percentage of the ballast void (the space between ballast stones) that is filled up with dust and fines. This can be a result of wear and fatigue on the asset, such as erosion due to traffic. This gives an indication of the average life of the asset. It is then possible to calculate the used life of that asset.

E.4 A lower percentage represents better sustainability.

Electrical power

E.5 Asset condition sustainability for electrical power assesses the remaining life of three main asset types in the electrical power portfolio: conductor rail, Overhead Line Equipment (OLE) and Signalling Power Supply (SPS) cable. The remaining life is the time until the asset must be replaced, as a percentage of the total life of the asset. The calculation method for each asset type is set out below.

E.6 The remaining life of a distinct section of conductor rail (measured in kilometres) is the percentage of the maximum allowable wear that remains. The maximum allowable wear varies according to the type of conductor rail and the electrical protection characteristics.

E.7 The remaining life for a wire run of OLE is the percentage of the Asset Technical Life (ATL) that remains. The Asset Technical Life is the point at which, on average, the asset would, based on engineering judgement, reach the end of its useful life. ATL reflects differences in versions of asset type, and utilisation.

E.8 For a given SPS cable, remaining life is a percentage of the ATL that remains. The ATL is the average age at which the asset would reach the end of its useful life, based on engineering standard and reflecting differences in cable types. Current age is a parameter for condition and is the difference between the current year and the year of installation of the cable.

E.9 For all asset types, a higher figure indicates better performance.

Deck elements

E.10 The average condition of major deck elements assesses Network Rail owned overbridges and underbridges. Footbridges, third party bridges and major structures are excluded. The purpose of this measure is to help provide assurance that we are managing our bridges sustainably. Major deck elements attract a large amount of investment, and typically degrade faster than the substructures.

E.11 A higher number indicates better performance.

Signalling

E.12 The sustainability of signalling assets is measured in terms of average remaining life of Network Rail signalling infrastructure. Signalling Infrastructure Condition Assessment (SICA) is a process by which signalling assets are graded according to their condition. The process requires the inspection of signalling assets in the form of either primary or secondary inspections.

E.13 Primary inspections are performed every five years from commissioning until predicted remaining life is less than ten years. Once predicted remaining life of the asset is less than ten years, secondary inspections are performed every three years until predicted remaining life is less than three years. Following this point, secondary inspections are performed annually. Secondary inspections encompass all elements of primary inspections and some additional elements.

E.14 Inspections are performed on a sample of the signalling infrastructure within the area of the railway controlled by an interlocking, and a condition grading is assigned to the assets. Condition grading is primarily based upon the remaining life of the equipment in a signalling interlocking area, and to a lesser extent the condition of line side signalling. Network Rail uses the SICA tool to assess the remaining life of these assets, which applies algorithms and weightings based on the criticality of each asset to the overall signalling system.

E.15 A higher figure indicates better performance.

Annex F: ESG and TSR list with the number of sites with no planned removal date

Site Name	Problem	Removal Details	Date Imposed	Removal Date
Wanstrow	Track geometry and severe wetbeds	Condition of Track and Wetbeds. Construction Services delivering wetbed removal in Weeks 29, 33, 34, 35, 36 and 44. DU sleeper changing plans TBC.	07 March 2017	TBC
Frome	Longitudinal Timber holding down system, sleeper condition, track geometry and bridge strength	Structure Repairs and Track Renewal planned Christmas 2023.	19 March 2021	TBC
Pontsmill Viaduct	Structural defect on Pontsmill Viaduct	Major work planned 2025. Minor work in the interim to maintain 5/10 TSR.	02 December 2021	TBC
Tytherington	Track geometry, rail, sleeper, and ballast condition	Speed split from T2023/203361 on 16/11/2023.	01 November 2022	TBC
Tytherington	Track geometry, rail, sleeper, and ballast condition	Speed split from T2023/203361 on 16/11/2023.	01 November 2022	TBC
Walcot Farm Bridge	Wing wall defect	Further ground investigation required on Down side for 1x wing wall. Repairs Weeks 35-38 on other Down side wing wall.	25 February 2023	TBC

Site Name	Problem	Removal Details	Date Imposed	Removal Date
Greenslade Bridge	Bridge strength	Bridge strength speed pending Network Change.	01 April 2023	TBC
Northolt	HS2 works causing ground movement	HS2 works causing ground movement. HS2 manually packing for now. 6-monthly cyclical tamping plan in place. End date for HS2 works 23/06/2024.	23 August 2023	TBC
Barnwood 683 Obtuse	Cracked obtuse crossing - 683 points	New crossing (SC120939) promise date now 04/12/2023, removal now planned 09/12/2023.	30 August 2023	TBC
Rose Farm Cutting	Crest drain being overwhelmed by run off from third party land	Crest drain cleared, monitoring being installed but timescales not yet known. Added to adverse weather site list. Speed removal plans TBC.	31 August 2023	TBC
Sonning Cutting	Bump report	Work lost in Week 30 due to RRVs being unable to access track. Being replanned for Week 38 subject to integration with renewals.	08 September 2023	TBC
Portobello	Track geometry and wetbeds	RailVac removing wetbeds in Week 45.	31 October 2023	TBC
Ruscombe to Waltham	Bump report	New speed, being tamped Week 37.	25 November 2023	TBC

Site Name	Problem	Removal Details	Date Imposed	Removal Date
Acton East	Cracked crossing - 8121A	New crossing to be installed, date TBC.	03 December 2023	TBC
UM126	Signal sighting - UM126	UM126 obscured by vegetation, 100yds sighting available.	07 December 2023	TBC
Denchworth Cyclic Top	Cyclic top	New speed.	08 December 2023	TBC
Bedlam	Track geometry and severe wetbeds	Track renewal planned Christmas 2023.		TBC

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