

Office of Rail & Road and Network Rail

Verification of Maintenance Volumes Access

#44399 Independent Reporter

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This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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A.1 Statement of Work

Glossary

Term	Description
ABP	Activity Based Planning
APS	Access Planning System
CP_n	Control Period 6, 7, etc.
CPPP	Confirmed Period Possession Plan
DPPP	Draft Period Possession Plan
E&P	Electrification and Plant
EAS	Engineering Access Statement
FOC	Freight Operating Company
FTE	Full Time Equivalent
MDU	Maintenance Delivery Unit
MST	Maintenance Standard Tasks
NR	Network Rail
ORR	Office of Rail and Road
PDR	Plan-Do-Review
PPS	Possession Planning System
PWAY	Permanent Way
SJ	Standard Jobs
SOW	Statement of Works
TOC	Train Operating Company
WO	Work Order
WON	Weekly Operating Notices
WTT	Working Time Table
Y_n	Year 1, 2, etc.

1. Executive Summary

1.1 Purpose

Arup, supported by Winder Phillips Associates (WPA), has been appointed by the Office of Rail and Road (ORR) and Network Rail under the Independent Reporter Framework to undertake a review for the Verification of Maintenance Volumes Access focussing on CP7 Y1 and Y2. The scope of this work was constrained to maintenance activities in the areas of track and electrification and plant. A copy of the Statement of Works is included in Appendix A.1.

ORR and Network Rail needed assurance that Network Rail Regions have robust plans to deliver increased maintenance activity in CP7. The key elements ORR and Network Rail asked us to verify are:

1. *In the final year of CP6 what was the actual volumes of maintenance delivered in possession and protected line blockages and did this align to the activities planned?*
2. *Does the proposed region maintenance access strategy support the volume and type of maintenance planned for year one and two?*
3. *If not, what is being done to address this and is it sufficient?*
4. *The dependence of the regions' plan on central functions within Network Rail.*

The Statement of Works restricted the review to a Maintenance Delivery Unit (MDU) from each of Network Rail's Eastern, Scotland, and Southern Regions. We reviewed plans at a Region level, gathering evidence and undertaking interviews and then used a small sample of one MDU per Region to review the final year of CP6 and Y1 and Y2 of CP7, assigning confidence levels based upon Network Rail's evidence of a robust access and maintenance plan.

1.2 Key Findings

Based on the evidence received and a number of interviews with people across Network Rail we produced an evidence pack covering over 65 lines of questions for each Region. We scored each of these on a 0-4 scale to produce confidence ratings on Network Rail's:

- Alignment of planned work to actual
- Forecasting maintenance
- Central function dependency

This informed our key findings to the questions posed in the Statement of Works, summarised below:

In the final year of CP6 what was the actual volumes of maintenance delivered in possession and protected line blockages and did this align to the activities planned?

We reviewed the actual volumes delivered by NR in CP6 Y5 and analysed volumes and activities against the delivery plan. Our data analysis has determined that Network Rail adapt their delivery plan based on the needs of the asset base which can at times identify significant changes to the delivery plan. These changes suggest that the initial plan and forecasting could be improved. However, it should be noted (as detailed within 4.3) that it has not been possible to quantify the volume of access available in any year. This is due to the inability of any Network Rail system related access to extract the data that it holds in a quantifiable manner. Network Rail provided some relevant documentation in this area; however, it was not in a format that was possible to analyse, nor was it the most accurate and up to date summary of access available. Therefore, we are recommending that Network Rail review these barriers in more detail and then consider

whether cost effective mitigations can be applied. These recommendations are shown in full within Section 1.4.

We reviewed the number of possessions and protected line blockages, and our analysis shows that availability of possessions and protected line blockages did not restrict the delivery of maintenance volumes in the final year of CP6.

Does the proposed region maintenance access strategy support the volume and type of maintenance planned for year one and two?

Based on the evidence provided, our analysis of data and focused discussions with the three Regions we are confident that Network Rail's access strategy plans for Track and E&P maintenance are likely to deliver the proposed volumes in CP7 Y1 and Y2 for the Eastern, Scotland and Southern Regions. All the evidence available to date shows the volume of maintenance delivered, aligns broadly with the level of activity planned, recognising that changing asset condition can mean that forecast requirements are amended.

Our review identified that 25%-35% of standard jobs had planned maintenance volumes greater in Y2 than in Y1 of CP7 with 75%-65% planned volumes that were reduced or the same level. Across all our evidence gathering we found access is not a significant issue to NR under delivering volumes in the areas assessed.

The data showing resourcing requirements across CP7 Track and E&P highlighted there are headcount issues where there is less resource than required in the plan. However, Network Rail has explained that additional resource is available via the supply chain, projects or Works Delivery which will mitigate the headcount gap. Based on our review of the evidence resourcing is not causing major issues in delivering maintenance volumes and is a low risk to future delivery. Although not a formal recommendation, in the interest of continuous improvement, this is an area where Network Rail could consider providing further assurance by forecasting the availability of external resource where additional support may be needed.

Our review of the backlog data for the three Regions shows it is steady or on an improving trend which is an indicator that delivery of current maintenance volumes is being achieved. The one MDU and discipline showing a rising trend is York PWAY where the reason given was cable theft causing a loss of work being able to be completed. To rectify the backlog, they have introduced a requirement for additional staff of which a change to the organisation is underway.

Our review has only looked at Y1-Y2 of CP7. There is a risk that in the future access requirements could become more restricted and / or the requirements for maintenance could increase in the later years of CP7. For an initial view we have provided an overview of the access planning timelines for Y3 which highlights the deadlines Network Rail need to achieve.

If not, what is being done to address this and is it sufficient?

While we believe the access strategy supports the volume and type of maintenance planned for Track and E&P in Y1 and Y2 there are changes which could be made to how Network Rail forecast access to better assess risks in future years. To this end we have made two recommendations for Network Rail to better identify the barriers to quantifying access and volumes and whether these could be addressed if appropriate by new technologies or system changes.

Whilst all three Regions have sufficient access, examples and processes were provided which demonstrate refinement and optimisation of access is undertaken working with the TOCs & FOCs when needed.

The dependence of the regions' plan on central functions within Network Rail.

The Regions confirmed the following dependence on central functions:

- Provision of on train monitoring fleet by Route Services;
- Technical Authority to set the standards

In relation to provision of the train monitoring fleet, we explored evidence with each Region around the number of recording runs undertaken in the three MDUs. We reviewed files detailing examples of ballast regulators, tampers and stoneblower runs across the relevant years. Our analysis indicates that where recording runs were cancelled by Route Services, they were generally replanned in a timely manner by Route Services.

The Regions are their own organisation, so the Route delivery teams have access to a local technical group for escalation which limits the input from central functions in maintenance planning.

No concerns were raised by any Region on the support they received in relation to the train monitoring fleet and our analysis did not identify any issues.

1.3 Acknowledgements

The Independent Reporter Team would like to thank ORR and Network Rail staff for their assistance with this study.

1.4 Recommendations

The following table outlines out recommendations for improvement for Verification of Maintenance Volumes Access. Further explanation to the findings linked to these recommendations are shown within Section 4.

Table 1: Table of Recommendations

No.	ORR Ref.	Recommendation to Network Rail	Intent & Benefits	Evidence of Implementation	Location in Text
1	SOW 44399-1	Our review has identified that it is not currently possible to relate access availability and required maintenance volumes in a way that the volume of access can be checked against the required maintenance. To increase the understanding of the risk this causes to delivery we recommend Network Rail undertake a review which identifies the barriers to quantification of the total volume of access and maintenance required. It should relate to specific railway geography as per the current systems used (PPS, Rail Hub & Ellipse) which limits the full and practical application of “NR/L2/MTC/PL0175 Module 02 DU Processes for Planning”.	This will allow MDUs to understand the actual amount of possession time available vs their requirements from the Maintenance Delivery Unit Annual Plan. This could then be used to compare the levels of access available to their forecasted requirement and identify any potential shortfalls and mitigate this before it becomes an issue. It could also be used to assess the impact of amended WTTs upon the maintenance requirement, avoiding the cumulative issues described in the Thames Valley. This will allow solutions to be identified to existing and developing technologies and processes, potentially minimising the amount of new technology (and therefore cost) required. It would also potentially realise efficiencies within the MDUs by removing the manual creation of access summaries which are created currently. This could have a financial or productivity benefit which would need to be quantified as part of any business case development.	Network Rail investigate and document the best value for money solution to quantify the levels of access available. This may include insight from Routes, Regions, and the System Operator into the causes of identified barriers, along with possible ways to overcome them, the ease of doing so, and the associated benefits.	4.3

No.	ORR Ref.	Recommendation to Network Rail	Intent & Benefits	Evidence of Implementation	Location in Text
2	SOW 44399-2	Once recommendation 1 is completed consider whether any of the barriers identified, can be removed or their impacts lessened by the adoption of new systems, or changes to current / in development technology - such as PPS and its replacement APS, Schedule It (a tool operating as proof of concept within some regions outside of the scope of this review which brings information from the existing systems together), Rail Hub and Ellipse. If appropriate and cost effective, develop new technologies to meet these requirements or include the requirements in the scope of existing system upgrades in future (or the current development of APS for example).	This will allow MDUs to more easily understand the actual amount of possession time available. This could then be used to compare the levels of access available to their forecasted requirement and identify any potential shortfalls and mitigate before it becomes an issue.	Building on the outcomes of implementing Recommendation 1, Network Rail produce a Statement of Requirements for either the procurement of a new access planning system or the reconfiguration of an existing system.	4.3

2. Background

This review was commissioned by Network Rail and ORR after Network Rail's strategic business plan identified that due to a constrained funding settlement for this control period, there were opportunities to reduce core asset renewals expenditure in CP7. This included seeking to obtain further life from its assets through increased minor works and maintenance activity. This will mean there is a greater reliance on maintenance work to manage asset condition and performance. ORR accepted this in its draft and final PR23 determinations.

ORR also identified that Network Rail was able to demonstrate greater alignment between maintenance planning and renewals (as set out in its final determination). At the point of delivery plan Network Rail identified further movement from renewals to maintenance. ORR accepted this plan but noted it will need to enhance its holding to account of maintenance in CP7 in a letter to Network Rail dated 28 March 2024 ([orr.gov.uk](https://www.orr.gov.uk)¹).

In addition to this Network Rail is going through a transition to reduce red zone working and the 2023 Annual Report of Health and Safety highlighted that use of possessions and protected line blockages has increased from 31% in 2019 to 60% in 2023. With increased maintenance volumes expected in CP7 it is important to verify Network Rail's processes surrounding planning and delivery of maintenance activities in possessions and protected line blockages are robust.

Network Rail's network licence (Section 1.1²) identifies securing the operation, maintenance, renewal and enhancement of the network to satisfy the reasonable requirements of its customers and funders in a timely, efficient and economical manner. This is a part of the core duties section and is fundamental to Network Rail's role.

Maintenance is vital to managing asset performance. If the activities are not delivered there is a risk to the railway network. Therefore, ORR and Network Rail need assurance that Network Rail regions have robust plans to deliver the increased activity in CP7.

The key areas that Network Rail and ORR are seeking to verify via this review are:

1. In the final year of CP6 what was the actual volumes of maintenance delivered in possession and protected line blockages and did this align to the activities planned?
2. Does the proposed region maintenance access strategy support the volume and type of maintenance planned for year one and two?
3. If not, what is being done to address this and is it sufficient?
4. The dependence of the regions' plan on central functions within Network Rail.

As per the Scope of Works this review has focussed on three Network Rail Regions namely Scotland, Southern and Eastern. The review has also been constrained to maintenance activities in the areas of track and electrification and plant. As such all other Network Rail's Regions and maintenance activities are outside of the scope of this review, as are CP7 years 3 to 5.

¹ [cp7-delivery-plan-and-holding-network-rail-to-account-2024-03-28.pdf](#)

² [network-licence-granted-to-network-rail.pdf](#)

3. Approach to Evidence Gathering

3.1 Methodology

At the inception meeting between Arup, Network Rail and the ORR, the proposed methodology, summarised in Figure 1. below was tabled and agreed. The approach to stakeholder engagement was also agreed.

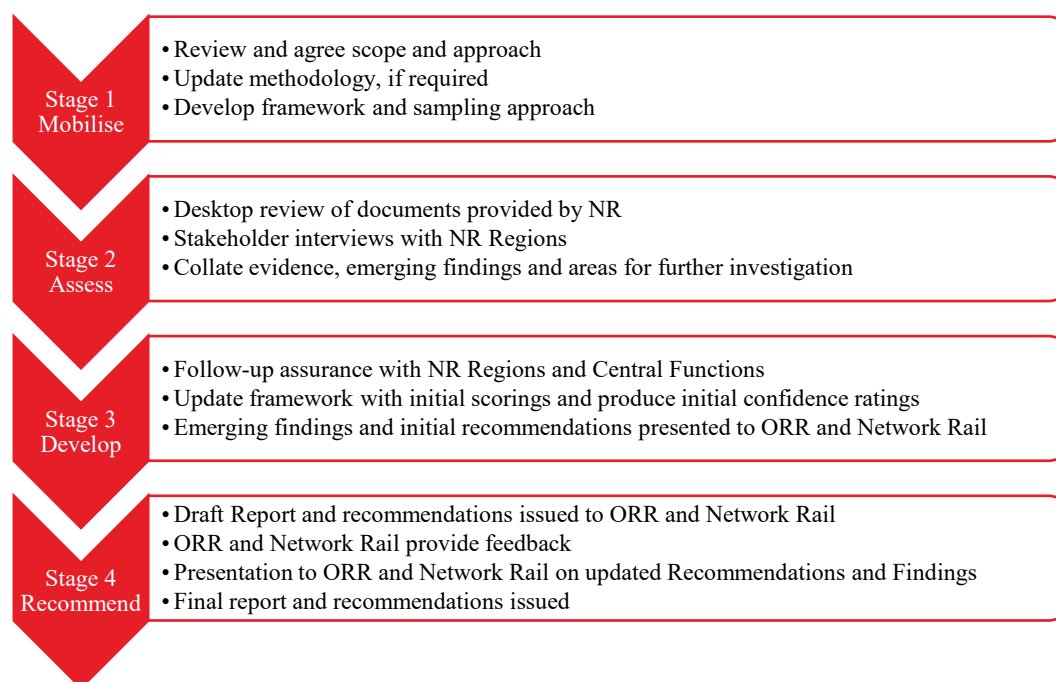


Figure 1: Methodology

The four staged approach to this study ensured that there was a feedback loop of any findings and gave Network Rail the opportunity to challenge and back up any findings and to keep Network Rail and ORR informed throughout the review.

Stage 1 – Mobilise

The mobilise stage finalised the approach of this study and built an assurance framework that focussed on the following topics:

- Alignment of planned to actuals: The variances between planned work and actual delivered volume of maintenance work (cyclic and work arising) in CP6 Y5 and where access was the reason, investigated what was the underlying cause behind this.
- Forecasted maintenance: The deliverability of maintenance (cyclic and work arising) work for CP7 Y1 and Y2 with specific review of planned access arrangements and mitigation plans were insufficient planning was identified.
- Central function dependency: The dependencies of the region on central functions in managing maintenance demand (e.g. approval from TA to deviate from standards) and undertaking access planning and scheduling of activities (e.g. central planning functions).

At the inception meeting it was agreed that a sampling approach reviewing and validating alignment of three MDUs in detail across the three in scope Regions would be a suitable approach. These were York (Eastern), Ashford (Southern) and Glasgow (Scotland). Information and all discussions would be at Region level with

the Region responsible for collating the relevant information from the MDU. This adjusted the focus from MDUs to Regions while keeping a line of sight through the system.

A framework was created, discussed and agreed with both Network Rail and ORR with the aim of using it for producing an evidence pack to allow Arup to answer the questions in the remit. These areas of investigation were grouped by theme and would form the basis of our confidence scoring later in the process. This produced over 70 areas for investigation by Arup across the 3 Regions/MDUs agreed.

To conclude this stage, we submitted a variety of information requests to Network Rail.

Stage 2 – Assess

The assess stage has been conducted in two parts; the initial stage involved a desk-based review of key evidence. The outputs of which fed into a targeted interviews.

Desktop Review

The desktop review process involved a thorough examination of existing documents and findings from desk-based reviews and interviews. This review aimed to identify any gaps in knowledge and seek clarification from the MDUs. The outputs were evaluated to score against the common scoring mechanism, which supported the establishment of key insights.

The analysis included comparing maintenance volumes (forecast and actual) for CP6 Year 5 and CP7 Year 1, as well as forecasting for CP7 Year 2. Planned versus actual comparisons and year-on-year analysis were conducted to translate the data into actionable insights.

Interviews with Network Rail Staff

The interview process with NR staff was designed to validate findings from the desktop review and gather additional insights. Interviews focused on key questions such as the alignment of actual maintenance volumes with planned activities, the support of regional maintenance access strategies, and the dependence on central functions within Network Rail.

The interviews provided valuable information on maintenance execution, planning accuracy, risk management, and central function dependency. These insights were summarised and used to assess the deliverability of maintenance plans for CP7 Year 1 and Year 2.

The types of evidence were aligned to the topics in the review framework established in the mobilise phase. The evidence reviewed was as follows:

- Alignment of planned to actual: MDU specific data of maintenance activity planned and delivered in possessions and protected line blockages in CP6 Y5 relating to disciplines of Track, Electrification, and Fixed Plant, in addition to risk assessments that were carried out for work that was not delivered due to access constraint.
- Forecasted maintenance: MDU Specific data of planned maintenance activity to be delivered by protection and access strategies in CP7 Y1 / Y2 in addition to risk mitigation tracker where due to access constraints maintenance activity was not able to be delivered. This also entailed review of meeting minutes of access planning sessions and data on average maintenance volume with detail on unit cost values on work done per shift with a comparison of national average on maintenance volumes.
- Central function dependency: MDU specific data of maintenance plans varying from standards with commentary of communication chain. A review of dependencies of maintenance work and engagement with central functions with relation to scheduling and planning including any actions from technical authority audits.

The interviews clarified any questions that arose from the review of evidence provided by the Regions and our initial findings formed the basis for questioning in the interviews. The output from the interviews was used to drive added insight with follow-up questions and information requested.

Stage 3 – Develop

In the Develop phase, the Core Reporter Team and Lead Author conducted follow-up activities to clarify outstanding issues and gather additional information. They reviewed existing documents and findings from desk-based reviews and interviews to identify gaps in knowledge and sought clarification from the MDUs via the Regions.

Our approach developed as the initial insights from the interviews and early review of documentation highlighted a low risk to delivery of volumes and some of the information requested was not available; namely Network Rail's ability to quantify the amount of access available or required in future.

An Emerging Findings Meeting with ORR and NR was held to share initial findings and recommendations, seek clarity, and establish high-level messaging for the Draft Report.

Outputs were analysed to identify key insights, risks, and potential issues, and evaluated to score against the common scoring mechanism, ensuring scoring was normalised across desk study and interview phases. Confidence rating/summary maps were created for effective visualisation.

Stage 4 – Recommend

In the Recommend phase, the final report was produced, including a quality review and presentation of key findings and recommendations. The report was compiled from the start of the commission, detailing the assessment methodology, documentation reviewed, and findings.

The report was produced through a two-part process: an initial draft with structured feedback from ORR and NR and a presentation to discuss the findings and recommendations. A final production addressing all comments was then produced and shared with Network Rail and ORR.

4. Findings

4.1 Data Analysis

As per our methodology we undertook a data sampling exercise covering three MDUs across three different Regions. Our approach and outputs of the data analysis are detailed here with findings listed at the end of each section.

4.1.1 Approach

Our analysis enabled us to understand the current levels of performance achieved and challenges to delivery. The current levels were used as a baseline which was then used to calculate a variance between actual delivery and future delivery. This was undertaken in a number of ways:

- Reviewing the planned volumes of maintenance in CP7 Y1 vs actual volumes of maintenance delivered in CP6 Y5
- Reviewing the resourcing levels in respect to maintenance volumes
- Reviewing the size, age and criticality of the maintenance backlog

It allowed us to determine if:

- in the final year of CP6 the actual volumes of maintenance delivered in possession and protected line blockages align to the activities planned, and
- the volumes of maintenance seem deliverable in CP7 Year 1 and Year 2

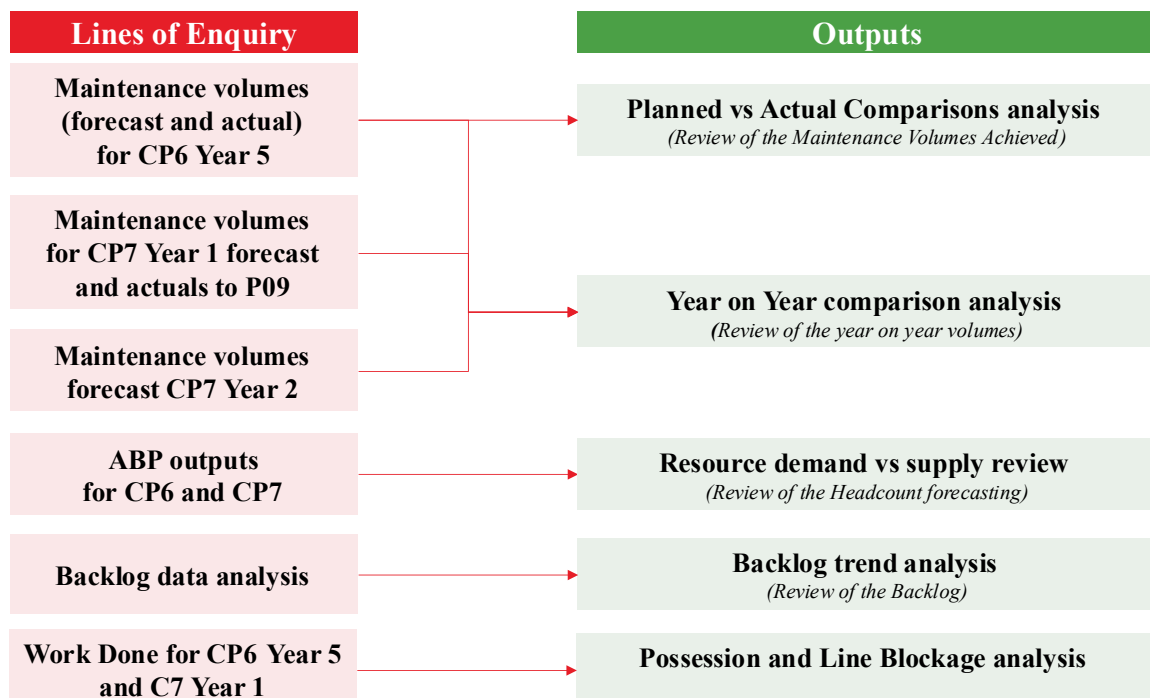


Figure 2: Diagram outlining the method of data analysis

4.1.2 Review of the Maintenance Volumes Achieved

4.1.2.1 Data Processing

NR provided evidence for each region and discipline on work completed for CP6 Y5 and work planned for CP7 Year 1 in the form of Work Orders (WOs) by asset type. These work orders are instances of Standard Jobs (SJs), which are standard tasks completed on the asset.

This analysis looked at each standard job comparing the planned volumes of work in CP7 Y1 to that of full year actuals from CP6 Y5. The purpose of this analysis was to identify if the planned volumes of the next year were greater than what was delivered in the previous year, and then to identify the percentage of variance.

As each standard job has a different unit of measure (e.g. miles, yards, meters, hours, units of assets) the output of the analysis categorised standard jobs into the following three groupings:

- Red: where the volume of WO for that SJ was below 95% of the plan
- Green: where the volume of WO for that SJ was between 95-105% of the plan (+/-5% variance to plan)
- Purple: where the volume of WO for that SJ was over 105% of the plan

We decided 5% either side of the plan was an appropriate number to give a reasonable tolerance level around the planned number of jobs. Then for each discipline and route we determined the percentage of standard jobs that fell into each of these categories (number in category/number of standard jobs for that discipline).

4.1.2.2 Results

In summary, the analysis of which standard jobs (SJs) were completed against the plan, shows that NR were flexible to the needs of the asset base and were able to achieve the plan.

Key:

Less than 95% of plan	Between 95-105% of plan	Over 105% of plan
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Eastern – North & East

E&P: 90 SJ items included

>5%	<95%	>5%
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Less than 5% of SJs were less than 95% of the plan, more than 95% of SJs were within 95% to 105% of the plan and less than 5% of SJs were over 105% of the plan.

One SJs was categorised as an MST

None of the jobs were Work Arising

PWay: 179 SJ items included

35%	40%	25%
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35% of SJs were less than 95% of the plan, 40% of SJs were within 95% to 105% of the plan and 25% of SJs were over 105% of the plan

41 out of the 69 SJs were categorised as MST

Of 28 Work Arising two relate to scrap, one is an inspection and the remainder average 50% of plan

Southern – Kent

E&P: 85 SJ items included

20%	65%	15%
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20% of SJs were less than 95% of the plan, 65% of SJs were within 95% to 105% of the plan and 15% of SJs were over 105% of the plan.

19 out of the 22 SJs were categorised as MST

Of 3 Work Arising, one was waste removal; one was an inspection activity and the last was Con rail replacement at 74%

PWay: 174 SJ items included

25%	55%	20%
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25% of SJs were less than 95% of the plan, 55% of SJs were within 95% to 105% of the plan and 20% of SJs were over 105% of the plan.

31 out of the 44 SJs were categorised as MST

Of 13 Work Arising one was cutting scrap; one was an inspection activity and the remainder average 50% of plan

Scotland – Scotland

E&P: 100 SJ items included

40%	35%	25%
-----	-----	-----

40% of SJs were less than 95% of the plan, 35% of SJs were within 95% to 105% of the plan and 25% of SJs were over 105% of the plan.

34 out of the 41 SJs were categorised as MSTs

Of the 7 Work Arising, one was removal of waste, one had a count of 8 and the remainder average 40% of plan

PWay: 182 SJ items included

25%	50%	25%
-----	-----	-----

25% of SJs were less than 95% of the plan, 50% of SJs were within 95% to 105% of the plan and 25% of SJs were over 105% of the plan

33 out of the 46 SJs were categorised as MSTs

Of the 13 Work Arising, one was removal of waste, one unloading of ballast trains, one was transporting of materials and the remainder average 50% of plan

4.1.2.3 Findings

Route – Region	Discipline	Analysis / Insight
Eastern – North & East	E&P	Over 95% of the SJs were delivered to planned volumes The remaining 5% consisted of trading one MST for another: 1193 units of MST – SERVICE B M001 was not delivered 130 of planned 21 units of MST - FINLUBE PLAIN LINE OILING was delivered This suggests a balancing of the plan to meet the needs of the asset and a high degree of forecasting accuracy.
	PWAY	40% of the SJs were delivered to planned volumes The remaining 60% comprised of trading MSTs for work arising: - MSTs were underdelivered on average by 58% of planned volume - Work arising was over delivered on average by 201% of the planned volume This suggests that the plan is being adapted so that higher priority maintenance is being done instead of regular inspection activities. The volume of variance suggests that there is opportunity to improve forecasting accuracy.
Southern – Kent	E&P	65% of the SJs were delivered to planned volumes The remaining 35% consist of those SJs that were either 5% under or 5% over delivery against plan, with a ranging variance of between 0 and 269 times plan. This variance was consistent both for MSTs and work arising and included FSP test M001 – which was planned to carry out 1 unit but delivered 269 units, hence the variance of 269 times planned. Of the 22 SJ that were not delivered to plan, 19 were MST. The 3 work arising consisted of one waste removal, one inspection activity and the last is a Con rail replacement at 74% This suggests that the mix of SJ at planning stage did not meet the needs of the asset base, and it was adapted through the year. The volume of variance suggests that there is opportunity to improve forecasting accuracy
	PWAY	55% of the SJs were delivered to planned volumes The remaining 45% consist of those SJs that were either 5% under or 5% over delivery against plan, with a ranging variance of between 0 and 392 times plan. This variance was consistent both for MSTs and work arising and included survey datum plates platform – which was planned to carry out 7 units but delivered 2746 units, hence the large variance of 392 times planned. Of the 44 SJs that were not delivered to plan, 31 were MSTs. The 13 work arising consisted of one cutting scrap, one inspection activity and the remainder averaged 50% of plan

		This suggests that the mix of SJ at planning did not meet the needs of the asset base, and it was adapted through the year. The volume of variance suggests that there is opportunity to improve forecasting accuracy.
Scotland – Scotland	E&P	35% of the SJs were delivered to planned volumes The remaining 75% average delivery against plan was 1.5 times planned volume, with a variance of between 0 and 25 times plan. This variance was consistent both for MSTs and work arising and included one SJ titled refill hydraulic lubricator – which was planned to carry out 20 units but delivered 511 units, hence the large variance of 25 times planned. Of the 41 SJs that were not delivered to plan, 34 were MSTs. The 7 work arising consisted of, one removal of waste, one post fault patrol activity, one had a planned count of 8 and the remainder average 45% of plan. This suggests that the mix of SJ at planning stage did not meet the needs of the asset base, and it was adapted through the year. The volume of variance suggests that there is opportunity to improve forecasting accuracy.
	PWAY	25% of the SJs were delivered to planned volumes The remaining 75% consisted of: • 50% that were below plan that were 33 SJs MSTs, one removal of waste, one unloading of ballast trains, one transporting of materials and the final one delivered at 50% of plan. • 25% that were above plan that were an increased use of cab rides (to mitigate reduced on foot patrols), specific known issue monitoring activities and work arising. This suggest that an alternative approach to maintenance was delivered to focus on work arising than what was in the original plan. The volume of variance suggests that there is opportunity to improve forecasting accuracy.
Notes:	Maintenance Scheduled Tasks (MSTs) – these are regular inspection and maintenance tasks – assumed to be less critical in directly maintaining asset performance but have a longer-term impact. Therefore, most likely to be deferred or reprioritised. Work Arising – these are more critical activities that focus on fixing faults or poor condition that has a direct impact on asset performance.	

Based on our analysis (see 4.1.2.2) it is our view that Network Rail are flexible to adapt the plan to achieve the needs of the asset base. However, the size of variation to plan in some areas assessed does suggest forecasting works required could be improved.

4.1.3 Review of the year-on-year volumes

4.1.3.1 Data Processing

The year-on-year analysis was carried out in two phases, the first phase reviewed the data provided by Network Rail to determine how the maintenance volume for each standard job varied year on year. This was done through three lines of enquiry:

- 1) Actual volumes of maintenance in CP6 Y5
- 2) Actual volumes of maintenance in CP7 Y1 normalised to P13
- 3) Forecasted volumes of maintenance in CP7 Y2

By reviewing each standard job on its own, this overcame the issue of each standard job having vastly different units of measures – thus only measuring the percentage difference year on year and recording whether it was either an increase or stayed the same / decreased when compared to the previous year.

This analysis outputted a list of standard jobs by region that were increasing year on year – this list was then used for the second phase of review which involved determining its deliverability through interviews with the regions. In the follow interviews sought to understand why there were such variances year on year – as routine maintenance should follow a similar volume and not have large variances. Through this it was determined whether this increase in reported maintenance volume was achievable or not.

4.1.3.2 Results

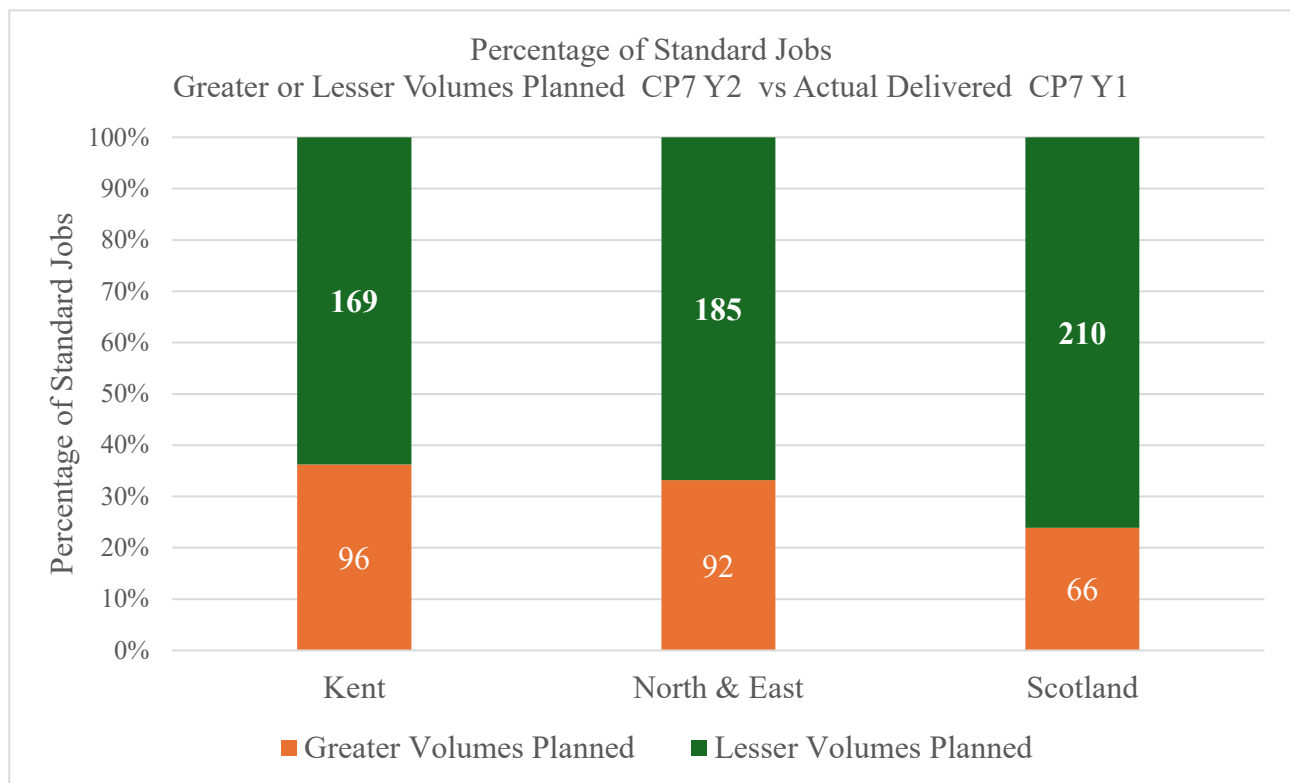


Figure 3: Graph showing the number of standard jobs that have forecasted a greater volume of maintenance than the actuals recorded in the previous year

4.1.3.3 Findings

The analysis in Figure 3 shows that across the three Regions reviewed approximately 35% to 25% of the standard jobs had planned volumes greater than this year's actual volumes, while 75% to 65% had planned volumes that were reduced or the same.

Table 2: Percentage of Standard Jobs with a higher or lower volume forecast in CP7 Y2

Route – Region	Analysis
Eastern – North & East	92 standard jobs forecasted a 40% higher volume of maintenance in CP7 Y2 than was actually delivered in CP7 Y1 or CP6 Y5 185 standard jobs forecasted the same or lower volume of maintenance in CP7 Y2 than was actually delivered in CP7 Y1 or CP6 Y5
Southern – Kent	96 standard jobs forecasted a 40% higher volume of maintenance in CP7 Y2 than was actually delivered in CP7 Y1 or CP6 Y5 169 standard jobs forecasted the same or lower volume of maintenance in CP7 Y2 than was actually delivered in CP7 Y1 or CP6 Y5
Scotland – Scotland	66 standard jobs forecasted a 40% higher volume of maintenance in CP7 Y2 than was actually delivered in CP7 Y1 or CP6 Y5 210 standard jobs forecasted the same or lower volume of maintenance in CP7 Y2 than was actually delivered in CP7 Y1 or CP6 Y5

This analysis provides further evidence that there is minimal variation between Year 2 of CP7 and Year 1 of CP7 and indicates that volumes should be deliverable based on existing access requirements.

4.1.4 Review of the headcount forecasting

4.1.4.1 Data Processing

NR provided us with the modelled and actual headcount for CP6 Year 5, CP7 Year 1 and CP7 Year 2 from the Activity Based Planning tool. The modelled headcount takes the norm times per SJ and forecast volumes to determine the need in FTE. The actual headcount provides the available FTE considering absences (leave, sickness, etc.) and overtime.

Then for each discipline and MDU we compared the two figures to determine where there was a resourcing gap. This was then presented to the regions to understand how this resourcing gap would be closed. All three regions advised that they use additional labour from Works Delivery and the wider external supply chain to address any shortfalls they have.

The charts that follow show the analysis and summarise headcount actual and forecasts from 2021 through to 2028/29 with our findings summarised in Section 4.1.4.3.

4.1.4.2 Results

Eastern – North & East:

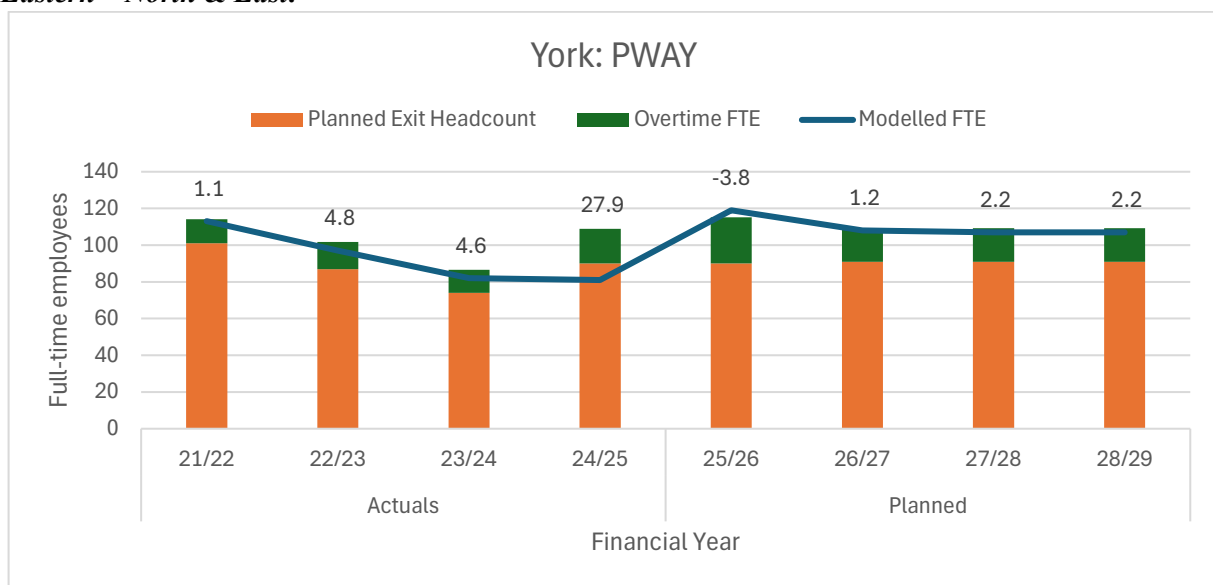


Figure 4: Eastern Region (York) P-Way

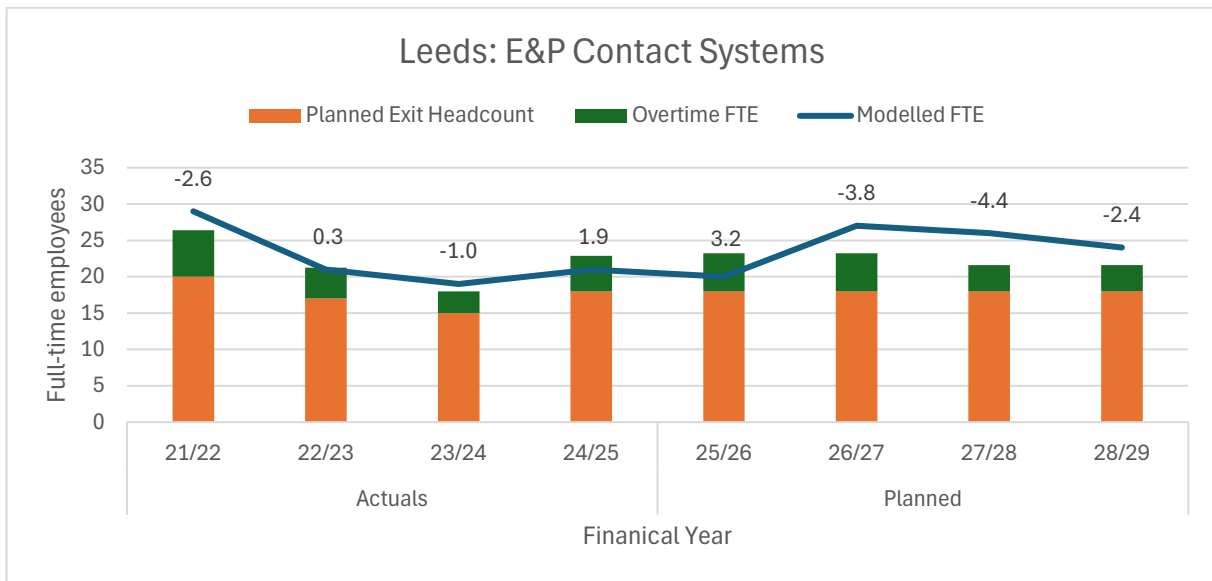


Figure 5: Eastern Region (Leeds) E&P Contact Systems

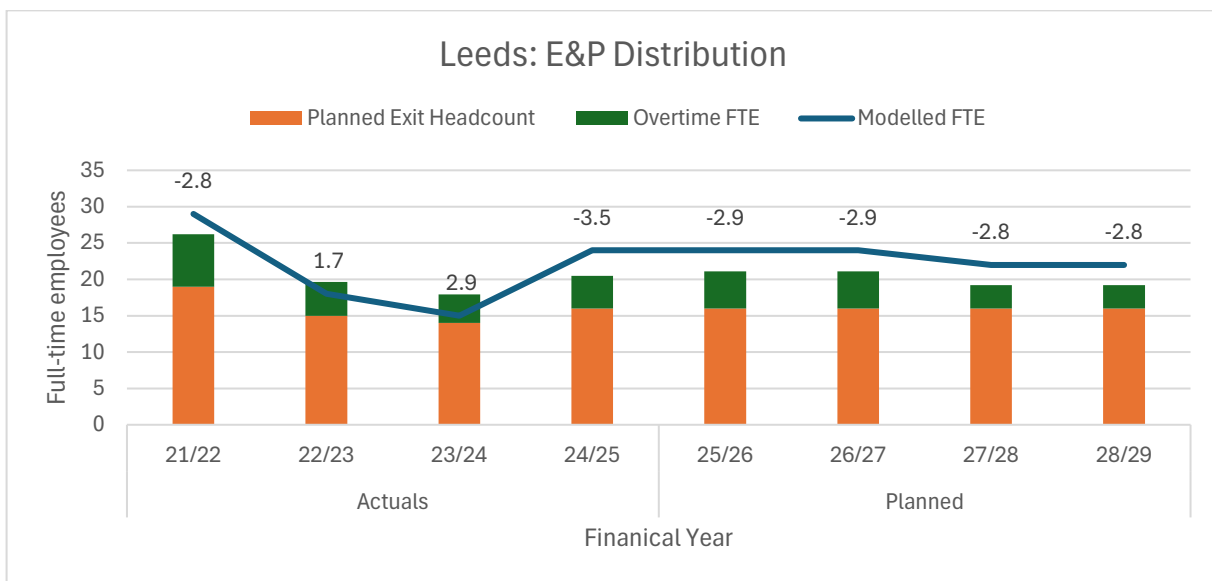


Figure 6: Eastern Region (Leeds) E&P Distribution

Southern - Kent:

The data provided by Network Rail for this Maintenance Delivery Unit and track discipline was declared to be incorrect, so it has not been used.

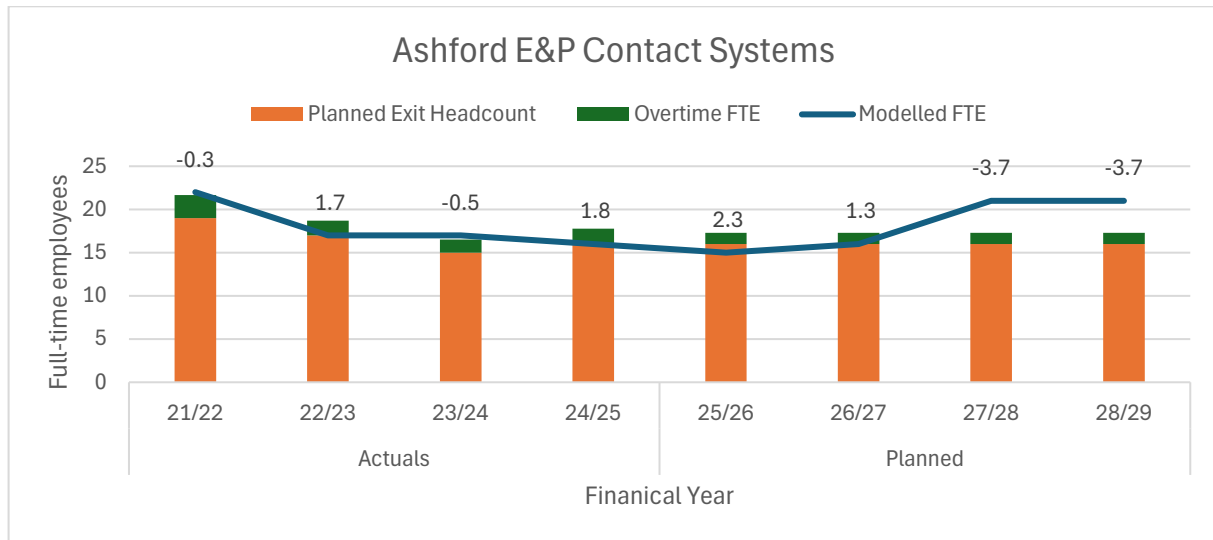


Figure 7: Southern Region (Ashford) E&P Contact Systems

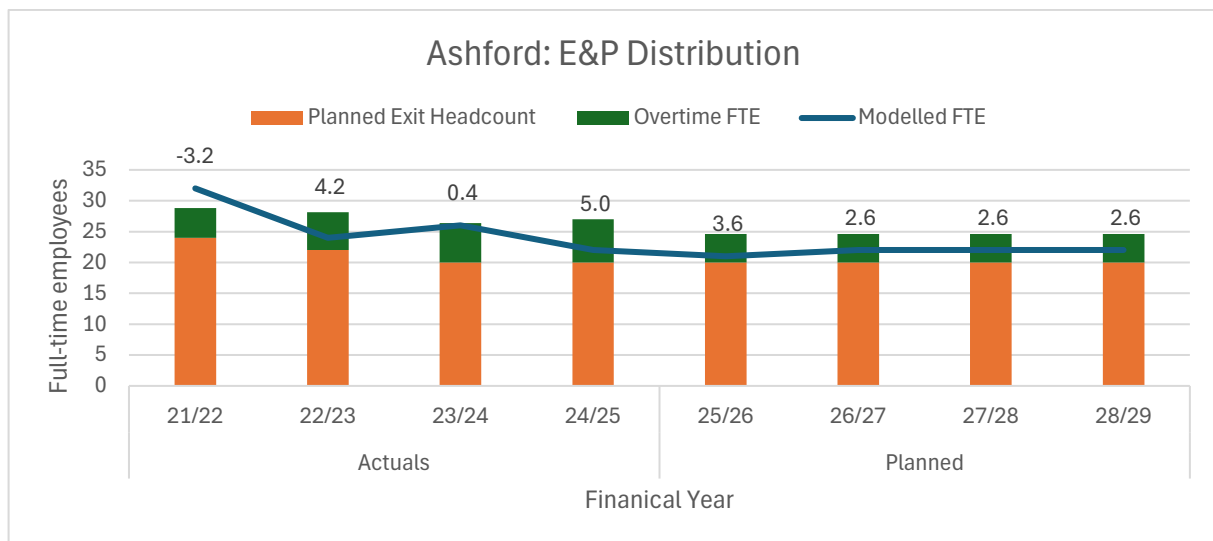
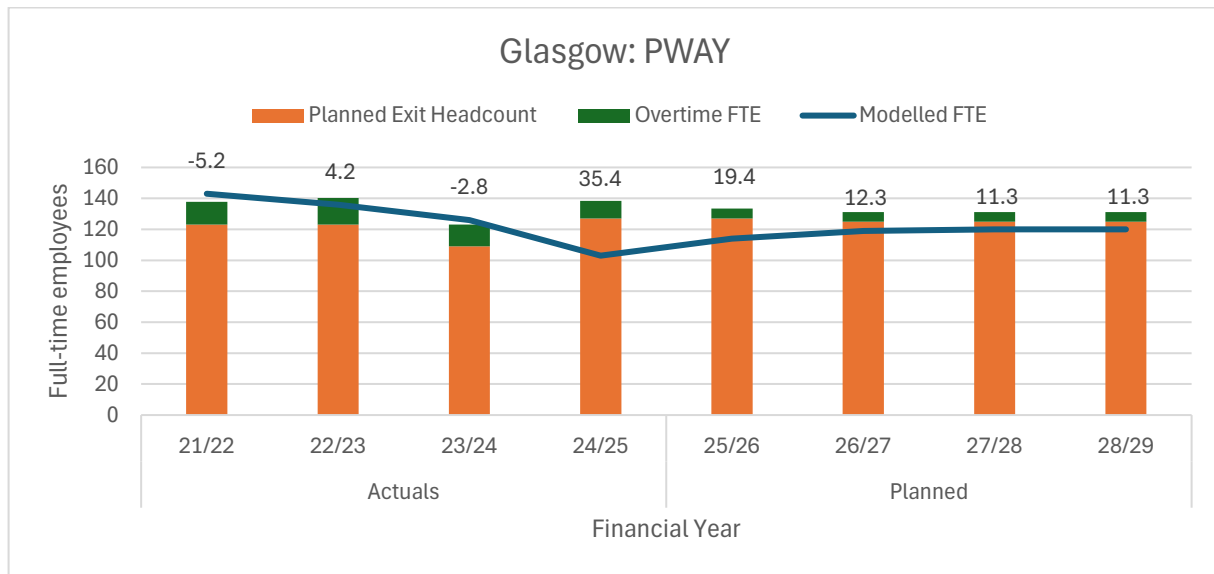
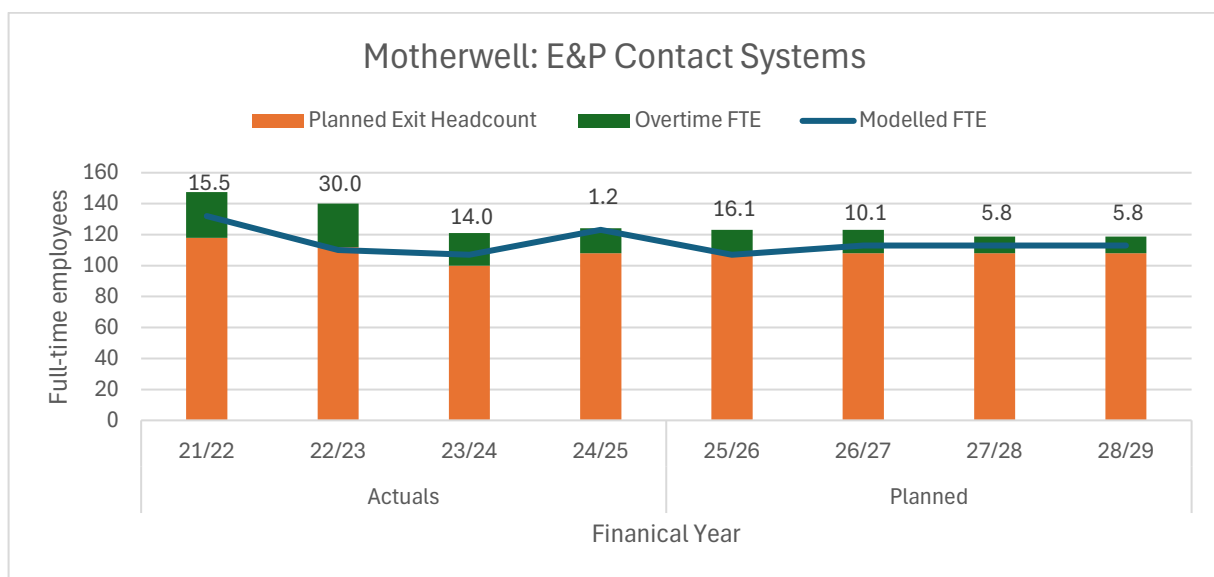


Figure 8: Southern Region (Ashford) E&P Distribution

Scotland – Scotland:**Figure 9: Scotland Region (Glasgow) P-Way****Figure 10: Scotland Region (Motherwell) E&P Contact Systems**

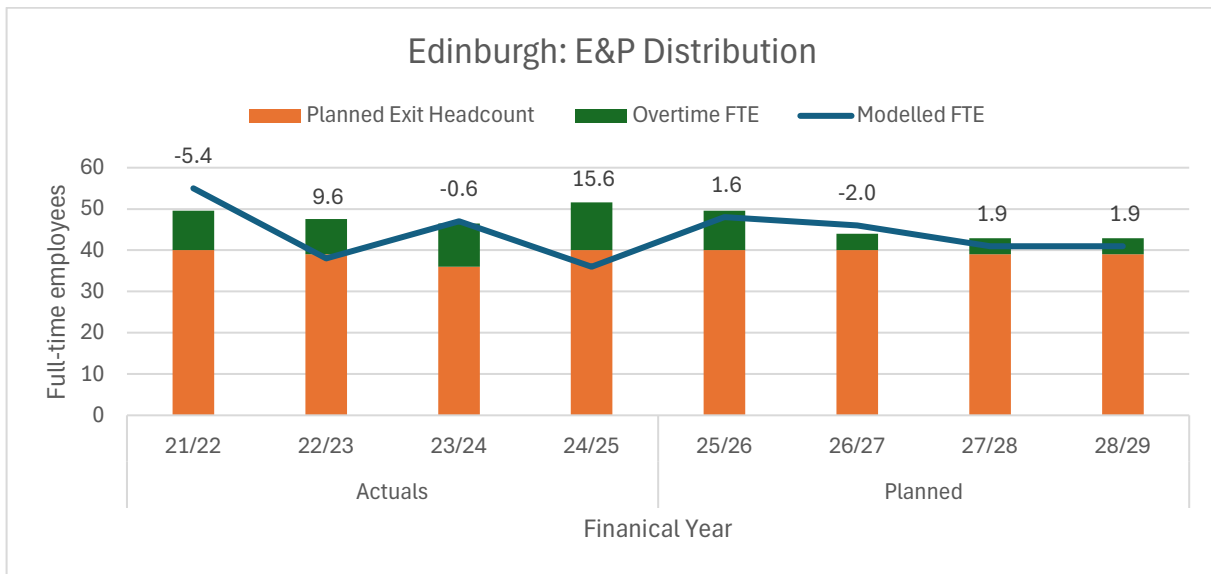


Figure 11: Scotland Region (Edinburgh) E&P Distribution

4.1.4.3 Findings

Route – Region	Discipline	Analysis / Insight	NR Explanation
Eastern – North & East	E&P	There has been a resourcing gap for CP7 year 1 and will be for year 2 of 3.5-3 FTE.	Leeds E&P is being resized to recruit additional staff alongside the TRU project requirements
	PWAY	There is a resourcing gap for CP7 year 2 of 4 FTE.	The MDU will draw on Works Delivery to deliver additional work but also specialist contractors and labour-only subcontractors depending on the work type
Southern – Kent	E&P	There are no direct labour concerns in relation to delivering the plan	Not applicable
	PWAY	There is a resourcing gap for CP7 year 1 and year 2 of 25-20 FTE.	Error in the modelled number with Ashford off-track included which is part of Orpington MDU
Scotland – Scotland	E&P	There are no direct labour concerns in relation to delivering the plan	Not applicable
	PWAY	There are no direct labour concerns in relation to delivering the plan	Not applicable

Based on the sample of three MDUs there are headcount issues in the areas noted above. However, Network Rail have explained that additional resource is available via the supply chain, projects or Works Delivery which will mitigate the headcount gap. Based on our review of the evidence resourcing is not causing any issues in delivering maintenance volumes and is a low risk to future delivery. However, this is an area where Network Rail could provide further assurance by forecasting the availability of external resource where internal resource is not at the required level.

4.1.5 Review of the backlog

4.1.5.1 Data Processing

NR provided us with the backlog data for each of the MDUs for each discipline from P01 23/24 (CP6 Year 5 start) to current P12 24/25 (CP7 Year 1). This data was analysed by:

- Plotting the total number of backlog items over time to understand the overall trend
- Plotting the total number of backlog items over time as percentage of overall open work-bank (NR has a 2% target). It should be noted that this is not timebound, but on inspection this is approximately 1 year's forecast. A suggestion for improvement is for Network Rail to agree a method to timebound this metric
- Where the above indicated a trend that was not favourable a review of the backlog to understand:
 - How the criticality (by track category) has changed over the time period
 - How the proportion of work arising as a total of the backlog is changing over the time period
 - How the age of the backlog is changing over the time period

Where this showed areas of concern, this was then presented to the regions to understand the rationale and any plans in place to rectify.

4.1.5.2 Results

The charts that follow summarise the analysis and outcomes and our observations are summarised in the findings section 4.5.1.3.

4.1.5.2.1 Eastern Leeds MDU

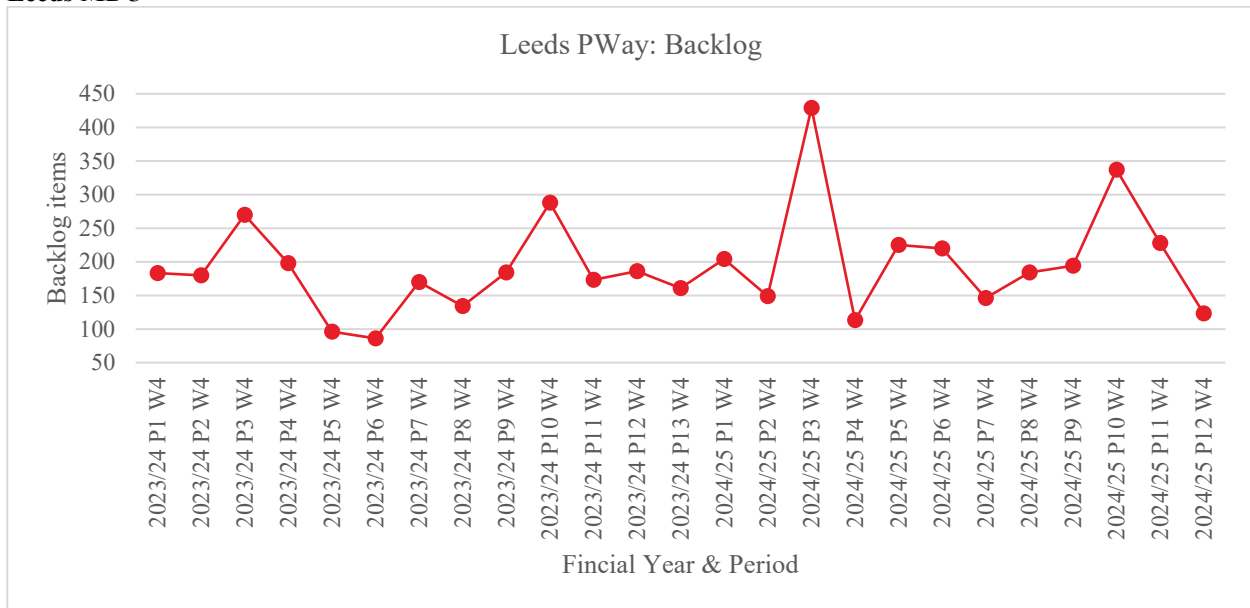


Figure 12: Eastern Region (Leeds) P-Way Backlog

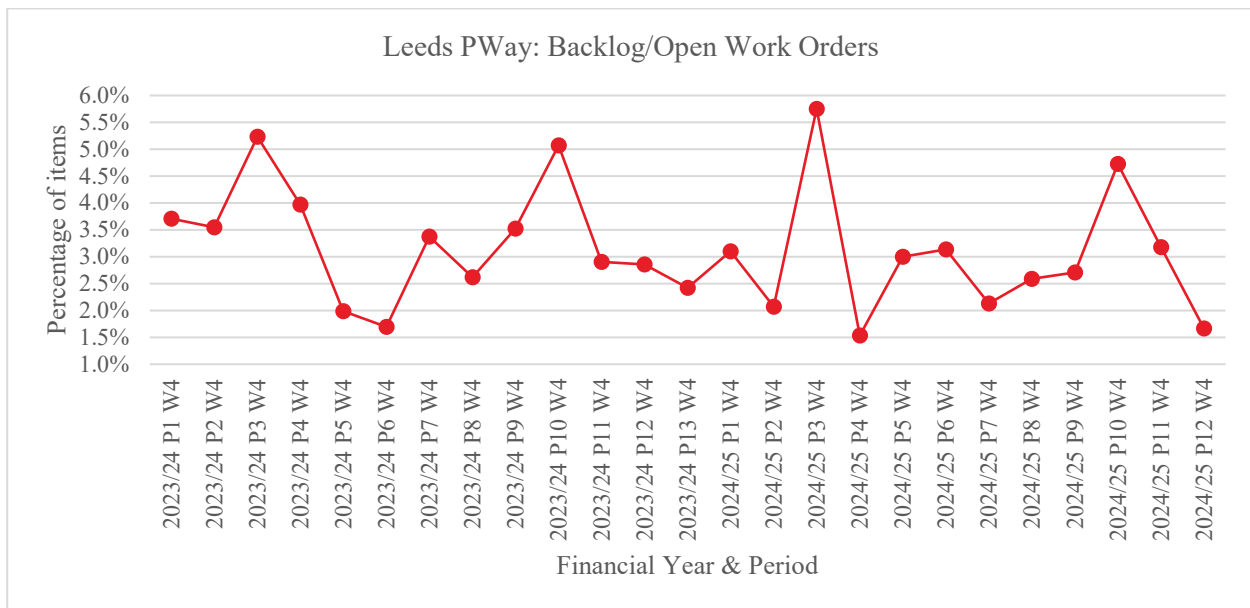


Figure 13: Eastern Region (Leeds) P-Way Backlog / Open Work Orders

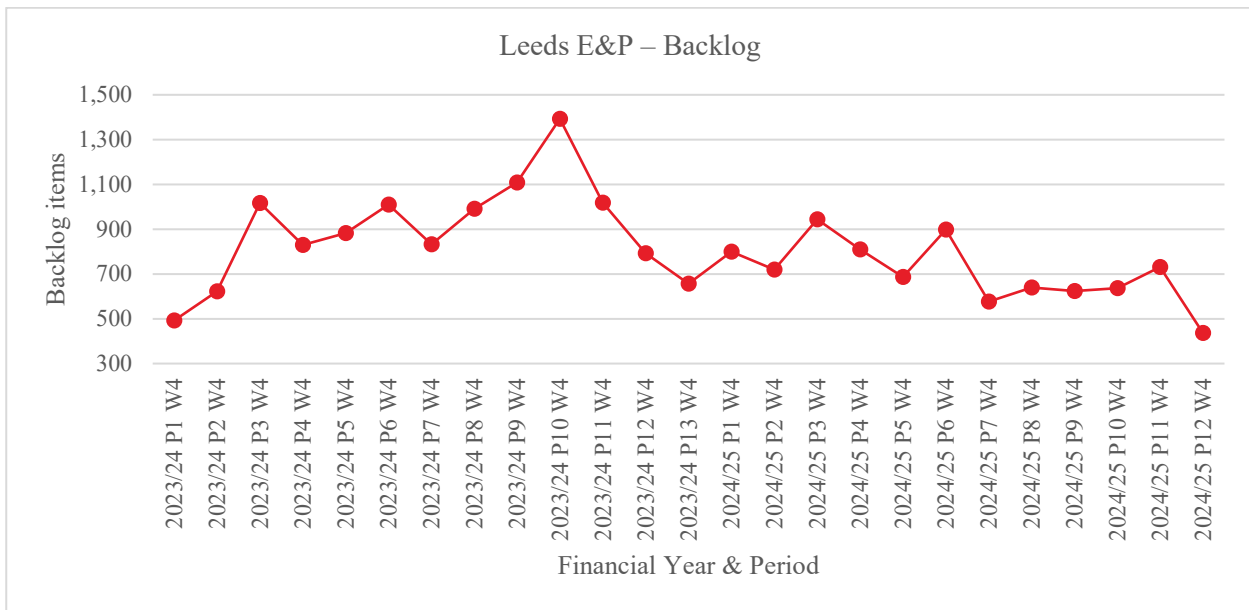


Figure 14: Eastern Region (Leeds) E&P Backlog

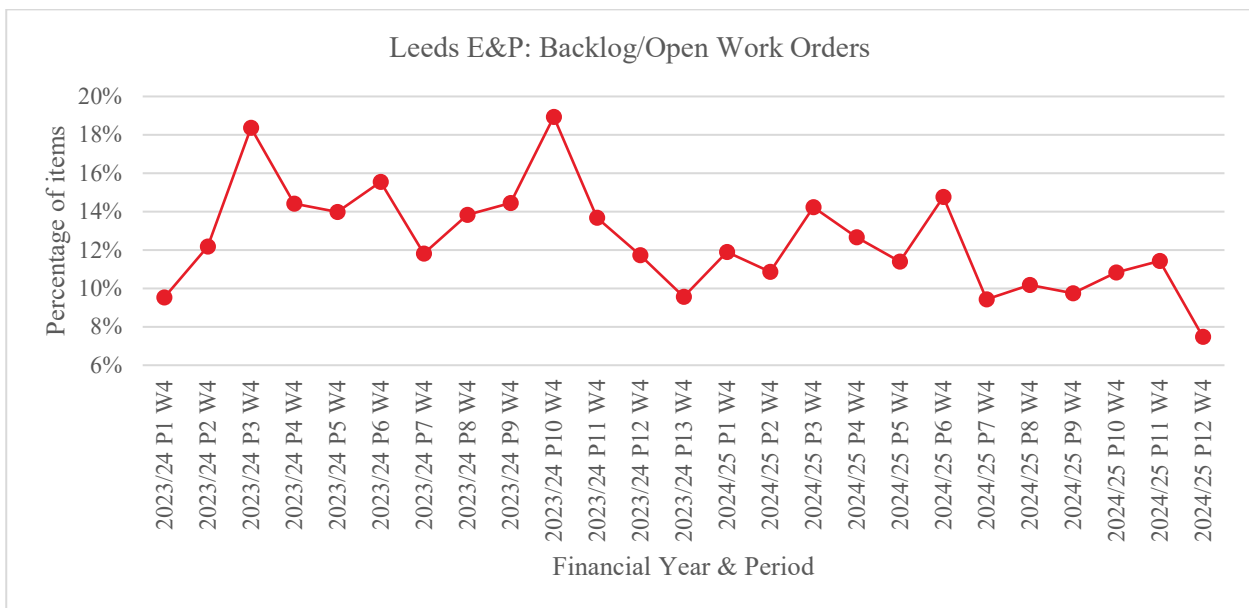
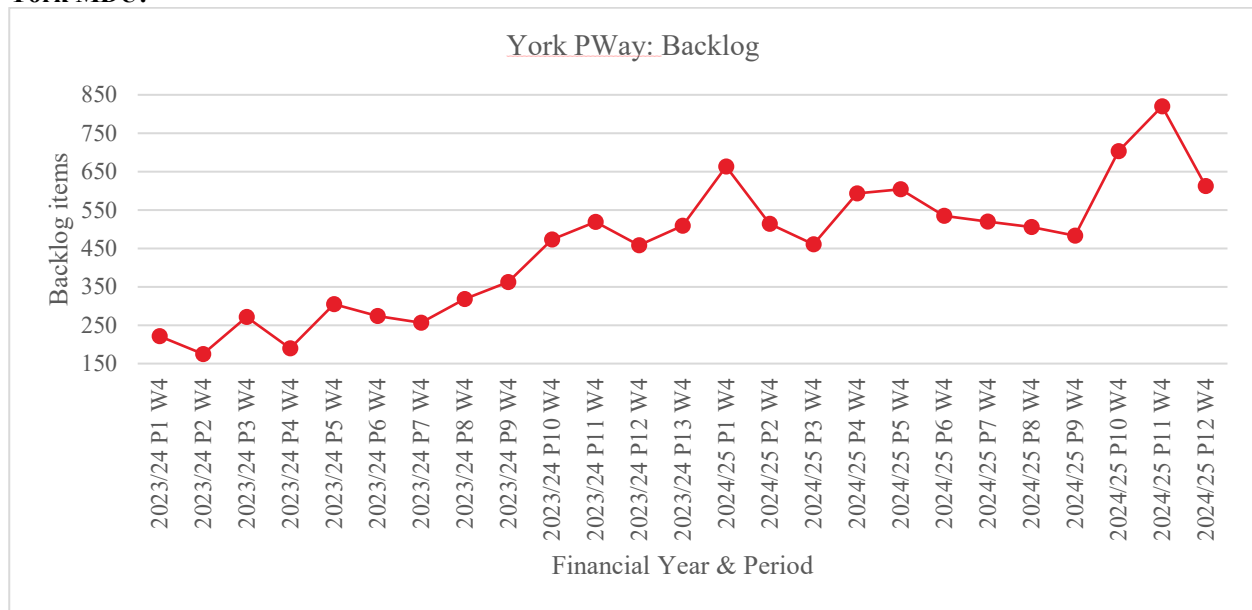
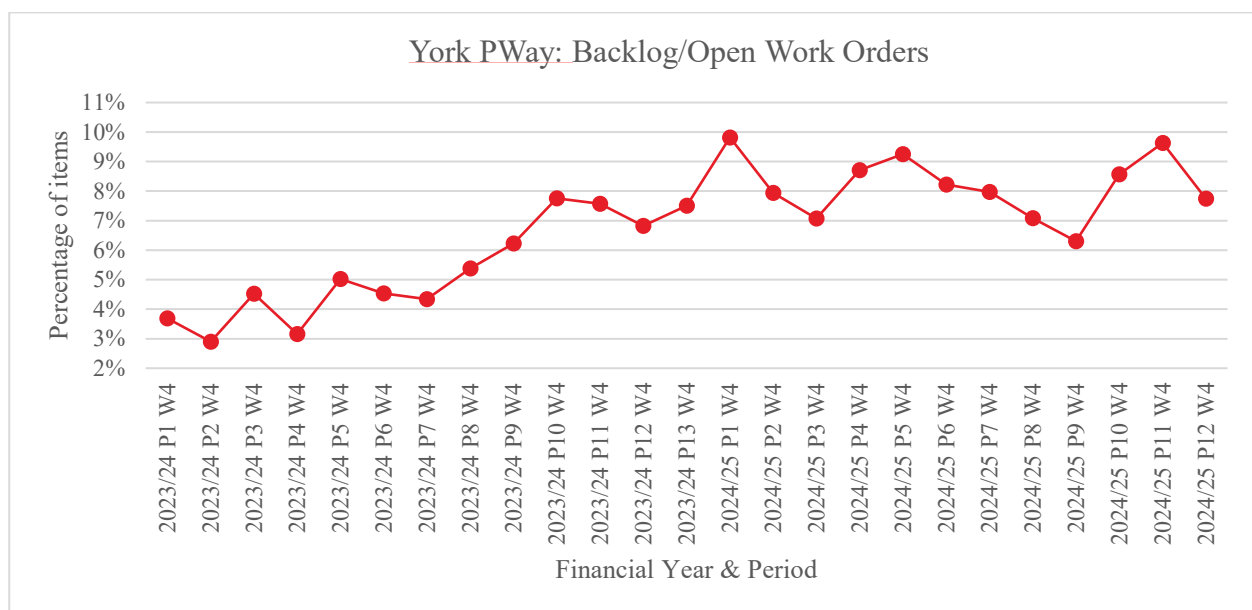


Figure 15: Eastern Region (Leeds) E&P Backlog / Open Work Orders

York MDU:**Figure 16: Eastern Region (York) P-Way Backlog****Figure 17: Eastern Region (York) P-Way Backlog / Open Work Orders**

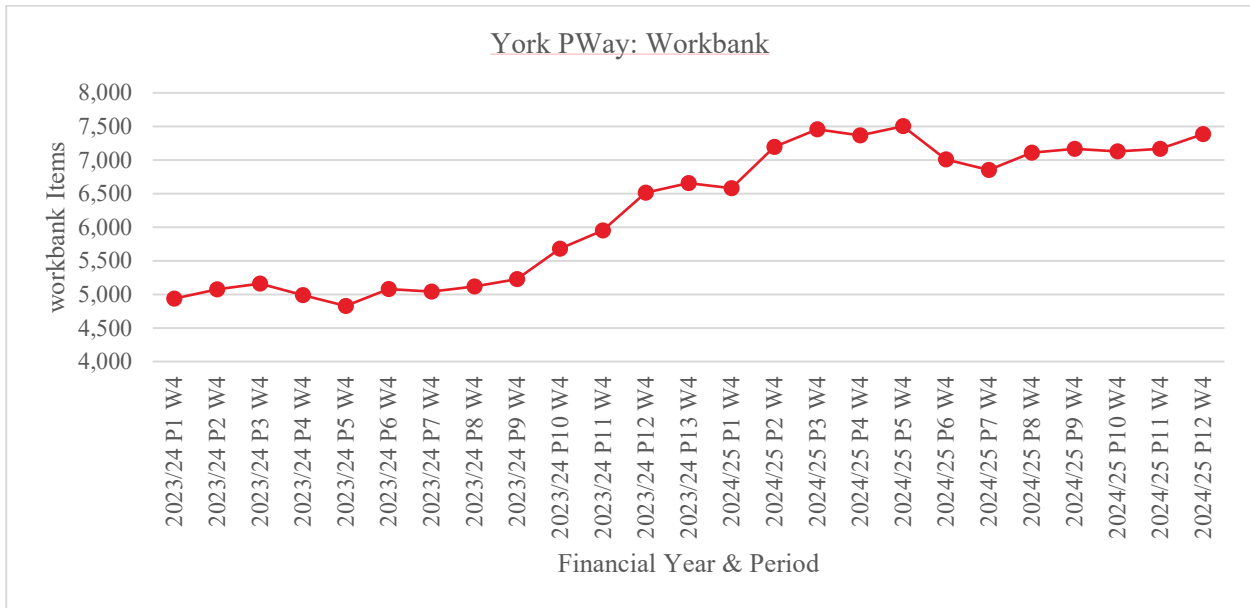


Figure 18: Eastern Region (York) P-Way Workbank

York MDU PWay Breakdown:

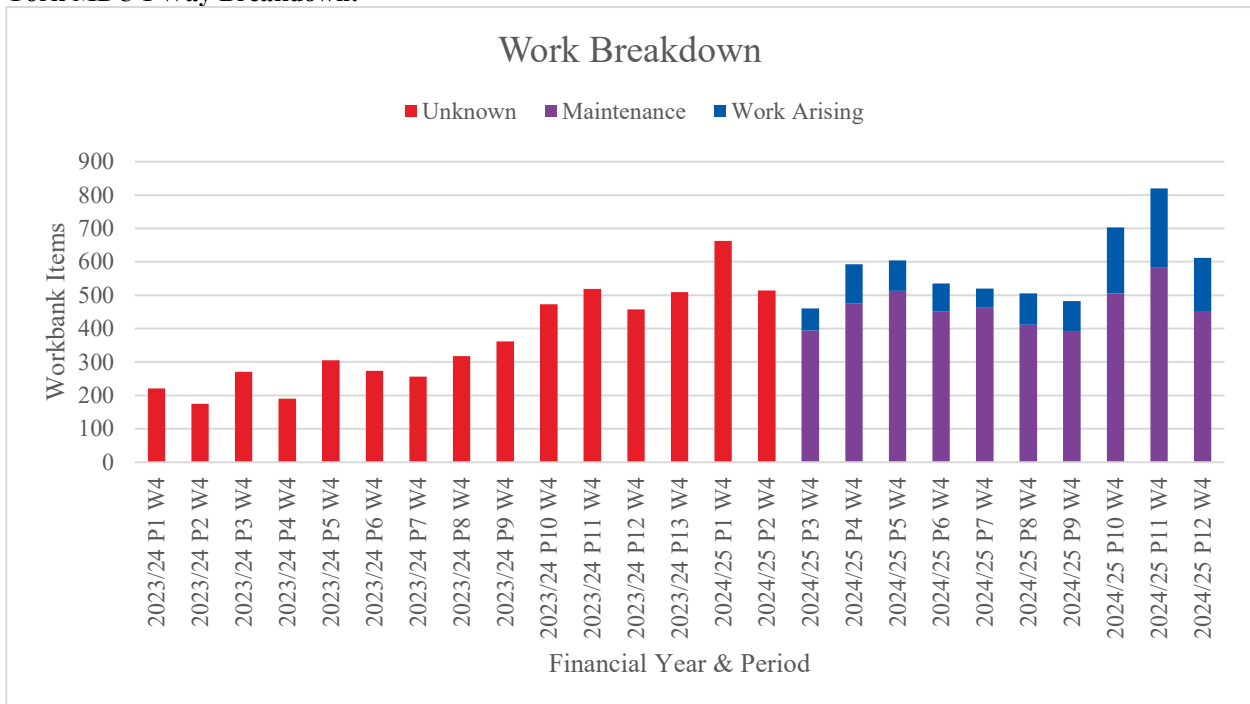


Figure 19: Eastern Region Work Breakdown

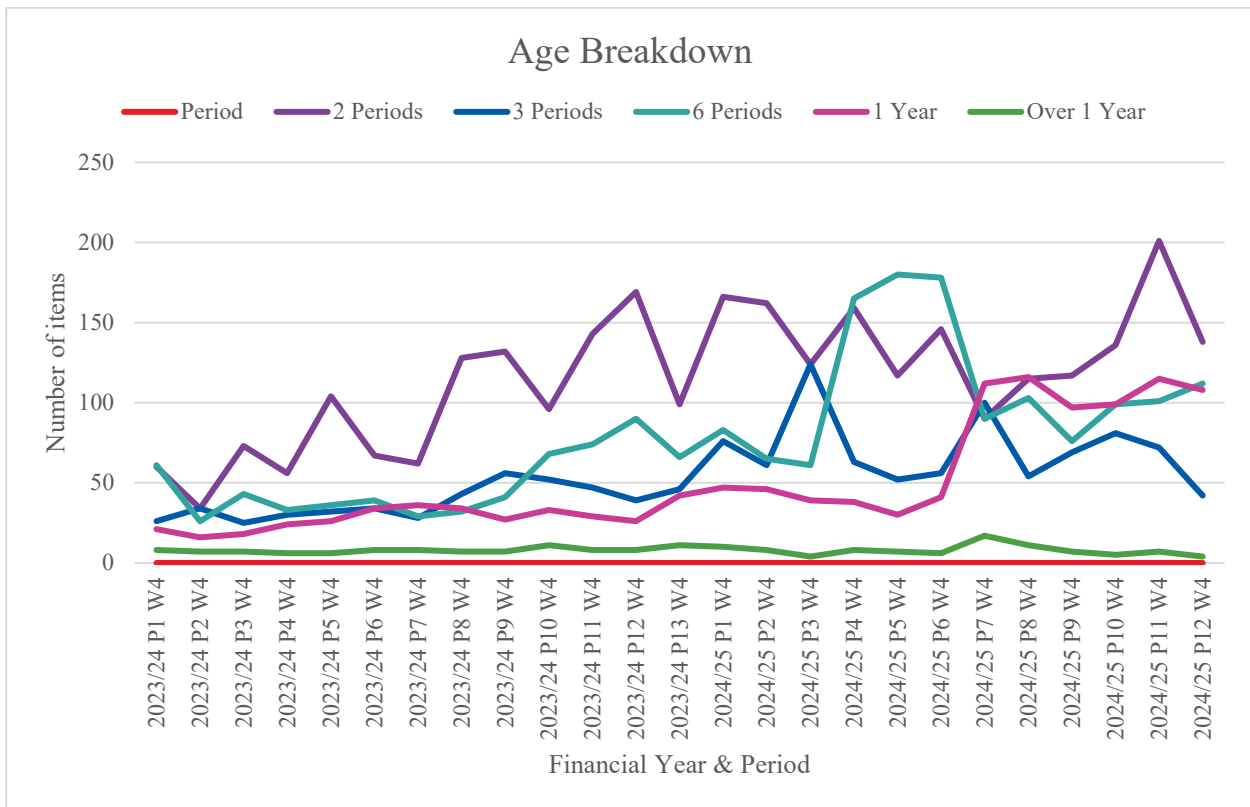


Figure 20: Eastern Region P-Way Breakdown

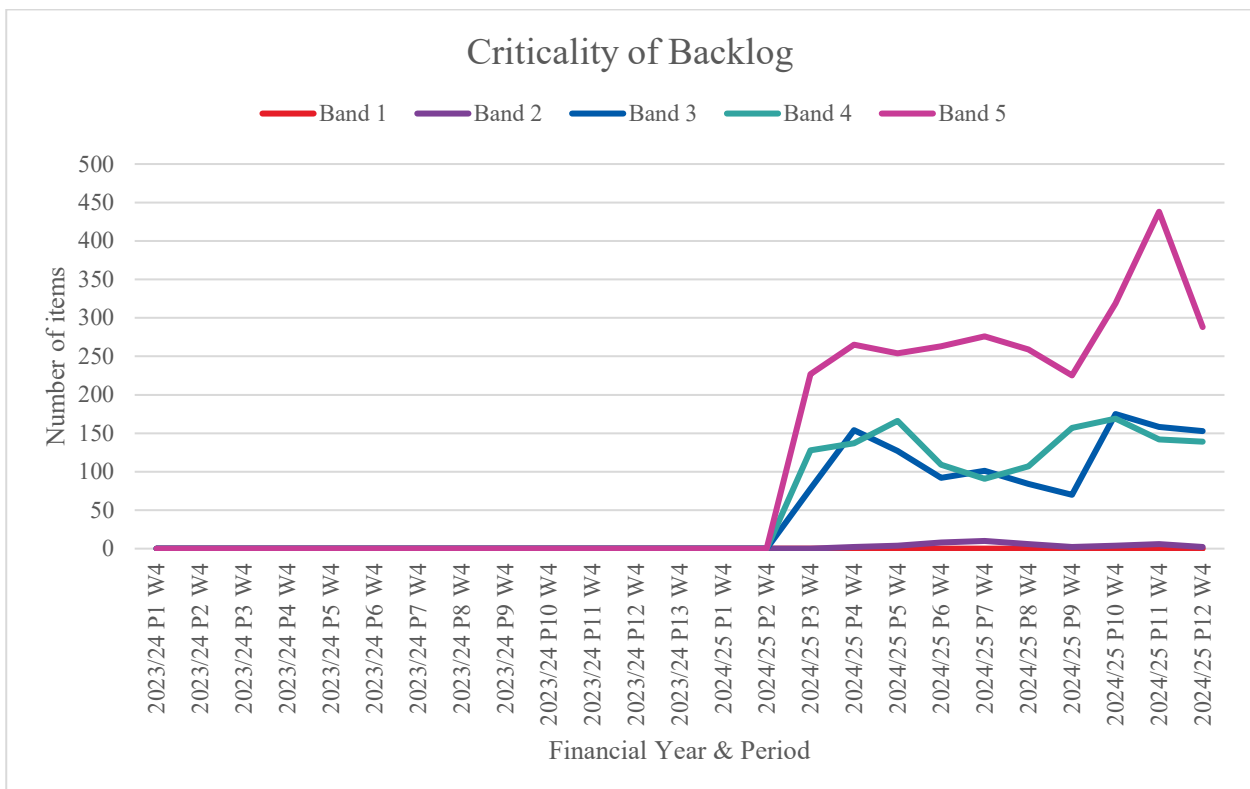


Figure 21: Eastern Region Criticality of Backlog

**4.1.5.2.2 Southern
Ashford MDU PWay:**

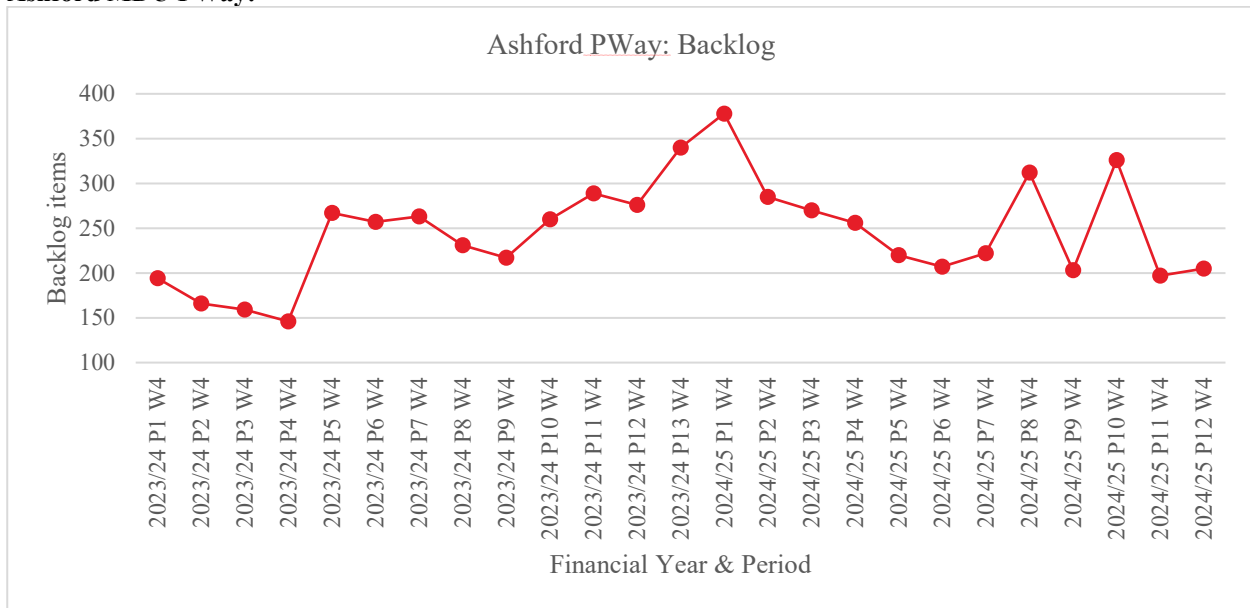


Figure 22: Southern Region (Ashford) P-Way Backlog

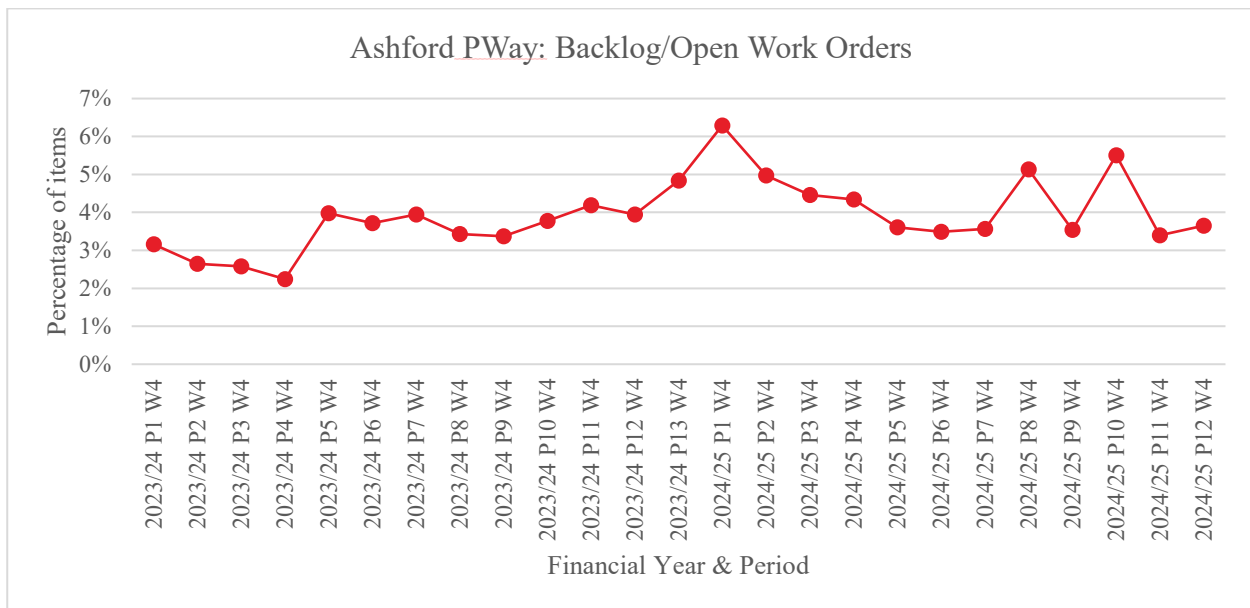


Figure 23: Southern Region (Ashford) P-Way Backlog / Open Work Orders

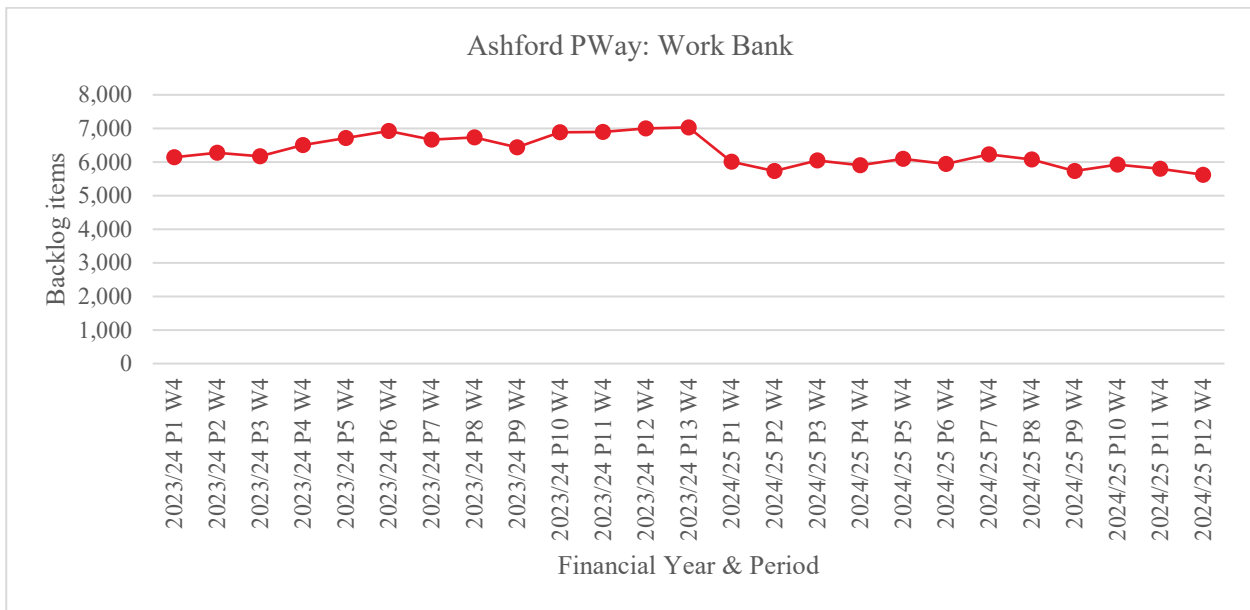


Figure 24: Southern Region (Ashford) P-Way Workbank

Ashford MDU E&P:

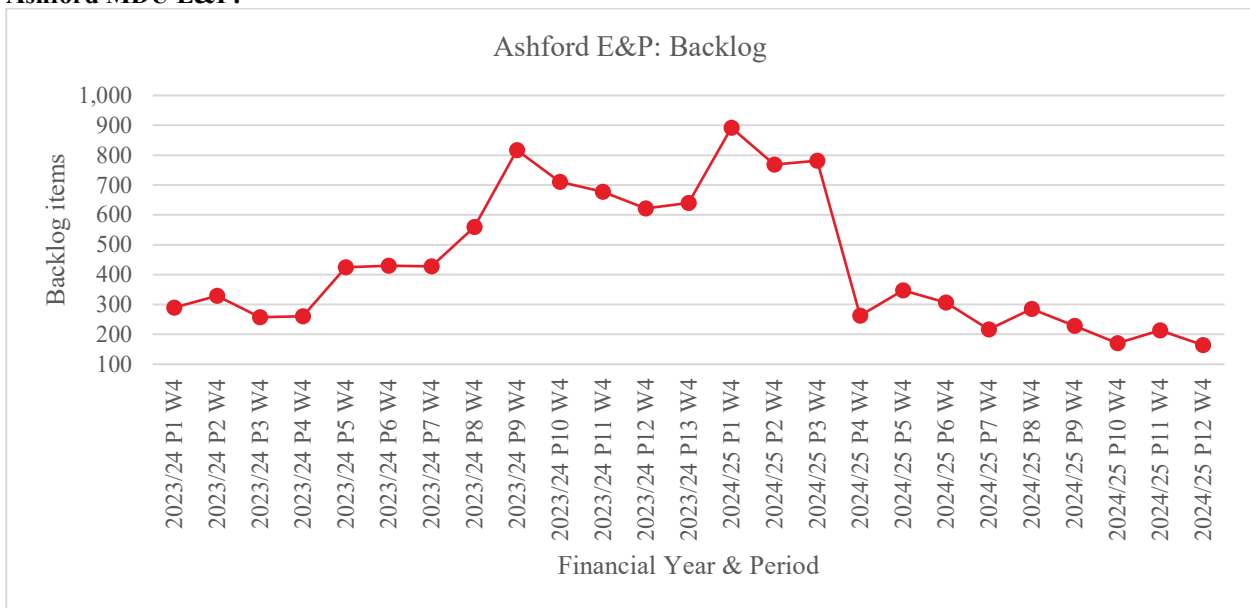


Figure 25: Southern Region (Ashford) E&P Backlog

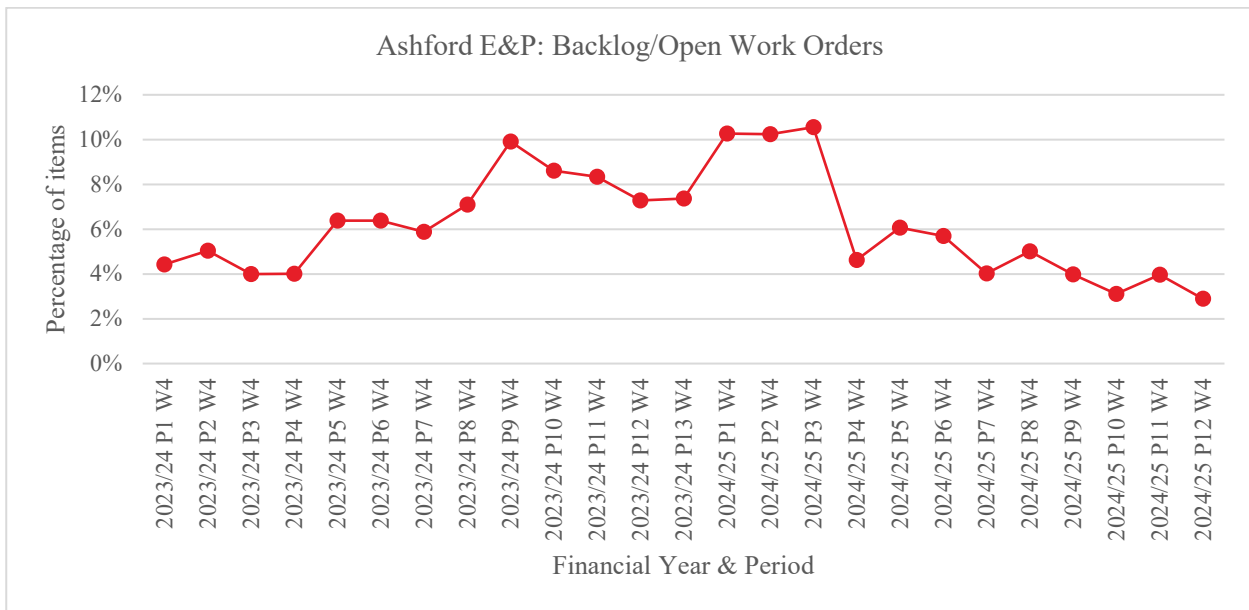


Figure 26: Southern Region (Ashford) E&P Backlog / Open Work Orders

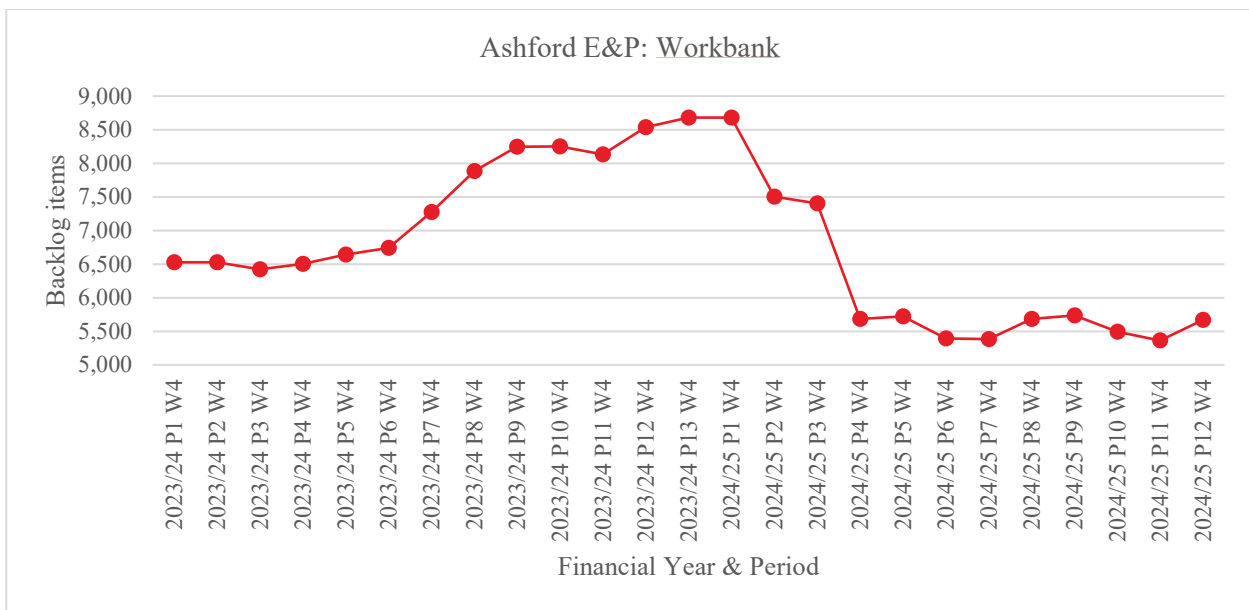


Figure 27: Southern Region (Ashford) E&P Workbank

4.1.5.2.3 Scotland – Glasgow Track

Glasgow MDU:

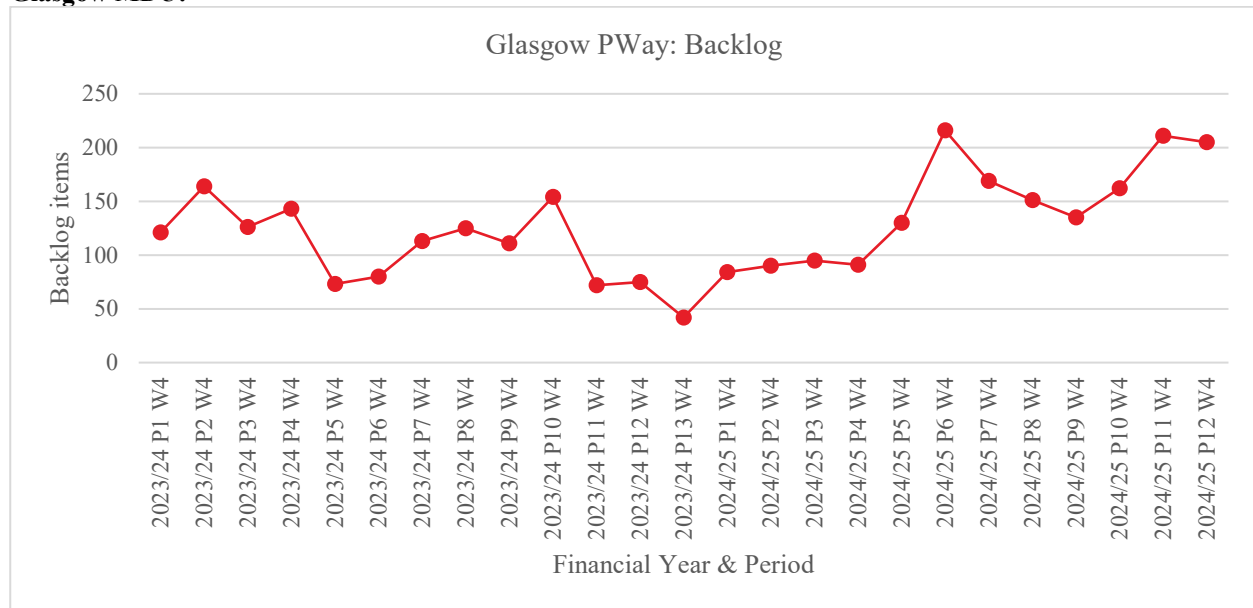


Figure 28: Scotland Region (Glasgow) P-Way Backlog

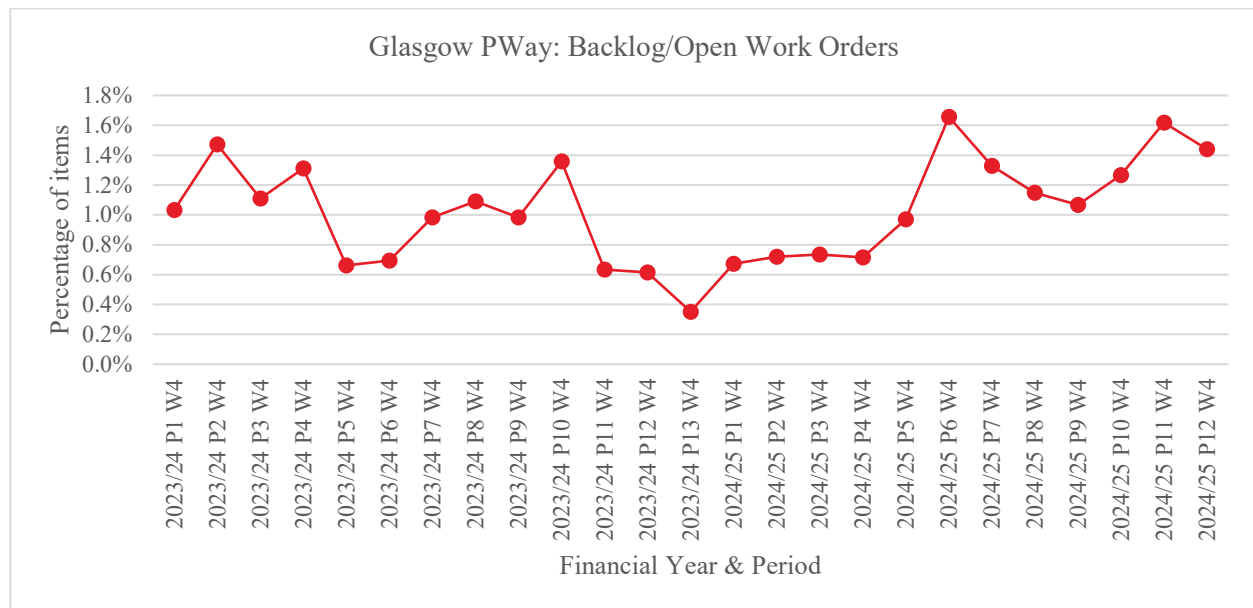
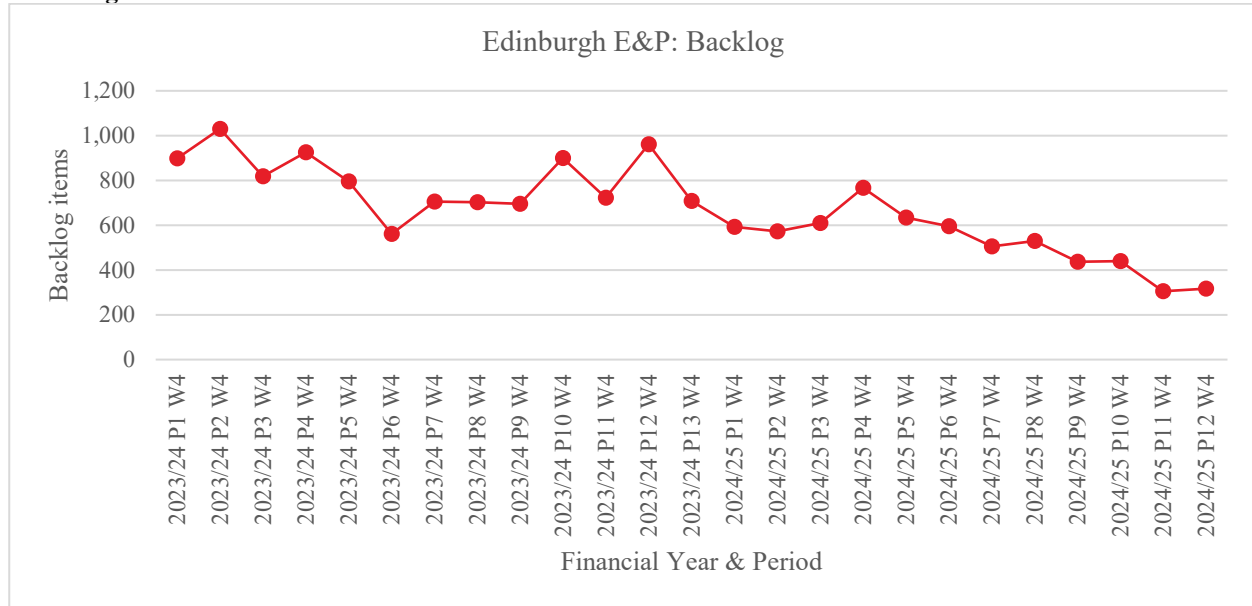
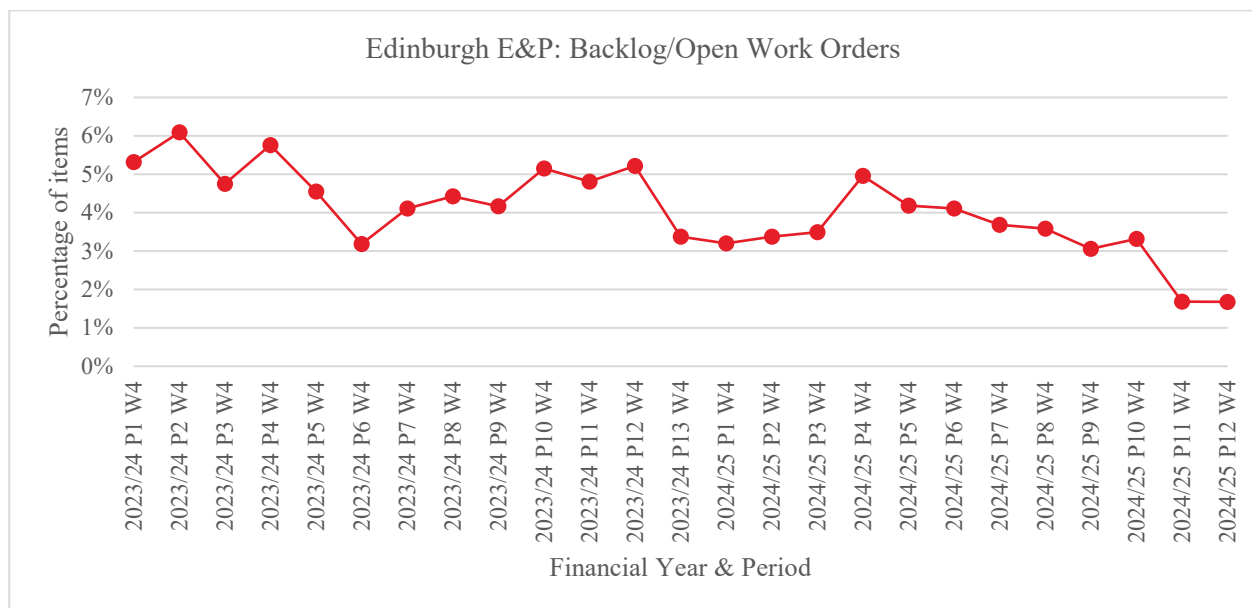


Figure 29: Scotland Region (Glasgow) P-Way Backlog / Open Work Orders

Edinburgh MDU:**Figure 30: Scotland Region (Edinburgh) E&P Backlog****Figure 31: Scotland Region (Edinburgh) E&P Backlog / Open Work Orders**

Glasgow MDU PWay Breakdown:

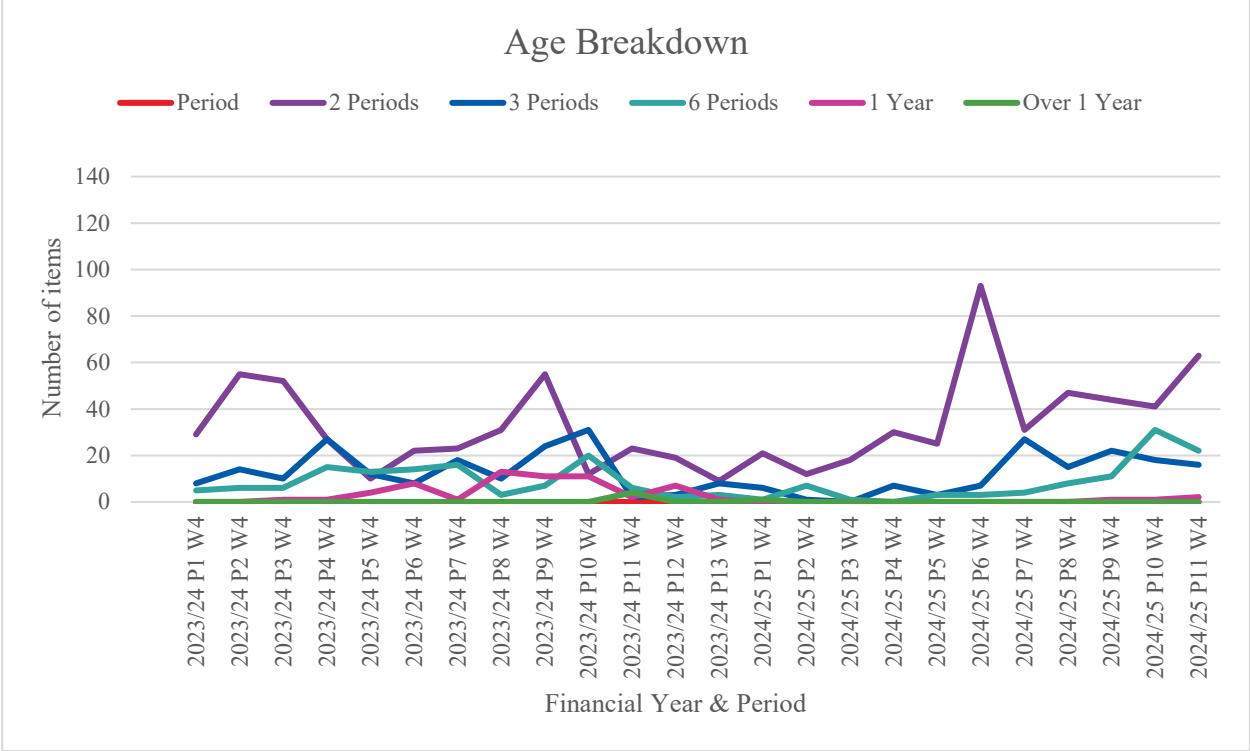


Figure 32: Scotland Region P-Way Breakdown

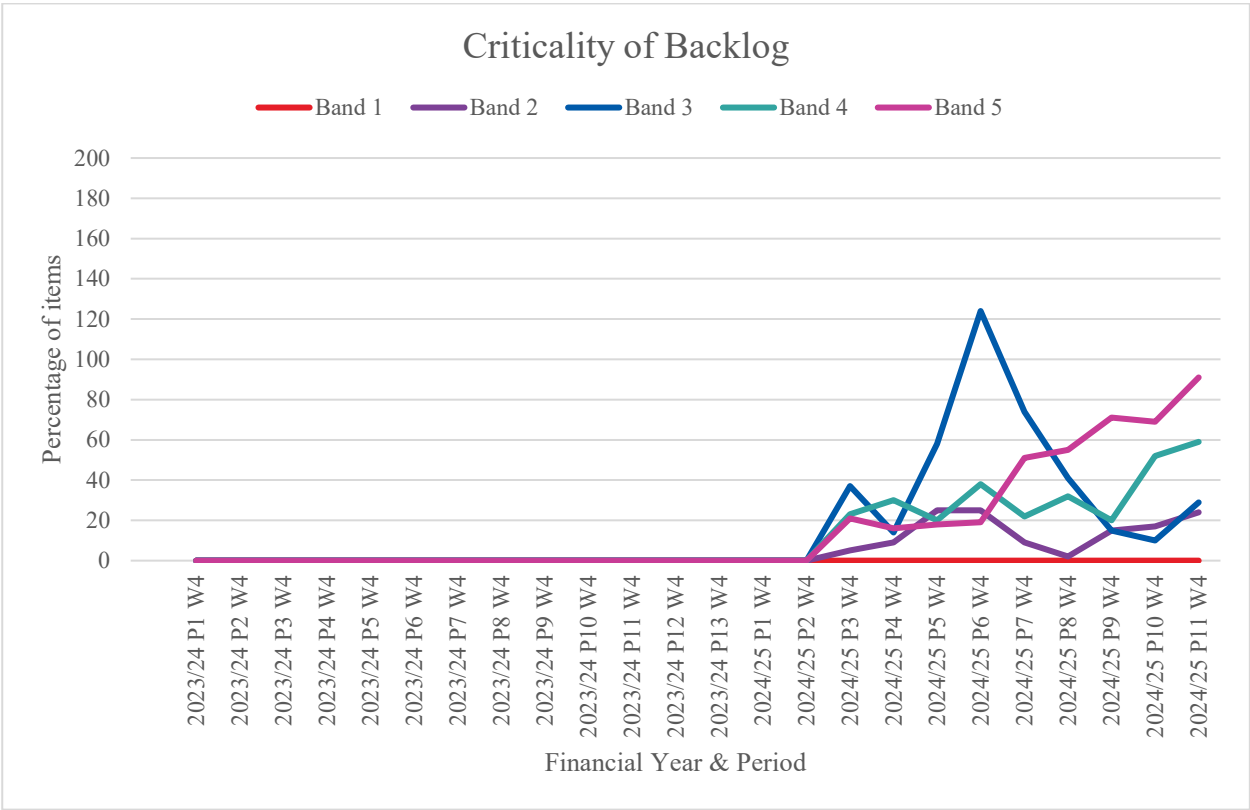


Figure 33: Scotland Region Criticality of Backlog

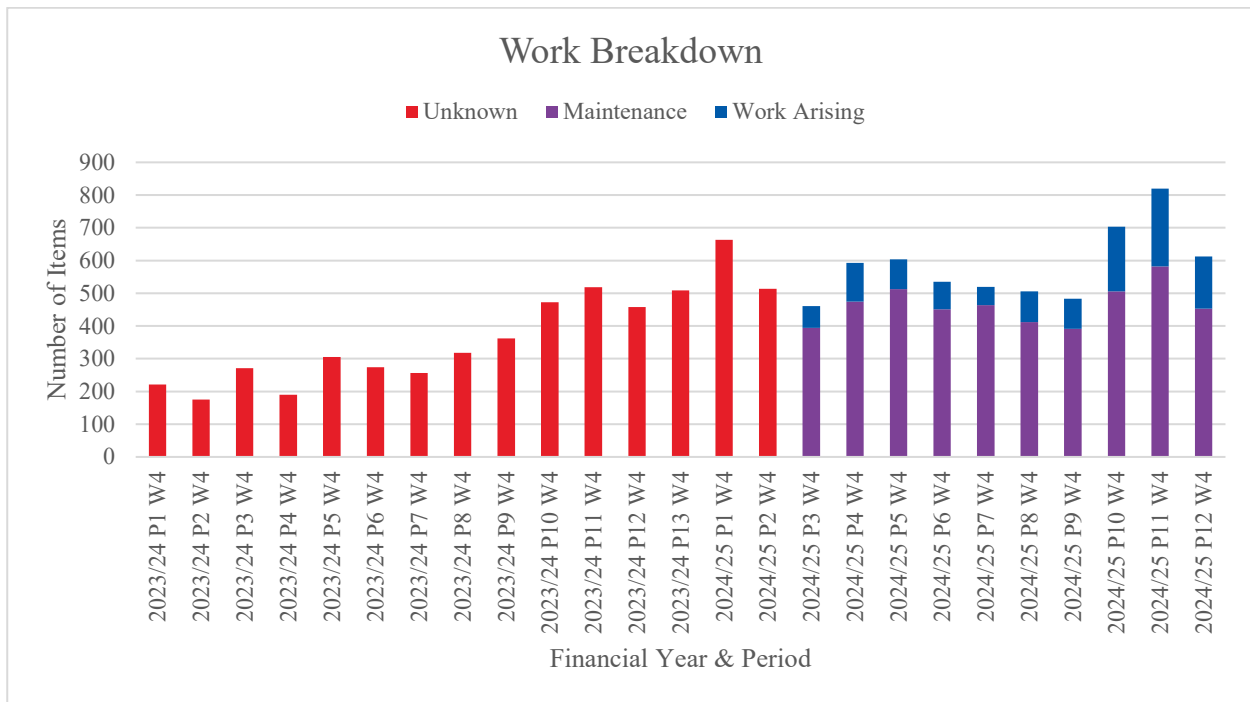


Figure 34: Scotland Region Work Breakdown

4.1.5.3 Findings

Route – Region	Discipline	Analysis / Insight	NR Explanation
Eastern – North & East	E&P	Backlog is under control with no concerns over deliverability	Not applicable
	PWAY	There seems to be a growing backlog problem for York MDU	Recent increase is largely related to a spike in cable theft in the Knottingley area and a change in Modernising Maintenance organisation change. An authority to change organisation is currently under review that will resolve this issue.
Southern – Kent	E&P	Backlog is under control with no concerns over deliverability	Not applicable
	PWAY	Backlog is under control with no concerns over deliverability	Not applicable
Scotland – Scotland	E&P	Backlog is under control with no concerns over deliverability	Not applicable
	PWAY	Backlog is trending in the wrong direction; however, the size of the issue is currently manageable and recoverable.	Backlog remains better than the 2% target and is being managed through the weekly PDR process

Based on our sample of backlog data for the three Regions backlog is under control or on an improving trend which is an indicator that delivery of current maintenance volumes is being achieved.

The one MDU and discipline showing a rising trend is York PWAY where the reason given was cable theft causing a loss of work being able to be completed and a requirement for additional staff of which a change to the organisation is underway.

When assessing the backlog data, we noted that the current measurement and target of 2% is not normalised by time. This could lead to backlog data from over a year ago skewing the data. Removing items of more than a year old would normalise the output and allow relevant comparisons to be made across MDUs.

4.1.6 Review of the number of possessions and line blockages

To understand the amount of work undertaken by Network Rail under possession or line blockages we reviewed the Work Done files for the three selected Regions. These showed, for CP6 Y5 and CP7 Y1, the number of occasions where Network Rail undertook work on the infrastructure and under which type of protection. This is summarised in Table 3 below.

Table 3: Work Done by Protection Type

Protection Type	Region	Discipline	CP6 Y5	CP7 Y1	Year on Year Change	Year on Year % Change
Possession	Scotland	Track	2684	3278	594	22%
		E&P	689	723	34	5%
	Eastern	Track	43893	45204	1311	3%
		E&P	3252	4811	1559	48%
	Southern	Track	13934	10271	-3663	-26%
		E&P	225	401	176	78%
Line Blockage	Scotland	Track	2589	2459	-130	-5%
		E&P	404	439	35	9%
	Eastern	Track	4	29	25	625%
		E&P	1090	722	-368	-34%
	Southern	Track	6718	6317	-401	-6%
		E&P	1167	1724	557	48%

As shown in Table 4 our review of work done by protection type shows there has been minimal change in CP6 Y5 and CP7 Y1 between possessions or line blockages. During the interviews we asked the Routes if Green Zone working was expected to impact their future possession strategy however it was suggested this will have no impact on the ability of Network Rail to complete the volumes required with the transitions largely completed in CP6.

Table 4: Percentage of Work Done by Protection Type

Region	Discipline	Possession			Line Blockage		
		CP6 Y5	CP7 Y1	Delta	CP6 Y5	CP7 Y1	Delta
Scotland	Track	51%	57%	6%	49%	43%	-6%
	E&P	63%	62%	-1%	37%	38%	1%
Eastern	Track	100%	100%	0%	0%	0%	0%
	E&P	75%	87%	12%	25%	13%	-12%
Southern	Track	67%	62%	-6%	33%	38%	6%
	E&P	16%	19%	3%	84%	81%	-3%

4.2 Qualitative Assessment

We augmented our data analysis with targeted interviews as set out in Appendix A.1 Meetings Log to understand the deliverability of the plan from those delivering it and to see if the data analysis was supported by the qualitative statements. It also allowed us to assess the systems and processes in place to develop, forecast, manage the plan, and giving the Regions the opportunity to discuss which key central functions are of importance.

On the reliance of central functions the Regions confirmed the following dependence on central functions:

- Provision of on train monitoring fleet;
- Technical Authority to set the standards

The Regions are their own organisation so the Regional delivery teams have access to a local technical group for escalation which limits the input from central functions in maintenance planning.

We asked the Regions to provide evidence the number of recording runs undertaken in the three Delivery Units assessed to provide us a level of assurance in the service received from central functions. We received files detailing examples of ballast regulators, tampers and stoneblower runs across the relevant years. Where runs were cancelled, they are replanned by Route services who are responsible for the provision of yellow plant for the MDUs. No concerns were raised by any Region on the outputs from the central function.

We have been unable to receive any outputs from any audits by the Technical Authority into maintenance delivery to inform our conclusions.

4.3 Quantifying Available Access

Following our document review and interview approach we have not been able to quantify the actual level of access available in the final Year of CP6. This is due to the inability of any Network Rail system related access to extract the data that it holds in a quantifiable manner. Network Rail provided some documentation in this area however it was not in a format that was possible to analyse, nor was it the most accurate and up to date summary of access available.

The main barriers to this have been:

- Availability of raw data
- Constraints of PPS and Rail Hub to provide raw data in a useable format
- Manual interpretation of the data which is available in theory would be impractical due to time constraints, and also prone to error because of the manual nature of extracting the data from the format available from PPS
- Limitations of relying on the data from the Engineering Access Statement (EAS)

This is because NR uses a system called PPS (Possession Planning System) that is essentially a large database for creating possessions (access) and worksites within those possessions that can then be published in a series of documents such as the EAS and ARP and Weekly Operating Notices (WONs). PPS is not linked to any maintenance planning systems such as Ellipse or Rail Hub (which includes details of line blockages which are not in PPS) and is the only source of possession information available to NR outside of locally created map and excel summaries. PPS requires manual input of all the information within it such as possession times, protection limits, isolations and possession start and finish times.

PPS creates reports which capture all the possessions within the requested report parameter. The parameters available are time and line of route sections which are defined by letters and numbers. For example, EA1010 covers all lines between Liverpool Street and Seven Kings. EA1010 is then broken into subsections so EA1010.1 applies to Liverpool Street station, EA1010.2 applies to Liverpool Street station exclusive to

Bethnal Green East or West Jn etc. In this way every section of track within the network has a line of route reference that is identified for possession planning purposes. As such you can select a time period (hours / days / weeks / months) and a line of route reference (or multiple line of route references), and PPS will create a report which lists all of the possessions which fall wholly or partially within those parameters.

However, there is no summary option available which could provide a total number of hours possession time within that report - the only way to obtain such a summary would be to review each possession individually and create a separate manual summary. Given the thousands of possessions which occur each period, NR have advised that they have no practical way to provide a summary of the access available at the three MDUs selected within each region for assessment given the limitations of PPS described. We observe that whilst not practical due to the extended period of time this would take, it is physically possible via the method described above.

Network Rail suggested that this information is available from the EAS. However, the limitations of this are that the EAS is only a snapshot in time and isn't kept up to date beyond circa T-26 when it begins to be superseded by the Draft Period Possession Plan (DPPP), Confirmed Period Possession Plan (CPPP) and the WON. It is also limited by the fact that the Section 4 "opportunities" (and to a lesser extent Section 5 possessions) listed within it (primarily used for maintenance) are only "opportunities" until each individual possession is created within PPS, and it then appears in the D/CPPP and WONs to become an actual possession. If an "opportunity" is not converted via this method to an actual possession for inclusion within the D/CPPP they must be requested as a late notice possession such that any amended timetables can ensure they accommodate them. Sometimes a shorter time period or physical extent of possession limits maybe necessary to fit around amended timetables. In addition, it would still require the manual interpretation and collation of data to come to a total amount of access.

We are therefore making two recommendations to address these findings as summarised in the executive summary and shown within Section 5. An example of a mitigation to one of the barriers identified could include the capability for PPS to export to excel spreadsheet and filter by location, whilst determining the number of hours possession access available within each possession.

4.4 Confidence Ratings

This section provides a confidence rating for each Region capturing the key insights and score against our analysis framework and common scoring mechanism. It identifies risks and potential issues in NR's current plans and ensures that scoring across the desk study and interview phases is normalised. The scoring has been completed by using the framework which was agreed by ORR and Network Rail.

The definitions for confidence ratings are set out in Table 5.

Table 5: Confidence rating descriptions

Band	Description
4	Evidence of a robust and aligned access plan and maintenance plan. Progress against relevant plans is on / ahead of schedule. Examples provided of good practice.
3	Evidence of a robust maintenance plan, but with some minor misalignments with planned access. With evidence of managing the gap and mitigating risk. Progress generally on schedule.
2	Evidence of misalignment between access plan and maintenance plan with limited evidence of managing the gap and mitigating risk. Progress behind schedule.
1	Evidence of no access planned for planned maintenance work with no evidence of managing the gap and mitigating risk. Progress significantly behind schedule.
0	Insufficient information provided to support rating.

The scoring has been formalised in confidence rating/summary maps (to enable effective visualisation of the results) alongside commentary for each Region.

4.4.1 Scotland

Based on use of the framework and assessment of information and evidence provided against the framework. Figure 35 shows these ratings.

Scotland performed strongly across all areas assessed as can be seen with all five areas of assessment rated as three out of four. Of the 65 individual items assessed via the desktop reviews of information and interviews undertaken with Scotland, four areas were rated as zero out of four due to information being unavailable relating to the unit costs of works delivery and provision of the RAID Log in respect to achievement of the maintenance volumes within the planned access. Only one area was assessed as a one, and this related to depot resourcing strategies.

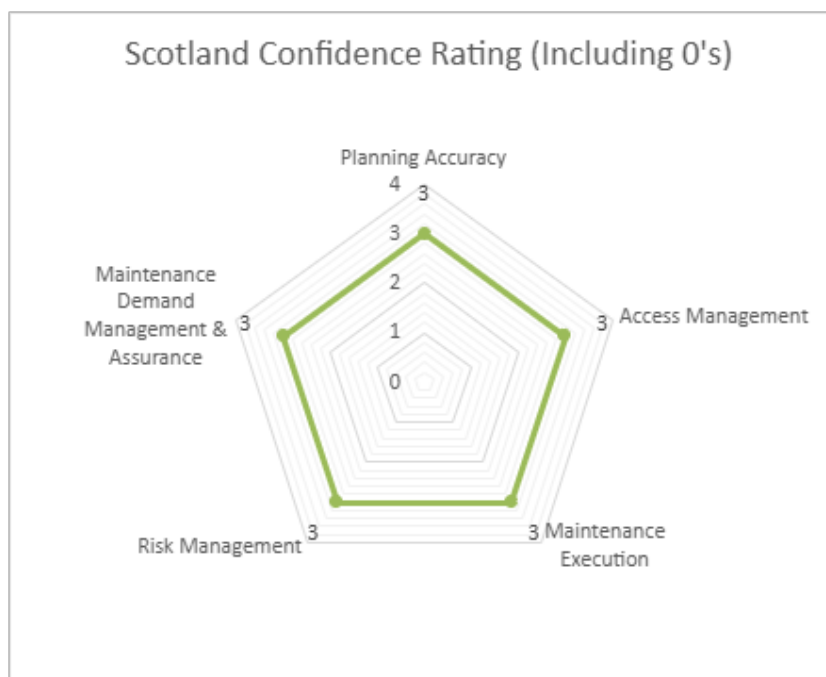


Figure 35: Scotland Confidence Rating

4.4.2 Eastern

Based on use of the framework and assessment of information and evidence provided against the framework, we have two confidence ratings. Figure 36 shows these ratings with the '0' scores included (where no evidence or information has been provided) however the number of '0's has dramatically reduced since the provision of the draft report after significant additional evidence was provided.

Eastern performed strongly across the majority of the areas assessed as can be seen with four of the five areas of assessment rated as three out of four. The only area of assessment to be rated lower than three was in Planning Accuracy which was rated two out of four.



Figure 36: Eastern Confidence Rating

Of the 65 individual items assessed via the desktop reviews of information and interviews undertaken with Eastern, two areas were rated as zero out of four due to information being unavailable which related to rationale for variance to plan and impact to the maintenance backlog. Only three areas were assessed as a one, and these related to unit costs and volume of available access. While these items had a negative impact on the confidence rating they raised no major concerns on our overall findings.

4.4.3 Southern

Based on use of the framework and assessment of information and evidence provided against the framework, we have two confidence ratings. Figure 37 shows these ratings with the '0' scores included (where no evidence or information has been provided) however the number of '0's has dramatically reduced since the provision of the draft report after significant additional evidence was provided.

Southern performed very strongly across most areas assessed as can be seen with all of the five areas of assessment rated as three or four out of four. Of the 65 individual items assessed via the desktop reviews of information and interviews undertaken with Southern, only three areas were rated as zero out of

four due to information being unavailable. Previously 13 individual items had been assessed as a zero rating. The remaining three zero ratings covered unit cost information. Only one area was assessed as a one, and this related average volume of work within the region compared to national averages.



Figure 37: Southern Confidence Rating

4.5 Summary of Findings

This section summarises our findings for each of the key questions required in the Independent Reporter Mandate.

4.5.1 In the final year of CP6 what was the actual volumes of maintenance delivered in possession and protected line blockages and did this align to the activities planned?

We reviewed the actual volumes delivered by NR in CP6 Y5 and analysed volumes and activities against the delivery plan. Our data analysis has determined that Network Rail adapt their delivery plan based on the needs of the asset base which can at times identify significant changes to the delivery plan. These changes suggest that the initial plan and forecasting could be improved. However, it should be noted (as detailed within Section 4.3) that it has not been possible to quantify the volume of access available in any year. This is due to the inability of any Network Rail system related access to extract the data that it holds in a quantifiable manner. Network Rail provided some relevant documentation in this area; however, it was not in a format that was possible to analyse, nor was it the most accurate and up to date summary of access available. Therefore, we are recommending that Network Rail review these barriers in more detail and then consider whether cost effective mitigations can be applied. These recommendations are shown in full within Section 5.

We reviewed the number of possessions and protected line blockages, and our analysis shows that availability of possessions and protected line blockages did not restrict the delivery of maintenance volumes in the final year of CP6.

4.5.2 Does the proposed region maintenance access strategy support the volume and type of maintenance planned for year one and two?

Based on the evidence provided, our analysis of data and focused discussions with the three Regions we are confident that Network Rail's access strategy plans for Track and E&P maintenance are likely to deliver the proposed volumes in CP7 Y1 and Y2 for the Eastern, Scotland and Southern Regions. All the evidence available to date shows the volume of maintenance delivered, aligns broadly with the level of activity planned, recognising that changing asset condition can mean that forecast requirements are amended.

Our review identified that 25%-35% of standard jobs had planned maintenance volumes greater in Y2 than in Y1 of CP7 with 75%-65% planned volumes that were reduced or the same level. Across all our evidence gathering we found access is not a significant issue to NR under delivering volumes in the areas assessed.

The data showing resourcing requirements across CP7 Track and E&P highlighted there are headcount issues where there is less resource than required in the plan. However, Network Rail has explained that additional resource is available via the supply chain, projects or Works Delivery which will mitigate the headcount gap. Based on our review of the evidence resourcing is not causing major issues in delivering maintenance volumes and is a low risk to future delivery. Although not a formal recommendation, in the interest of continuous improvement, this is an area where Network Rail could consider providing further assurance by forecasting the availability of external resource where additional support may be needed.

Our review of the backlog data for the three Regions shows it is steady or on an improving trend which is an indicator that delivery of current maintenance volumes is being achieved. The one MDU and discipline showing a rising trend is York PWAY where the reason given was cable theft causing a loss of work being able to be completed. To rectify the backlog, they have introduced a requirement for additional staff of which a change to the organisation is underway.

Our review has only looked at Y1-Y2 of CP7. There is a risk that in the future access requirements could become more restricted and / or the requirements for maintenance could increase in the later years of CP7. For an initial view we have provided an overview of the access planning timelines for Y3 which highlights the deadlines Network Rail need to achieve.

4.5.2.1 *If not, what is being done to address this and is it sufficient?*

While we believe the access strategy supports the volume and type of maintenance planned for Track and E&P in Y1 and Y2 there are changes which could be made to how Network Rail forecast access to better assess risks in future years. Two recent examples of where this would be or would have been beneficial are:

- The future ECML timetable which will increase service where there is a strong potential for reduced access. Highlighting risks and considering mitigations in advance of such timetable changes would protect maintenance delivery and performance/reliability.
- The recent performance issues within the Thames Valley post the implementation of the Elizabeth Line services is an example of where whilst the approach was taken to assess the requirements, the asset condition has deteriorated and subsequently required late possessions to be requested for remedial works such as headspan replacement.

The standard 'NR/L2/MTC/PL0175 Module 2 DU Processes for Planning' outlines the process for reviewing future maintenance volume demand and securing the necessary access to deliver against that volume demand. This is not currently possible using the current industry systems which limits the full and practical application of the standard.

To this end we have made two recommendations for Network Rail to better identify the barriers to quantifying access and volumes and whether these could be addressed if appropriate by new technologies or system changes.

Whilst all three Regions have sufficient access, examples and processes were provided which demonstrate refinement and optimisation of access is undertaken working with the TOCs & FOCs when needed.

4.5.3 *The dependence of the Regions' plan on central functions within Network Rail.*

The Regions confirmed the following dependence on central functions:

- Provision of on train monitoring fleet by Route Services;
- Technical Authority to set the standards

In relation to provision of the train monitoring fleet, we explored evidence with each Region around the number of recording runs undertaken in the three MDUs. We reviewed files detailing examples of ballast regulators, tampers and stoneblower runs across the relevant years. Our analysis indicates that where recording runs were cancelled by Route Services, they were generally replanned in a timely manner by Route Services.

The Regions are their own organisation, so the Route delivery teams have access to a local technical group for escalation which limits the input from central functions in maintenance planning.

No concerns were raised by any Region on the support they received in relation to the train monitoring fleet and our analysis did not identify any issues.

5. Recommendations

The following table outlines out recommendations for improvement for Verification of Maintenance Volumes Access. Further explanation to the findings linked to these recommendations are shown within Section 4.

Table 6: Table of Recommendations

No.	ORR Ref.	Recommendation to Network Rail	Intent & Benefits	Evidence of Implementation	Location in Text
1	SOW 44399-1	Our review has identified that it is not currently possible to relate access availability and required maintenance volumes in a way that the volume of access can be checked against the required maintenance. To increase the understanding of the risk this causes to delivery we recommend Network Rail undertake a review which identifies the barriers to quantification of the total volume of access and maintenance required. It should relate to specific railway geography as per the current systems used (PPS, Rail Hub & Ellipse) which limits the full and practical application of “NR/L2/MTC/PL0175 Module 02 DU Processes for Planning”.	This will allow MDUs to understand the actual amount of possession time available vs their requirements from the Maintenance Delivery Unit Annual Plan. This could then be used to compare the levels of access available to their forecasted requirement and identify any potential shortfalls and mitigate this before it becomes an issue. It could also be used to assess the impact of amended WTTs upon the maintenance requirement, avoiding the cumulative issues described in the Thames Valley. This will allow solutions to be identified to existing and developing technologies and processes, potentially minimising the amount of new technology (and therefore cost) required. It would also potentially realise efficiencies within the MDUs by removing the manual creation of access summaries which are created currently. This could have a financial or productivity benefit which would need to be quantified as part of any business case development.	Network Rail investigate and document the best value for money solution to quantify the levels of access available. This may include insight from Routes, Regions, and the System Operator into the causes of identified barriers, along with possible ways to overcome them, the ease of doing so, and the associated benefits.	4.3

No.	ORR Ref.	Recommendation to Network Rail	Intent & Benefits	Evidence of Implementation	Location in Text
2	SOW 44399-2	Once recommendation 1 is completed consider whether any of the barriers identified, can be removed or their impacts lessened by the adoption of new systems, or changes to current / in development technology - such as PPS and its replacement APS, Schedule It (a tool operating as proof of concept within some regions outside of the scope of this review which brings information from the existing systems together), Rail Hub and Ellipse. If appropriate and cost effective, develop new technologies to meet these requirements or include the requirements in the scope of existing system upgrades in future (or the current development of APS for example).	This will allow MDUs to more easily understand the actual amount of possession time available. This could then be used to compare the levels of access available to their forecasted requirement and identify any potential shortfalls and mitigate before it becomes an issue.	Building on the outcomes of implementing Recommendation 1, Network Rail produce a Statement of Requirements for either the procurement of a new access planning system or the reconfiguration of an existing system.	4.3

A.1 Statement of Work

Independent Reporter Framework

Scope of Works – Verification of the deliverability of the planned maintenance activities in the available access (possession and protected line blockages)

1. COMMISSION OVERVIEW	
1.1 Background	Network Rail's strategic business plan identified that in light of the tight funding settlement, there were opportunities to reduce core asset renewals expenditure in CP7. This included seeking to obtain further life from its assets through increased minor works and maintenance activity. This will mean there is a greater reliance on maintenance work to manage asset condition and performance. ORR accepted this in its draft and final determination. ORR also identified that Network Rail was able to demonstrate greater alignment between maintenance planning and renewals (as set out in its final determination). At point of delivery plan Network Rail identified further movement from renewals to maintenance. ORR accepted this plan but noted it will need to enhance its holding to account of maintenance in CP7 in a letter to Network Rail dated 28 March (orr.gov.uk). In addition to this Network Rail is going through a transition to reduce red zone working and the 2023 Annual Report of Health and Safety highlighted that use of possessions and protected line blockages has increased from 31% in 2019 to 60% in 2023. With increased maintenance volumes expected in CP7 it is important to verify Network Rail's processes surrounding planning and delivery of maintenance activities in possessions and protected line blockages are robust.
1.2 Business Objectives and Priorities	As stated above, the ORR final determination and delivery plan letter committed to an enhanced focus on assurance of maintenance activity in CP7. Network Rail's network licence (section 1.1) identifies securing the operation, maintenance, renewal and enhancement of the network to satisfy the reasonable requirements of its customers and funders in a timely, efficient and economical manner. This is a part of the core duties section and is fundamental to Network Rail's role. Maintenance is vital to managing asset performance. If the activities are not delivered there is a risk to the railway network. Therefore, ORR and Network Rail need assurance that Network Rail regions have robust plans to deliver the increased activity in CP7. The key elements ORR and Network Rail are looking to verify are: 1. In the final year of CP6 what was the actual volumes of maintenance delivered in possession and protected line blockages and did this align to the activities planned? 2. Does the proposed region maintenance access strategy support the volume and type of maintenance planned for year one and two? 3. If not, what is being done to address this and is it sufficient? 4. The dependence of the regions' plan on central functions within Network Rail. The scope of this work will be constrained to maintenance activities in the areas of track and electrification and plant.

1.3 Key Requirements	The reporter will analyse the evidence from each region listed below to provide independent critical verification on Network Rail's current plans to identify risks or potential issues in local maintenance access plans. Delivery plan (2024) regional asset management supporting information should be used to demonstrate line of sight between regional targets and route planning and delivery. It is expected that the work will be delivered through engagement between technical authority (and other relevant central functions), and regions (with regions liaising with other local teams to seek information where required). A contact for each region (and other relevant central functions) will be provided following appointment of the Independent Reporter. The reporter should not seek out contacts and should only utilise the contacts nominated to them by the NR lead. The scope of the work will focus on Eastern, Scotland and Southern regions with the maintenance plan for one Delivery Unit from each region being chosen for this work. Network Rail will inform the independent reporter of the chosen routes at the start of the project. It is important to note that there is a continuum of interventions, from capital works, through maintenance to inspection. For this work we ask the independent reporter to assess all maintenance activities in the identified disciplines (Electrification & Plant and Track), looking at activities identified as "work arising" and "cyclic work" separately. Please note that these definitions are currently aligned to maintenance activities. Therefore, we are not expecting the independent report to allocate definitions to activities as this will be included in the data sets provided. It is also understood that due to the number of maintenance activities the reporter may want to use a sampling approach for parts of the work. Requests for data should happen within the first three weeks of the work. Evidence from each region and relevant central function, which will aim to provide at the start of the project: • In response to question one - data of maintenance activity planned and delivered in possessions and protected line blockages in last year of CP6. • In response to question two - data for each region of the planned maintenance activities to be delivered by protection method for years one and two of CP7,) alongside the access strategies. Data for delivery of mechanical maintenance work in possession and protected line blockages and verification that this aligns to the plan. • Verification of collaborative planning between teams. <u>Items excluded from scope.</u> The work is an independent critical verification on Network Rail's current plans to identify risks and potential issues. It is not expected that the reporter will identify solutions to address these items as Network Rail will address this in its response to the work. On site observation and direct engagement with delivery units is not required as part of this work. The Network Rail contact provided for each region will manage engagement with route and Delivery Units as required.
1.4 Key skills	Bidders will need to demonstrate how their relevant technical expertise is applicable to this work package, notably: • delivering maintenance services within a railway infrastructure environment • maintenance planning, including the annual planning processes, access, the relationship with asset management, and balancing supply and demand. • track and Electrification & Plant (E&P) maintenance in a railway environment at a senior level (e.g., Infrastructure Maintenance Engineer), including knowledge of key plant and tools. • Network Rail systems e.g., Ellipse and PPS • The ability to work with senior stakeholders and request through them the information and data they require.

1.5 Stakeholders	The main contacts will be the Network Rail Head of Maintenance, Principles & Standards and the Network Rail Regulatory Compliance & Reporting Manager. Further contacts will be nominated by them and are likely to include Route Directors and Director, Engineering & Asset Management (DEAMs) for the nominated routes. Direct contact with Delivery Units must not take place without written confirmation from the Network Rail Regulatory Compliance & Reporting Manager.
1.6 Key Deliverables	The required deliverables for this review are: ▪ Schedule of activities covering the duration of the commission (5 working days following contract award). ▪ An update meeting during week three where the reporter confirms the proposed method and sampling approach, as well as any initial observations. ▪ Weekly progress update reports and meetings (with ORR and NR leads); ▪ A presentation and discussion on the findings and recommendations being included in the draft report; ▪ A draft report (for comment by ORR and Network Rail) covering the issues set out in the key requirements section above, to be provided by the end of March 2025; and ▪ A final report that addresses comments provided by ORR and Network Rail (on the draft report). The final report is required to meet the accessibility requirements (Guidelines for writing accessible reports for ORR) This includes the use of charts, maps and colours.
1.7 Place of work	Network Rail Elder Gate, Milton Keynes MK9 1EN. ORR (Office of Rail and Road) 25 Cabot Square, London E14 It is anticipated that the majority of the services may be conducted from the supplier's own office or remotely. Meetings with Network Rail staff can be in person or via MS Teams. Business Travel Expenses to UK locations may be claimed, subject to prior agreement and in accordance with Network Rail's Business Travel and Expenses Policy. The Supplier shall endeavour to minimise travel and expense costs throughout the duration of the contact. Where remote working, facilitated by video-conferencing platforms such as Microsoft Teams, is appropriate, it is anticipated that the Supplier will be able to adapt to similar measures.
5. SOURCING STRATEGY	
2.1 Call off mechanism used:	Mini-Competition as per the process set out in the Framework agreement.
2.2 Justification:	Following framework process

2.3 Technical Evaluation Questions to bidders:
[Note: must total 100%]

Q1 – Resource and Technical Expertise

Please provide details of the resource team being proposed, demonstrating how their relevant technical expertise is applicable to this work package, including as a minimum:

- delivering maintenance services within a railway infrastructure environment
- maintenance planning, including the annual planning processes, access, the relationship with asset management, and balancing supply and demand.
- track and Electrification & Fixed Plant (E&P) maintenance in a railway environment at a senior level (e.g., Infrastructure Maintenance Engineer), including knowledge of key plant and tools.
- Network Rail systems e.g., Ellipse and Possession Planning System (PPS) will be utilised for successful delivery of this contract.

Bidders are asked to provide:

- CVs for each resource demonstrating their knowledge, skills, and expertise in line with the Scope of Services
- A resource plan of their proposed team, with a clear breakdown of resources, positions, and estimated days against the scope of each of the requirements.
- An organisational chart of their proposed advisory team
- A clear explanation of where value add benefits are achieved through the resource team and expertise proposed for the work package.

Weighting: 40%

Page limit - Four A4 pages (excluding CVs and resource plan but please keep these concise and to the point).

Minimum 10pt Arial with 1.27cm margins

Q2 – Methodology and approach

Please explain your methodology and approach while also detailing how this contributes to the efficient and successful delivery of the requirements contained in this SOW.

Bidders should include as a minimum:

- The approach to undertaking the review.
- how they will apply their existing knowledge and expertise of railway maintenance to minimise the impact on Network Rail's resources / activities.
- their tools and techniques that will be used for the basis of the review.
- their application of best practice
- how they provide assurance and confidence in the final report
- a clear explanation of where value add benefits are achieved through the proposed methodology and approach.

Weighting: 50%

Page limit - Six A4 pages

Minimum 10pt Arial with 1.27cm margins

Q3 – Timescales

Please explain how the specified timeline will be achieved, or if not, what timeline is feasible and how this will support the objectives of this review – in either case, supported by appropriate evidence, stating assumptions, and identifying how risks will be managed.

	Weighting: 10% (minimum score of 3 to 'pass') Page limit - Two A4 pages Minimum 10pt Arial with 1.27cm margins														
2.4 Score criteria	<table> <tr> <th>SCORE</th><th>SCORE DESCRIPTORS</th></tr> <tr> <td>5</td><td>An outstanding response that provides excellent confidence in the Bidder's approach and excellent confidence in their consequential overall ability to deliver the required services.</td></tr> <tr> <td>4</td><td>A high-quality response that provides very good confidence in the Bidder's approach and very good confidence in their consequential overall ability to deliver the required services.</td></tr> <tr> <td>3</td><td>Acceptable response that provides good confidence overall in the Bidder's approach and their consequential ability to deliver the required services.</td></tr> <tr> <td>2</td><td>Mostly acceptable response with minor concerns overall in the Bidder's approach and their consequential ability to deliver the required services.</td></tr> <tr> <td>1</td><td>Unacceptable response with material concerns overall in the Bidder's approach and their consequential ability to deliver the required services.</td></tr> <tr> <td>0</td><td>No response or a fundamentally unacceptable response.</td></tr> </table>	SCORE	SCORE DESCRIPTORS	5	An outstanding response that provides excellent confidence in the Bidder's approach and excellent confidence in their consequential overall ability to deliver the required services.	4	A high-quality response that provides very good confidence in the Bidder's approach and very good confidence in their consequential overall ability to deliver the required services.	3	Acceptable response that provides good confidence overall in the Bidder's approach and their consequential ability to deliver the required services.	2	Mostly acceptable response with minor concerns overall in the Bidder's approach and their consequential ability to deliver the required services.	1	Unacceptable response with material concerns overall in the Bidder's approach and their consequential ability to deliver the required services.	0	No response or a fundamentally unacceptable response.
SCORE	SCORE DESCRIPTORS														
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0	No response or a fundamentally unacceptable response.														
2.5 Weightings (Technical vs Commercial)	<table> <tr> <td>Technical</td><td>70 %</td></tr> <tr> <td>Commercial</td><td>30 %</td></tr> </table>	Technical	70 %	Commercial	30 %										
Technical	70 %														
Commercial	30 %														
2.6 Budget	Has the budget been approved? Yes Fixed price contract														
6. TIMELINES															
3.1 Publish Procurement Documents:	28 th October 2024														
3.2 Deadline for submission of clarification questions:	8 th November 2024 - midday														
3.3 Tender submission closing date:	15 th November 2024 - midday														
3.4 Evaluation and moderation period:	18 th November to 13 th December 2024														

3.5 Contract award and signatures:	23 rd December 2024 – 10 th January 2025 Note – an allowance is included due to resource over Christmas and New Year
3.6 Anticipated contract to commence from:	13 th January 2025
3.7 Anticipated contract to end date:	21 st March 2025 for delivery of the draft report and recommendations, with the contract ending on 18 th April 2025, or, subject to advance agreement in writing by Network Rail, until all deliverables (1.3 Key Requirements) under the contract have been completed and signed off within the agreed cost stated in the contract.
7. ORR SIGN OFF	
4.1 Specification Proposer	Complete
4.2 Specification Authoriser	Complete