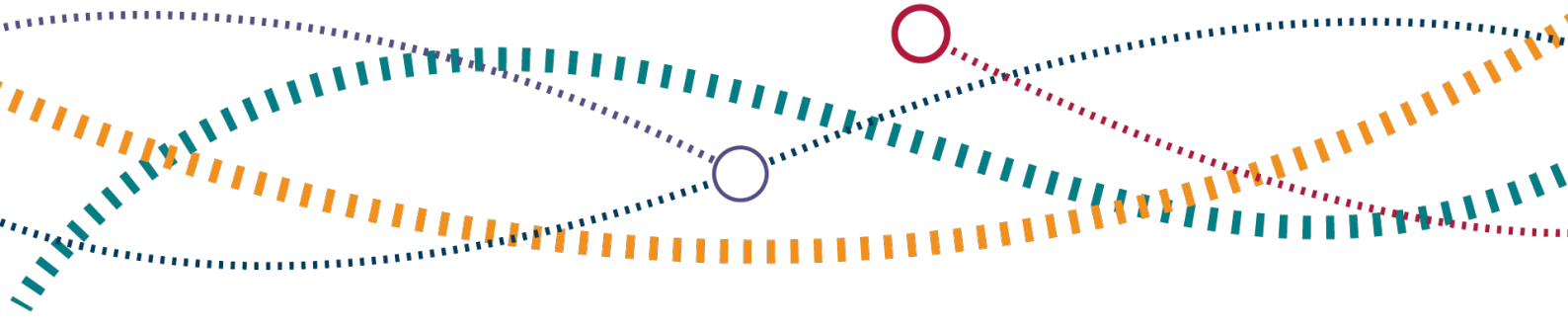
Mobile Maintenance Trains – Effectiveness & Utilisation

07 August 2025



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Glossary of Terms

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Abbreviation / Acronym	Description
MMT	Mobile Maintenance Train
NROL	Network Rail Online Logistics
PWAY	Permanent Way
RACI	Responsible, Accountable, Consulted, Informed
S&C	Switches & Crossings
SPZ	Signal Protection Zone
SRP	System Review Panel
TAR	Targeted Assurance Review
TME	Track Maintenance Engineer

Executive summary

Network Rail's Mobile Maintenance Trains (MMTs) represent a £40 million investment made in 2015, with eight units currently operating across the Eastern and Southern regions. These specialised "workshops on wheels" were designed to improve railway maintenance by making it quicker, safer, more efficient, and less disruptive.

This Targeted Assurance Review (TAR) has found mixed results regarding the MMTs' effectiveness. While machine availability is high at 96%, and safety performance is strong, significant operational and governance challenges exist.

Key findings include:

Governance Issues: There is a lack of central oversight and strategic direction across the MMT fleet, with no clear leadership driving the closure of outstanding requirements. The MMTs have operated under a trial certificate for eight years without full completion.

Inconsistent Utilisation: Performance varies significantly between Maintenance Delivery Units (MDUs). Some teams have excelled with structured support, while others struggle with budget constraints, staffing gaps, and planning inefficiencies.

Limited Data Collection: The original business case projected annual savings of £8.5 million (£0.9 million per machine), but inconsistent data collection makes verification impossible. Only one MDU has provided limited evidence of cost savings (£1.2 million annually).

Communication Barriers: MMT teams operate independently with limited communication between units, restricting the sharing of best practices and innovations.

Training Bottlenecks: Only one centralised trainer serves all MMT teams, creating delays in onboarding new staff and developing necessary competencies.

Despite these challenges, operational teams generally view the MMTs positively, citing superior performance over traditional methods. Local innovations have been implemented to improve efficiency and safety, though approval processes for new equipment remain slow.

The review concludes with four key recommendations:

- Close out the trial certificate process with a timebound plan
- Review and optimise the governance framework
- Standardise performance metrics and reporting systems

- Develop an overarching strategy for MMTs as part of a broader On-Track Machine strategy

Implementing these recommendations would help Network Rail maximise the potential of its MMT investment and ensure alignment with national maintenance objectives. It would also provide the groundwork for expansion of the fleet.

Background

1.1 In September 2015, Network Rail introduced the first Mobile Maintenance Train (MMT) at Darlington, followed by seven additional units over the next 12 months, representing a £40m investment.

1.2 Designed as a 'workshop on wheels', MMTs perform repairs, renewals, and upgrades, including wet bed remediation, rail replacement for defect removal or breaks, sleeper changes, and track circuit maintenance. Their goal is to make railway maintenance quicker, safer, more efficient, and less disruptive.

1.3 Eight MMTs are currently active, stationed across Network Rail's Eastern and Southern regions, as detailed in TABLE 1.1 below. Horsham Maintenance Delivery Unit (MDU) operates two units. Stabling locations have shifted since 2015 based on demand and utilisation, with a unit moving from Derby to Horsham and the eighth, previously a spare for maintenance and overhaul, now assigned to Basingstoke.

Table 1.1 Mobile Maintenance Train locations

Region	Route	Maintenance Delivery Unit
Eastern	Anglia	Romford
Eastern	East Coast	Darlington
Southern	Kent	Paddock Wood
Eastern	North & East	Wakefield
Eastern	North & East	Retford
Southern	Sussex	Horsham (x2)
Southern	Wessex	Basingstoke

Objectives

1.4 This Targeted Assurance Review (TAR) was undertaken to evaluate the effectiveness and efficiency of the Mobile Maintenance Trains currently in operation.

1.5 The review aimed to determine whether these machines are being utilised optimally across the network, assess their impact on maintenance operations in terms of added value, and establish a clear strategic direction for their future use.

1.6 Given the significant investment in these machines, it is important to verify whether the intended benefits have been realised and whether further enhancements or changes to their deployment are necessary.

Scope and Methodology

1.7 The review focuses on the Mobile Maintenance Trains currently in use across Network Rail. The scope does not extend to other on-track maintenance machines.

1.8 A desktop study was conducted to examine existing data. This was followed by the development and analysis of a Request for Information (RFI) to gather insights from key stakeholders.

1.9 Further clarifications were sought through interviews with relevant personnel and site visits to locations where MMTs are actively deployed.

1.10 As part of our on-going assurance activities, we are investigating Network Rail's On-Track Machine (OTM) strategy. OTM are essential for maintaining and renewing the rail network. Network Rail should have a clear, long-term OTM strategy to ensure these activities are efficient, effective, and aligned with best practices. We would expect the MMTs to form part of this strategy to align with best practice.

2. Findings

Stakeholders and Governance

2.1 The operation and machine maintenance of the MMTs fall under the remit of Network Rail's Route Services functions. Route Services has contracted Harsco for the day-to-day management of the fleet. Network Rail's Technical Authority are accountable for the product approval.

2.2 MMTs are owned and operated within individual MDUs at the route level, who are responsible for their deployment and utilisation. There is a centralised structure governing their shift allocation, however not all of the MDU's appear to be consulted in this process. Additionally, from the information received as part of the RFI and interview processes, it is apparent that there is no central function working to understand the cost and benefits of the MMT's output.

2.3 It was noted on several occasions that there was previously an informal 'coordinator' of the MMT fleet. Their exit has been viewed to have hindered the governance and collaboration of the fleet. This coordinator role was in addition to the specified duties of that post and involved the setting up of many of the systems, practices and documentation the teams now use. The coordinator also acted as a bridge between the teams, sharing information and communications between them.

2.4 MMT teams operate independently of one another. Limited communication was observed; this is further complicated by night shifts and geographic spread. Best practice, and knowledge sharing is difficult due to the lack of communication.

2.5 Some MMT teams are perceived to have outperformed others. Some have experienced budget constraints and staffing gaps. Some teams report a shift allocation of 225 per annum reduced from an original 250, while others report 250 and some report above this number.

2.6 We understand that the MMT fleet was originally allocated 250 shifts per annum, this was reduced to 225 early in the MMT's introduction because of extended downtime due to poor machine performance and reliability. These issues have been rectified, and performance and reliability has considerably improved due to work carried out by Network Rail, but despite this some MMT's still have this limitation.

2.7 In addition, one MMT Team had filled 300 shifts with 50+ of those funded in addition to their specified budget, showing that there is potential for shift numbers to be uplifted with the correct planning in place.

From our conversations with Network Rail, we noted that there is no formal structure for senior management support above section manager level for the MMT. In DUs where senior management support is present it aids in budgets, training, staffing levels and outward facing publicity. In DUs where this support wasn't present, they faced challenges in these areas relying on consistent positive behaviours and local agreements to bring in additional work for the MMT.

Trial Certificate

2.8 Since their introduction, the MMTs have been operating under a trial certificate, which allows for an assessment period before full approval.

2.9 The original trial certificate is still active and has not been completed. Many the prerequisites have been met, though we did not see evidence of clear leadership to drive the closure of the outstanding requirements. It remains unclear who is responsible for ensuring that the necessary conditions are met or when the trial period will officially conclude.

2.10 The lack of a guiding mind has resulted in delays in achieving full approval. This creates uncertainty about the long-term status of these machines within the rail network.

2.11 We view the completion of the product approval process as a good opportunity to gather the required data and measure the project against the original business case. This would assess performance, cost/saving and delivery metrics from each MMT. We are not aware of any current plans to do this.

MMT Operations

2.12 While MMTs are primarily used for track maintenance, their specific applications vary by region. The flexibility of MMTs makes them suited for reactive maintenance tasks, such as addressing urgent rail defects, but they are also frequently employed for planned maintenance activities.

2.13 It is difficult to draw comparison with other On-Track Machines, such as tampers because MMT have a more complex operational model due to their in-built flexibility. Tamping is booked and provided as a service across the network, whereas the work an individual MMT carries out is operationally under the control

of the MDU it is attached to. Only the driving and maintenance of the machine is centrally controlled.

2.14 In addition, Tamping as a process, and the outputs it provides are well understood, and as a service it has been in use for a significant period of time. As such there is a great deal of competency in this area. Whereas for the MMT the services and outputs it can provide are relatively new and less established.

2.15 MMT teams highlighted that budget constraints, in terms of shift allocation per annum, limits the extent to which MMTs can be deployed. The absence of clear key performance indicators (KPIs) makes it difficult to measure their true impact and identify areas for improvement.

2.16 Network Rail Online Logistics (NROL) issues have also been reported, affecting MMT scheduling and network access. This has resulted in stand down of the MMT for extended periods. The MMT team effected shared frustrations about being unable to resolve this and were unsure of the contacts needed to assist them. This highlights a need for greater centralised support.

2.17 We noted differences in headcount and rostering across the MMT teams. While some MDU's have fully staffed MMT's according to their org charts, standardised format shown below, others have experienced continual staffing gaps. This seems to either be mainly due to budget constraints or turnover or from an inability to train personnel. This has resulted in a reliance on agency workers within some team's which could affect long-term financial sustainability and cause potential problems with loss/ transfer of key skills.

Figure 2.1 Org chart example

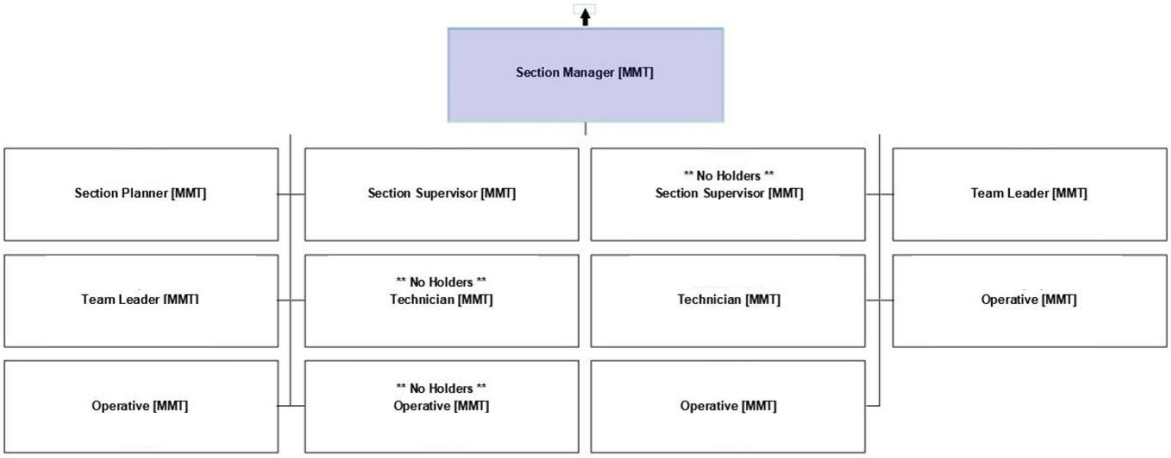
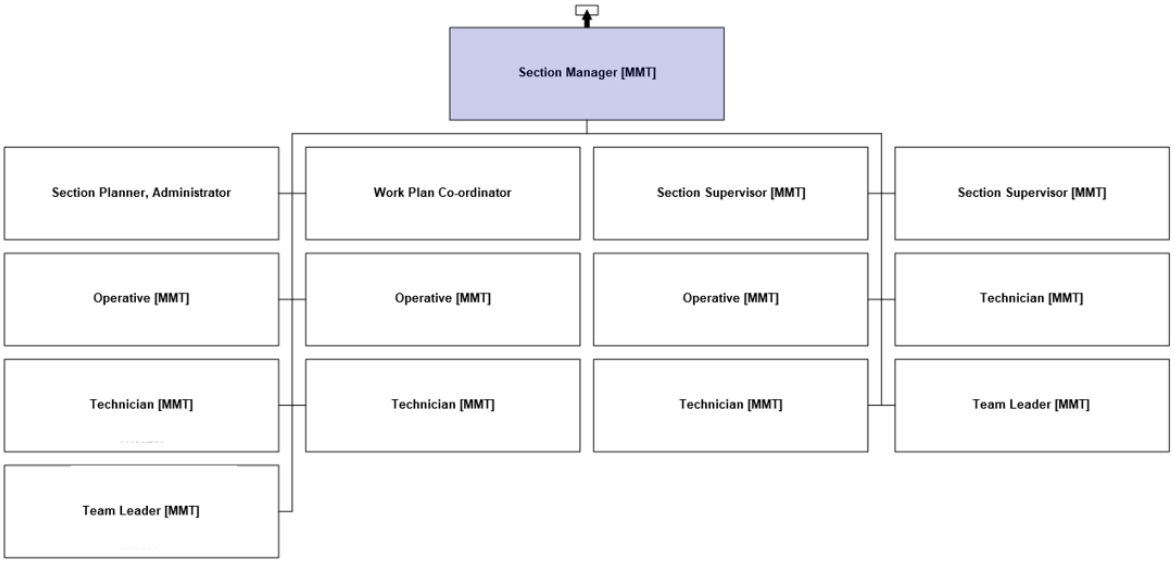


Figure 2.2 Org chart example



2.18 There are specific competencies associated with the MMT, and the teams highlighted systemic challenges. While the operation of the MMT can rely on experienced staff and robust processes, the lack of sufficient trainers creates bottlenecks in upskilling and training new starters.

2.19 Only one centralised trainer is available for the majority of the MMT teams, which makes scheduling difficult, and training often lags behind operational demands.

This has led to delays in onboarding new staff and, in some cases, high turnover rates, as seen when a new starter moved posts due to unmet training needs.

2.20 Some MMT teams expressed a desire to manage training internally. They reasoned that experienced team members, who use the equipment daily, are better suited to train new staff than the existing centralised trainer. However, the absence of a formal trainer competency pathway limits this potential. Most teams demonstrated local documentation and processes to support competency development, including live spreadsheets and hubs for sharing procedural and training-related information.

2.21 The MMT teams provided evidence of systems and processes which aid in the work planning and delivery process, such as comprehensive operating procedures, and shared tools for tracking and reviewing work.

2.22 Generally, the teams have demonstrated good competency frameworks, these are underpinned by documentation and have experienced staff capable of mitigating gaps.

Business Case

2.23 The original business case for the Mobile Maintenance Trains projected an annual savings target of £8.5 million across the fleet, equating to approximately £0.9 million per machine per year. However, the ability to verify whether these savings have been achieved is not possible due to inconsistent data collection across different Delivery Units, and we see no attempts to improve this gap in data validation at this time.

2.24 The trial product approval certificate, reference PA05/06487, lists specific criteria that must be met prior to final product approval. These are as follows:

"A final trial report must be provided to the SRP for review (whom will be required to inform the Product Lead Reviewer(s) identified at the end of this certificate of their satisfaction). This report must summarise the following information:

- *how each of the conditions of this certificate (and those listed in the associated reference documentation) have been satisfied.*

- *the trial feedback and any resolutions reached*

- *any maintenance, modifications or changes made to the product throughout the trial (other than routine)*

- *the number of shifts that where undertaken*
- *the types of activity that have been undertaken*

2.25 Only one MDU has provided evidence of cost savings, reporting an estimated £1.2 million in annual savings. Given the records provided by the other MDU's we believe this process could be replicated, which would give an overall view of MMT cost saving. At present the full running costs of the MMTs remain unknown, making it difficult to assess their overall financial impact.

2.26 The recording of work undertaken by MMTs is highly variable, with some locations providing only the numbers of shifts undertaken, and others giving detailed line items of volumes of work completed. Without standardised metrics to measure cost savings and efficiency, it is challenging to determine whether the original business case objectives have been met.

Performance and Utilisation

2.27 Machine availability is reported at approximately 96%, indicating that the majority of MMTs are in working condition and ready for deployment. However, this figure does not necessarily reflect whether the machines are being utilised effectively or if they are delivering the intended benefits and adding value to the rail network.

2.28 When we undertook our review, comprehensive cost data was unavailable, which complicated efforts to assess the true value of the MMTs. Utilisation varies significantly between different Delivery Units, and specific figures are needed to provide a more detailed analysis.

2.29 The eighth machine was previously used as a spare unit but has recently been assigned to the Basingstoke Delivery Unit, marking a shift in its role within the fleet, and meaning we currently are unable to comment on this MMT team within this report.

2.30 Although there is a lack of available cost data, local confidence in the MMT is generally positive. Both Route Services and the individual MDUs regard the MMT as a success story in terms of performance and work delivery. This perception has not always been the case, as highlighted in a quote from the South East Route Strategic Plan in February 2018:

"We are looking to exploit and maximise the potential efficiencies from the Mobile Maintenance Train (MMT), which during CP5 has been expensive to operate and underutilised. We will be more decisive, using the MMT only where it makes sense to use

it (e.g. utilising it for a significant portion of a possession rather than a small amount of time and then leaving it idle).” [1]

2.31 Individual teams within Network Rail have recognised the challenges associated with the MMTs and have taken steps to enhance their performance and utilisation. Route Services have implemented changes to the machines since their inception due to early issues. These have led to increased reliability and output performance, stable year on year performance and a positive view on the machines from the MDU’s.

2.32 The data provided to us shows that generally MDU’s have made improvements to the tracking of completed works/shifts in the last few years. However, we note that the shift data for the works completed is somewhat sporadic and incomplete, and dependant on individual MDU’s with no centralised reporting strategy.

2.33 In addition, there have been efforts to understand the value of the MMT by Horsham MDU, who have established the only defined cost metrics for MMT teams, we believe this still requires some optimisation but is a big step forward for determining the overall value of the MMT, and which activities add the most value.

Changes and Improvements

2.34 Progress has been made in introducing and trialling new equipment to improve work efficiency and safety during shifts, however, this seems to be mainly at a local level and not a national strategy. Notable innovations include the potential introduction of a robotic digger (Brokk) at Retford MDU to streamline wet bed works, requiring fewer staff and reducing fatigue, though it was highlighted that approval processes have been slow.

2.35 Other advancements include the use of remote-controlled Track Circuit Operating Devices (TCODs), which enhance access in areas with challenging possession times. Improvements to hydraulic and hoist systems are also underway, alongside considerations for heavy-duty cranes to manage larger units like switch & crossing (S&C) components and insulated block joints (IBJ).

2.36 Teams have also explored enhancements to current equipment, such as improved extractor fans, safety catches for tail lifts, and increased ballast carrying capacity through specialised bag beams. Romford has introduced a trial system for cooling

[1] https://www.networkrail.co.uk/wp-content/uploads/2018/02/South-East-Route-Strategic-Plan.pdf

rail temperatures and sprayers for hot weather management. These innovations are aimed at boosting productivity, safety, and environmental adaptability.

2.37 Efforts to streamline operational processes are evident, particularly in areas where Signaller Protection Zones (SPZs) can be utilised. These zones, currently under trial, allow teams to establish worksites more efficiently by avoiding traditional possession requirements. This system reduces setup times and minimises risks associated with physical possession boards. Teams have also begun trials to extend the scope of MMT operations to include maintenance tasks beyond traditional track work, such as S&C maintenance and delivering impedance bonds.

2.38 The operator of the MMTs is actively training drivers and operational staff to support the deployment of additional machines, with plans to integrate these into the regional workbank.

2.39 Safety continues to be a priority, with minimal incidents reported in over five years of operation. This is supported by enhanced assurance processes, rapid response, and thorough reviews of incidents, such as hydraulic fires, which were highlighted to demonstrate a commitment to continuous improvement. Digital tools and app-driven systems are being adopted to streamline inspection processes and improve compliance tracking.

2.40 Despite progress, the approval processes for new equipment and changes remain slow, often taking several years for final sign-off. We believe this is due to the lack of a guiding mind overseeing the MMT as a function.

3. Conclusions

3.1 There is a lack of central oversight and strategic direction across the MMT fleet, with no clear leadership driving the closure of outstanding requirements.

3.2 The extended duration of the MMT trial certificate highlights a lack of structured governance and control, contributing to delays in achieving full approval. The absence of a clear leadership framework has resulted in uncertainty about the long-term integration of MMTs into Network Rail's maintenance strategy. This prolonged trial status raises concerns about accountability and strategic direction, affecting confidence in the programme's future.

3.3 While the Mobile Maintenance Trains have demonstrated clear operational benefits, including improved maintenance efficiency and enhanced safety for track workers, their deployment has been inconsistent. Some Delivery Units have successfully embedded MMTs into their maintenance operations, whereas others have underutilised the machines due to planning inefficiencies, resource constraints, and unclear governance structures.

3.4 The lack of central oversight has resulted in discrepancies in performance tracking and data reporting. Without a standardised approach to measuring cost savings and efficiency, it remains difficult to determine whether the MMTs are delivering on their original business case objectives. The absence of unified performance metrics has also hindered efforts to optimise utilisation across different regions.

3.5 Network Rail currently lacks a formal On-Track Machine (OTM) strategy, making it difficult to assess the long-term role of MMTs within the wider maintenance fleet. Without clear strategic direction, there is a risk that Network Rail will fail to capitalise on the full potential of MMTs, missing opportunities to expand their application or refine their operational model.

4. Recommendations

4.1 **Close Out the Trial Certificate -** Network Rail must provide a timebound plan to formally close out the trial certificate process and determine a final decision.

4.2 **Review Governance Framework -** Review the current governance framework and determine how this can be best optimised for the MMT, we would expect this to include a RACI matrix as a minimum, to determine levels of responsibility. This review should be conducted 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. of the network license.

4.3 **Standardise Performance Metrics and Reporting** – Develop a consistent performance monitoring system to measure MMT impact, cost savings, and efficiency. This should be developed to facilitate data-driven decision-making.

4.4 **An overarching strategy for the MMT** - We expect that strategy to form part of a broader OTM strategy**.** The long-term role of MMTs should be defined within the broader On-Track Machine strategy to ensure alignment with national maintenance objectives.

5. Appendix A

5.1 The Network Rail System Review Panel (SRP) are governed by NR/L2/RSE/100/07 [Issue: 3] System Review Panels All SRPs act under authority delegated by Network Rail Assurance Panel and are given a remit within which they must operate. There are five types of SRP:

1. Regional SRPs, which review changes to infrastructure on a given Region

2. Generic Asset or System SRPs

3. Product Specific SRPs, which review the Product Acceptance of a given product

4. Vehicle Compatibility Review Group, which reviews changes to vehicle assets

5. Major Enhancement Project SRPs, which may be set up to review changes made by a Major Programme.

Of these five, only Generic Asset or System and Product Specific SRPs may undertake the role of reviewing Product Acceptance. These SRPs are resourced and appropriately competent to undertake this task for the network as a whole and are not specific to any Region.