Review of Network Rail's Condition Management of Depot Plant Assets

Full Report

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Executive Summary

Frazer-Nash Consultancy was commissioned to carry out an independent review of the effectiveness of Network Rail's asset management of its depot plant assets. The review relied upon good practice, specialist domain knowledge and evidence drawn from Policy, Standards and Guidelines together with engagement with stakeholders following a line of enquiry based upon a series of questions.

In defining good practice, we produced an 'assumed good practice model of operation' based upon written evidence based in Network Rail Policy and Standards. That model accommodated good practice from the ISO 55000 Asset Management series of standards. The model was then shared with the various interviewees to validate the model during the course of the interviews and assessment process. Our conclusions are as follows:

1. Policy is not practiced. . It is Frazer-Nash Consultancy's view that the governance framework of the policy as explained is reasonably robust. However, for reasons that are unclear, several roles have been removed or changed in the Plant Technical Authority function during the Control Period. Therefore, the intent of the Policy can no longer be applied. The impact of this is that Network Rail appear to no longer have the ability to work effectively at a strategic and tactical level across the whole depot plant estate. With exception of Scotland, in general, the level of engagement Network Rail has is at a 'per depot level', predominantly reactive, responding to the requirements of the Depot Facilities Owner (DFO), bounded by the respective Depot Access Condition .

   Note: The Scotland region is unique as the regional leadership are engaged with both the devolved Transport for Scotland authority and Network Rail at a strategic level, this is not seen with any of the other regions.

2. Limited Assurance: Because of the removal of the aforementioned Technical Authority (TA) roles, it is Frazer-Nash Consultancy's view that Network Rail have not independently assured compliance against the Standards of the management of Plant Assets in the last 4 years. Hence it has not been able to validate maintenance practices and the assurance of depot plant asset condition in accordance with the Depot Access Conditions. This would have a negative impact on Network Rail's Delivery Plan for 2019-2024 for example impacting the ethos of putting passengers first. The decision to invest or upgrade depot plant is largely left between Network Rail Asset Engineers and the individual DFO. Network Rail Asset Engineers from the West & Wales Region have stated that the assessment of compliance against standards does not fall within their competency profiles (although could be suitably trained). We understand the only assurance carried out is Mechanical & Electrical (M&E) assurance and this level of assurance is superficial. Alignment of TA strands (if they existed) could create synergies in activities and provide an approach consistent with the application of asset management at a depot level

3. Limited Strategic Investment: The Policy[1] implies that Input for future depot plant asset investment comes from a combination of The Network Technical Head of Plant and Rail Vehicle Engineering who have the wider view of Network Rail strategy and can therefore steer medium- and long-term strategic investment. Requirements for short term inputs into funding are also taken from Asset Engineers who maintain the local interface with the DFO to form the overall budget. From our understanding, Asset Engineers inputs are the only inputs into future depot plant investment and the engineering consultancy and advisory role that Rail Vehicle Engineering gave to Asset Engineers is no longer available. It is Frazer-Nash Consultancy's view that this represents a risk as there is no longer a

[1] States that Plant performance targets shall be aligned with the delivery control period target, *NR/L1/RMVP/0001, Issue 5, cl. 8.6.2*. Though not specifically mentioning the CP6 plan '*Network Rail CP6 Plant and T-RS Asset Policy Sections 1 to 9_ First Issue _May 2018*' it is clear from the document change log that elements of the CP6 plan have been incorporated into the policy.

central function to evaluate and compare regional performance and share good practice across the network. For example, multiple different approaches being adopted to implement investment across the depot plant estate potentially leading to duplication of work or missed opportunities; and a lack of learning across the depot plant teams.

4. Disconnect in asset remaining life in Policy and an understanding of Asset Condition: The Policy sets the remaining design life of the asset at nominally fixed terms. Whilst this is one way of interpreting remaining asset life, it is Frazer-Nash Consultancy's view that it is not the most pragmatic and effective way given the nature of the asset. Depot plant can last for many years and can go through several generations of systems upgrades and replacements beyond that specified in the policy. A pragmatic approach is adopted by the Asset Engineers and DFO. This approach only addresses the need for short term investment and there is no comprehensive view of the overall asset condition or remaining life in real terms beyond the immediate needs of for example the Depot Access Conditions. Based on the interview with Technical Authority and regional asset management teams, it is unclear how Network Rail considers future depot plan asset liability and because of this short-term view Network Rail are constantly beholden to the DFO to understand depot plant asset condition. The quality of the asset condition data should be sufficiently accurate and detailed to be able to manage the medium to long term life of the assets. The short term management of plant assets is done through the relationship between the DFO and Asset Engineer. The assurance activity (that no longer takes place) validated the integrity of process that assures asset condition. An appropriate assurance activity should be reinstated, and depot plant asset condition records should be available to enable Network Rail to plan at a strategic and tactical level across the entire depot plant estate.

5. Railtrack Model Contracts: The Depot Access Conditions still appear to be Railtrack Model Contracts[2], where Railtrack was disbanded 20 years ago. Frazer-Nash Consultancy are unaware if the original model form of contracts has been updated to be more flexible accommodating future external and internal emerging demands and opportunities for the future railway. While it is not possible to confirm that all Depot Access Conditions agreements are in this format, we have not been made aware of any other form by the regional asset management teams. Scotland appeared to be the only region that has maintained a regular and active relationship with internal and external stakeholders such as Transport for Scotland where transport related benefits, opportunities and investment could be created through partnerships.

[2] Depot Access Conditions template is publicly available through the ORR website: https://www.orr.gov.uk/media/11693

Table 1 List of Abbreviations

Abbreviation	Definition
ALE	Asset Life Expectancy
AM	Asset Management
ASPRO	Asset Protection & Optimisation
CET	Controlled Emissions Toilet
CITADEL	Asset management database replacement for OPAS
CP	Control Period
DAC	Depot Access Conditions
DFO	Depot Facility Owner i.e. depot operator
DfT	Department for Transport
DPS	Depot Property Surveyor
Eastern	Eastern Region - East Midlands, Anglia
ELLIPSE	System for managing and recording asset maintenance activities
FDP	Fixed Depot Plant
GWR	Great Western Railways
HST	High Speed Train
ISO	International Organization for Standardization
KPI	Key Performance Indicator
LMD	Light Maintenance Depot
M&E	Mechanical & Electrical
M&R	Maintenance & Renewal
NR	Network Rail
OEM	Original Equipment Manufacturer
OPAS	Operational Property Asset System
OPHD	Operational Property Helpdesk
OPI	Operational Property Inspections
ORR	Office of Rail and Road
P&E	Plant & Equipment
PARL	Percentage of Asset Remaining Life
PPM	Planned Preventative Maintenance
PR	Periodic Review
RACI	Responsible, Accountable, Consulted and Informed
RAM	Regional Asset Management

Abbreviation	Definition
RDG	Rail Delivery Group
RPP	Railway, Planning & Performance
RSSB	Rail Safety & Standards Board
RVE	Rail Vehicle Engineering
Scotland	Scotland Region
Southern	Southern Region - Sussex, Wessex, Kent
T&RS	Traction & Rolling Stock
TA	Technical Authority
TfS	Transport for Scotland
TOC	Train Operating Company
W&W	West & Wales Region

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1 Introduction

Depots are used for servicing, maintenance and stabling both engineering and passenger rolling stock. Within the confines of a depot environment, there are a large portfolio of plant and equipment (P&E). This P&E provides vital support for servicing and maintenance, supporting the continuity of railway services that need to run across our railway systems. If depot plant is unavailable due to failures for example, then this situation can potentially stop trains running onto the network and prevent train operating companies from delivering passenger services. There are approximately 89 depots across the Network Rail estate each depot accommodating specialist depot plant.

It is important that Network Rail as asset owner sets the appropriate investment strategy for assets which responds to and drives the current and future growth in railway demands. It is also important that the strategy is discharged through appropriate management systems that uphold the integrity of the condition and performance of those assets.

For example, within the context of P&E, those Network Rail management systems support the current and future availability and performance of rolling stock that enable passenger services. A P&E failure or a reduction in P&E performance against passenger service demand must therefore have a detrimental impact on passenger services.

Network Rail discharge their responsibilities through Policies, Procedures and Standards. There are two main policies associated with P&E, the Level 1 Asset Policy for Plant and Traction & Rolling Stock NR/L1/RMVP/001 Issue 5, 7th September 2019 and the Control Period Policy produced for the respective control period, in this case Control Period 6 Plant and T&RS Asset Policy CP6 (Combined Sections 1 to 9) Issue 01, May 2018. Work is underway to develop this policy for the next control period. The regional asset management teams use these policies in conjunction with those under the ownership of the buildings technical authority. These two sets of policies explain the expectations and subsequent interventions required of Network Rail to uphold the integrity of P&E performance and availability.

Within the context of good Asset Management practice, where a line of sight needs to be established between Strategic, Tactical and Operational perspectives, the body within Network Rail responsible for producing the strategy and monitoring the effectiveness of the discharge of the Plant and T&RS Policy, Procedures and Standards is The Technical Authority of Plant.

The tactical and operational asset management practices of P&E are discharged through separate contractual arrangements on a per depot / Route basis. These contractual arrangements are arranged between the lease holder (Depot Facilities Owner (DFO)) of the contract - for example the Train Operating Company (TOC) - and Network Rail's Station and Depot Access body. The tactical asset management practices of the depot are managed by Network Rail's Asset Engineers. The operational asset management practices are managed by the DFO Tactical and Operational meetings are held at least on a monthly basis between Network Rail's regional Asset Engineers and the DFO at a regional level. These roles and actors and their interdependencies are explained in further detail in this report.

Depot plant is critical to maintaining rolling stock. Rolling stock failures impact on passenger services and disrupt the timetable. This report responds to the requirement of the Civil Engineering team within ORR Railway Planning and Performance (RPP) directorate to understand the management of the condition of Network Rail's depot plant assets.

This report provides insight of maintenance and renewal strategies used to manage depot plant condition and associated risks and to identify opportunities for improvement looking forward to Control Period CP7.

1.1 Layout of this document

The subject matter of this report is complex due to the responsibilities and interdependencies of different actors and roles related to the boundary of investigation.

- In section 2 we explain the project objectives and scope.
- In section 3 we explain the methodology. The methodology relies upon good practice and matches that good practice with existing Network Rail policy and then used that as a baseline to discover gaps. The methodology covers five main tranches of work:
  - An independent explanation of what good practice looks like within context. This is explained in Annex B
  - An assimilation of that good practice in relation to Network Rail's existing Policy and Standards. We refer to this assimilation as 'the assumed organisation' which is used as a baseline when carrying out interviews.
  - The carrying out of interviews following particular lines of enquiry.
  - The production of 'an existing organisation' model after consolidating the return from the interviews that show gaps. These gaps are against good practice and gaps against Network Rail Policy and Standards i.e. the assumed organisation.
  - Production of the final report.
- In section 4 we explain the findings. To put the findings into context, in section 4.2 we first explain what good looks like by providing a narrative against the assumed organisation. This shows the baseline of what we are expecting to see. We also provide additional context by showing the assumed organisation overlay against the features of a viable asset management system explained in Annex B. The gaps or outcomes of the findings are shown in section 4.3. This is where following our interviews, Frazer Nash Consultancy has made observations on mismatches in Network Rail practices against policy and observations around wider opportunities for improvements against good practice. In this section we also explain what those gaps mean in terms of lack of capability for the provision of depot plant.

The Annexes are an integral part of the document, they will need to be read in conjunction with the main part of the document and we reach out to different parts of each of the Annexes as we go through the methodology and elicit the findings. The Annexes are as follows:

- Annex A explains the scope of the project, the requirements of the project from the ORR.
- Annex B describes the general requirements of a viable asset management system. This is conceptual but also includes relevant subject matter to add context and explains the purpose of each part of the system and how those interdependent parts interact and the need for feedback loops. We also describe the requirements for asset management systems integrity, and we use this as a baseline. We provide additional context so the application of the concept can be related to the scope of the project. We have also called out references from good practice in this section.
- Annex C describes the existing organisation. The existing organisation is complex involving several stakeholders, actors, dependencies on relationships and roles and systems interfaces that are managed through contracts. We draw evidence from existing Network Rail Policy, Standards etc in this Annex and explain how Network Rail documentation is applied. We then reflect on the conceptual organisation described in Annex B and make observations about gaps in Network Rail's Asset Management systems against the conceptual organisation. These observations are then linked back to the findings in section 4. It is important to point out that

during our enquiry we determined that there had been several organisational changes in Network Rail that impacted the integrity of their asset management system. This is described in detail in this Annex and the impact of these changes is summarised in Section 4.

- Annex D provides the consolidated feedback from the interviews. We carried out 10 interviews with the Plant Technical Authority, each of the regions asset management teams and a selection of Depot Facility Owners, collected feedback from each interview and then consolidated the feedback to create a combined response.
- Annex E provides a Red-Amber-Green status on the return from the consolidated interviews.

2 Project Objectives and Scope

The objectives and scope of the project comprise:

1. Assess the conditions of depot plant
2. Assess the management process and supporting asset management strategies
3. Be assured that maintenance and renewal (M&R) strategies agreed between Network Rail and Depot Facility Operators to manage depot plant are adequate to support rolling stock to deliver the level of customer service required and do not limit the operation of national infrastructure, and
4. Understand any impact of current conditions of depot plant on Network Rail's planning for Control Period CP7 with respect to asset sustainability and renewal plans

The outcome of the objectives and scope of the project will then help to provide ORR assurance that maintenance and renewal activities being undertaken in CP6 are in line with best practice and to identify opportunities for improvement ahead of the periodic review 2023 (PR23).

3 Methodology

The methodology is shown in Figure 1 and shows the basic steps of the overall project. The key steps are numbered and described below:

1. Work was undertaken to re-visit ISO 55000 Asset Management suite of standards and to develop an early-stage generic model in context of the project.

1.a The scope of the project and question set provided by the ORR was reviewed and work was undertaken to align the question set against ISO 55000 in context.

2. Work was carried out to research existing Network Rail top level and subsequent level policies and relevant Standards / documentation.

3. An independent mapping exercise was carried out to assimilate good practice from ISO 55000 against the described environment in the Network Rail documentation. An ‘assumed as-is’ model was produced. The question set was mapped against the assumed as-is model.

4. Using the assumed as-is model as the backdrop for the interviews, the model was shared with the interviewees and used to validate the existing working environment, each role, responsibilities etc. (e.g., RACI) of the actors involved and referring back to validate the intention/requirements of the policy.

4.a The interview addressed the questions within the context of good practice and the assumed as-is model, capturing observations which would then be used as comparisons and used to identify gaps against good practice.

5. The assumed as-is model was adjusted accordingly where appropriate based upon advice and in agreement from the interviewees.

6. The feedback was captured, supported by background rationale and gaps reported against the question set in this report including recommendations.

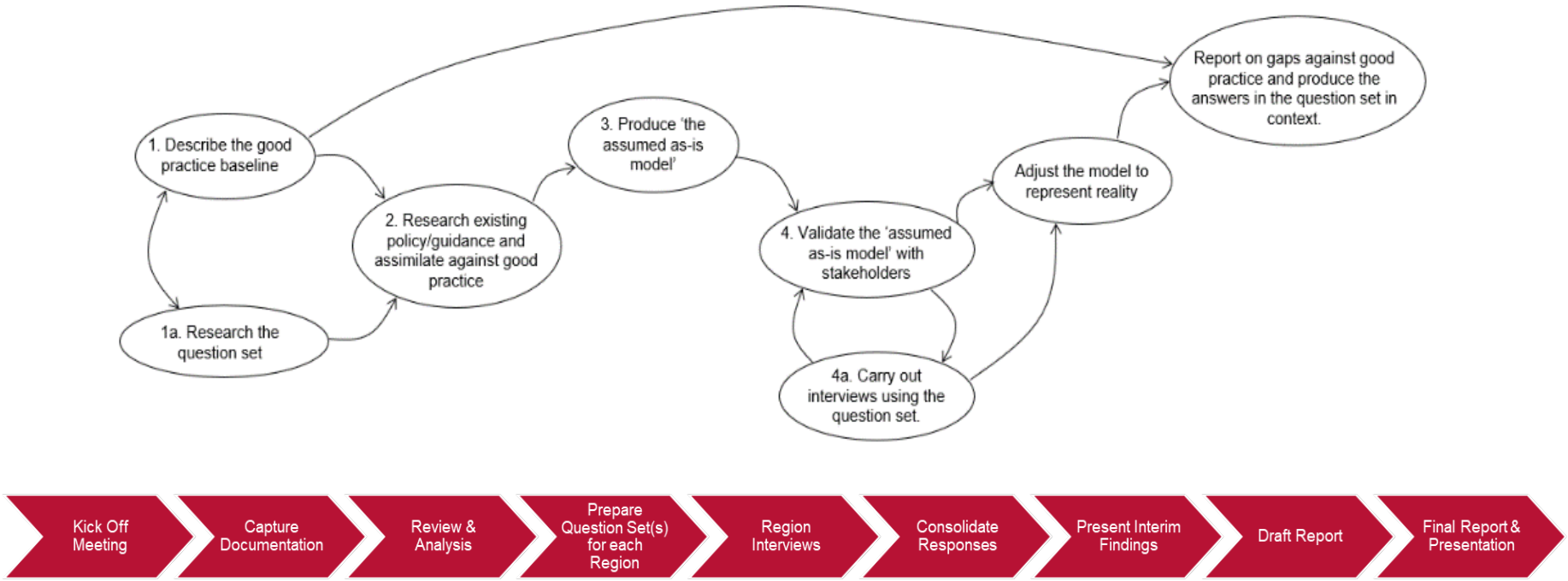

Figure 1 Methodology

4 Findings & Discussion

4.1 Introduction

The description of the organisation, the organisation that manages the asset management of depot plant has been drawn from existing Policies and confirmed during the course of discussions with each meeting attendee. We have called this the 'assumed organisation'. The Policies that shape and inform the organisation and include:

> NR/L1/RMVP/0001 Issue 05 1st June 2019 - Level 1 Asset Policy Plant and Traction & Rolling Stock Policy. This is an overarching policy that outlines governance of assets, and its purpose comprises:
>
> a) management of non-compliance with legislation and regulatory requirements;
>
> b) operational safety risks on Network Rail managed infrastructure; and
>
> c) operational commercial risks caused by non-availability or failure.
>
> Plant and T&RS Asset Policy CP6 (Combined Sections 1 to 9) May 2018 Issue 01. This policy is associated with explaining for example how governance is applied in practice, how the condition of assets is understood, how asset performance is considered and how intervention options are made. This policy is only relevant to control period 6.

Using both policies and assimilating the General Requirements for a Viable Asset Management System described in Annex B -we developed an assumed organisation

4.2 Assumed organisation

Given the interpretation of the policies and outcome of the discussions an assumed organisation was developed that maps out the roles and responsibilities of different stakeholders. A number of assumptions were made based upon good practice that were then tested as to whether certain activities were carried out.

The assumed organisation is shown in Figure 2 followed by a narrative. Good practice proposes and governance that there is a line of sight created between strategy, tactical and operational practices.

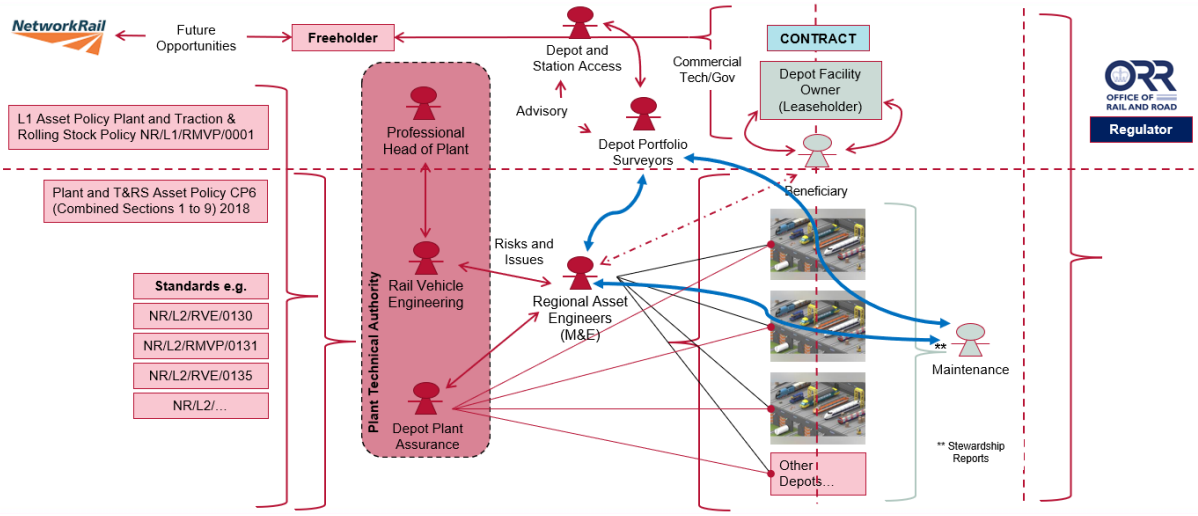

Figure 2 Assumed Depot Plant Asset Management System Organisation

This is reflected in the linking between areas of 5 – 1 shown in Annex B - Figure 12 The Integrity of the Asset Management System. To reflect this we have shown this as the top-level in Figure 2 separated by a dashed line and have shown the top level in more detail in Figure 3.

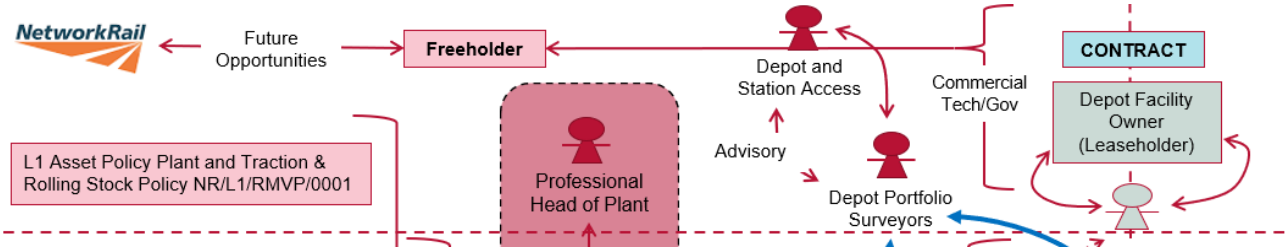

Figure 3 Strategic / Tactical Depot Plant Asset Management

Network Rail Strategic / Tactical Assumptions:

C.1 Network Rail in the broader context are aware of both external and internal opportunities to develop railway services in future and the outcome of that awareness creates future business development plans that will have an impact for example, an increased demand on depot plant and this leads to future investment strategies for depot plant services.

C.2 The Network Professional Head of Plant oversees the overall management of depot plant across all depots and plans and influences investment to address the current and future plans.

C.3 Most if not all of the depots are operated under a Freehold. Strategic and tactical investment into the general fabric and functional performance of depot plant assets is carried out by Network Rail from the investment and planning activities. Operational activities e.g., to uphold the operational performance of the depot plant is usually carried out by the Depot Facility Owner (DFO) This responsibility is discharged through a contract between the DFO and Network Rail. There are model forms of contract.

C.4 The commercial terms of the contract are managed and overseen by Depot Station Access

C.5 Depot Portfolio Surveyors are commercially and technically competent surveyors who are familiar with the strategic and tactical drivers of Network Rail as well as commercial and technically competent.

C.6 Rail Vehicle Engineering understand the detailed and technical aspects around depot plant and can advise at a consultative level on good practice across all technical and engineering matters.

The lower or tactical and operational assumed activities of Network Rail are represented below the dashed line in Figure 4.

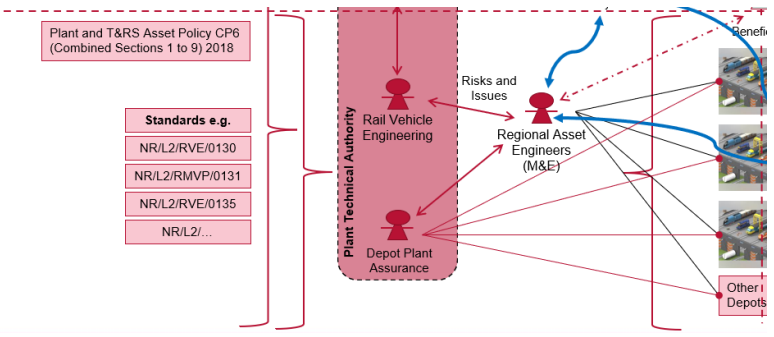

Figure 4 Tactical / Operational Depot Plant Asset Management

Network Rail Tactical and Operational Assumptions

C.7 The Technical Authority should carry out independent audits and assurance of the depot plant assets ensuring that the practices and standards are upheld by any party including the DFO and that non-conformance is corrected. The audit and assurance activity upholds the integrity of the depot plant assets against the standards.

C.8 Regional Asset Engineers interface with the DFO as well as oversee general operational and tactical activities. However, they are not sufficiently competent to make technical assessments on depot plant.

C.9 Depot Plant Assurance oversee the general fabric of the depot from a Mechanical and Electrical perspective but are not sufficiently competent to make technical assessments on depot plant.

During the course of our interviews not all Routes operated in the same way and there were slight variances in roles and responsibilities.

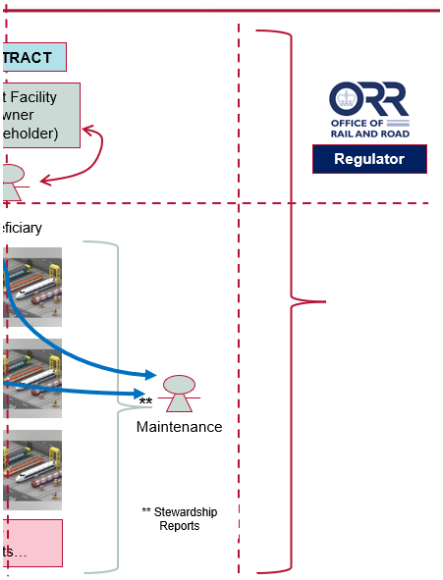

Figure 5 Operational Maintenance

The Depot Facilities Owner - Operational Assumptions

The DFO manages the operations of the depot as well as the general maintenance of depot plant. There is a close relationship between the DFO and Asset Engineers as well as a chain of authority or escalation. The DFO works within the constraints of the Contract, and it is in the interest of the DFO to maintain the performance of the depot plant assets ensuring that their availability of plant will not disrupt for example passenger services. This relationship is shown ‘on the other side’ of the vertical dashed line shown in

C.10 The DFO plans and carries out maintenance activities and produces stewardship reports and holds regular meetings with Network Rail.

C11. The ORR regulate Network Rail’s activities. They do not regulate the lease agreement between DFO and Network Rail

It is important to point out that the DFO only carried out maintenance and to some extent future planning demands on assets within the term of their contract. For example, contracts are won through competition, therefore planning will only go up to the term of the contract. The future planning activity beyond the term of the contract, i.e., Network Rail’s future planning to accommodate wider market growth should be carried out by Rail Vehicle Engineering being cognisant of inputs from the various Route Asset Engineers.

The assumed organisation, roles and responsibilities is overlayed onto the viable asset management systems model to show the relevant area where the function and value reside. This is shown Figure 6. We use this as the basis to form observations about the findings from the line of enquiry and from the interviews in the next section.

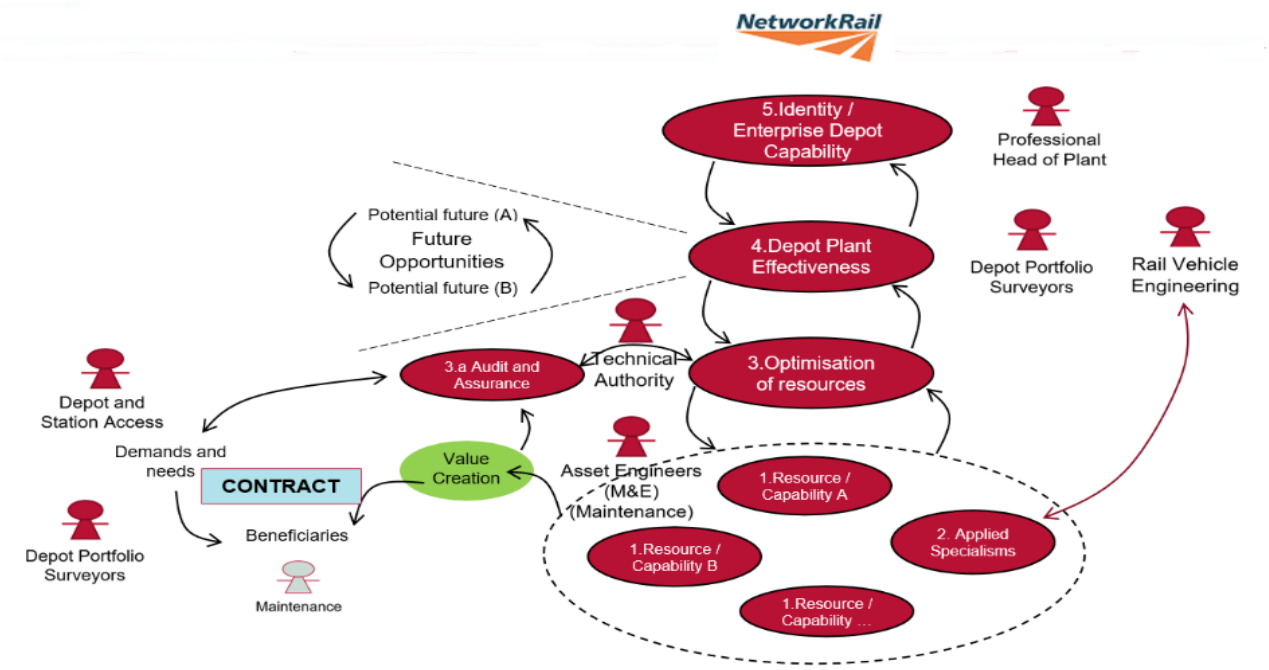

Figure 6 Assumed organisation overlay

4.3 The existing organisation

The previous sections explain “what good looks like” and we have extrapolated the intent from the Policies, reflected this in good practice from industry guidance and presented an overly of capabilities and resources against dependent areas of a viable asset management system.

This section explains the findings from the interviews within context, firstly from an organisational capability perspective and then explains what impact the lack of that capability means. For example, what would prevent the asset management system remaining viable. The findings from the interviews are shown in Figure 7. The same findings are overlayed in the viable asset management systems model in Figure 8.

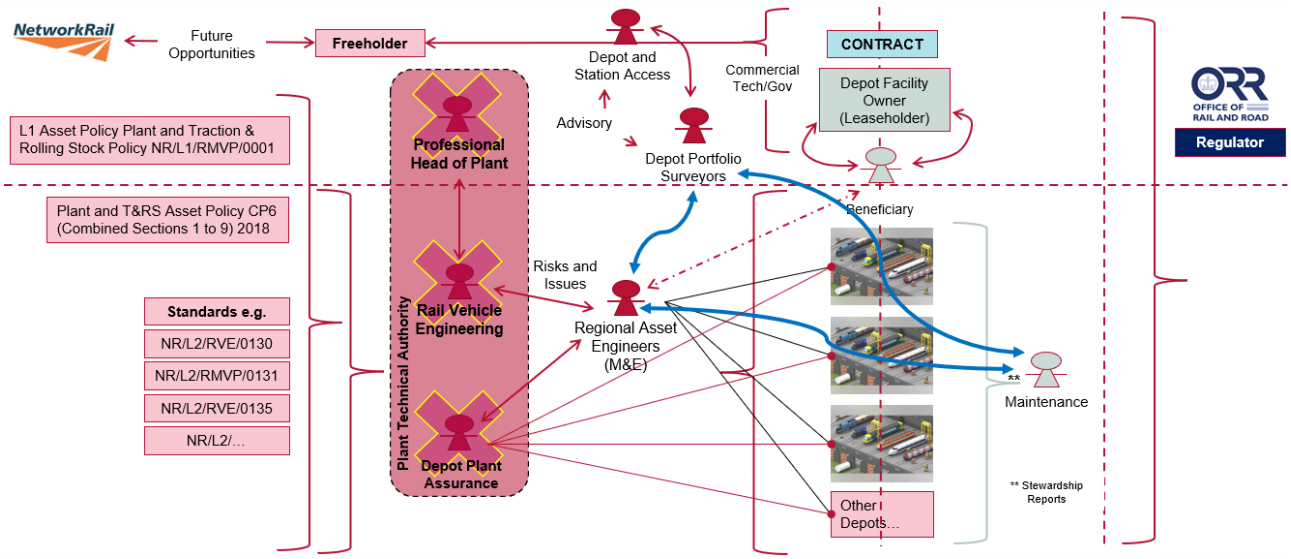

Figure 7 Actual Depot Plant Asset Management System Organisation

We can now explain these gaps within context. For example, for each area of a viable asset management system described in Annex B - we can explain how Network Rail are managing their Depot Plant assets and how effective that asset management system is based upon the draft corporate goal in [Appendix B] Table 2.

For clarity, we provide the original purpose and function of the respective part of the asset management system described in Annex B - followed by the in-context Network Rail gap described below as a general finding.

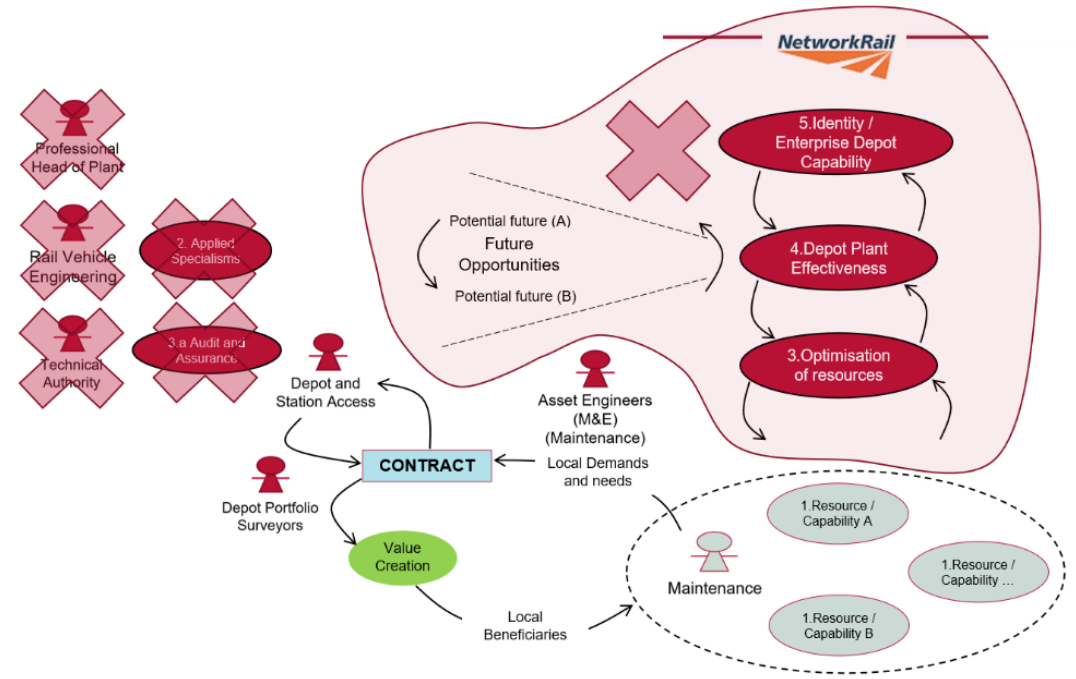

Figure 8 Actual organisation overlay

5. The 'Depot Plant Asset Management System' covers the entirety of depot plant assets across the whole of the Network Rail estate. The system needs to express its identity and value and needs to be described and communicated. This can be described as an overarching corporate goal and subsequent sub-systems regional goals that also incorporate the demands of stakeholders of that region. We have provided an example of a corporate goal as described in Appendix B Table 2.

   General findings: Frazer-Nash Consultancy have not found evidence to suggest that the asset management of depot plant is managed as a Network Rail wide discipline. The Technical Authority has stated to us that responsibility for asset management currently sits with the Regions, and the regional asset management teams are working in conjunction with each DFO to undertake their role at each depot location. Therefore, Network Rail may not have a wider strategic understanding as to the overall strategic value that depot plant has in being able to facilitate wider stakeholder needs that provide transport services on its infrastructure.

4. In order to deliver and develop depot plant asset management systems effectively there is a requirement to continually monitor stakeholder's needs and expectations, this will inform and develop the current and future overall and individual depot and plant capabilities further across the estate as well as protect that capability within Network Rail, so its value is not depreciated.

   General findings: In context Network Rail operate and manage lease contracts between itself and the Depot Facilities Owner. We would envisage these would be model contracts. It appears that the model for these contracts are still operating under a Railtrack engagement model (Depot Access Conditions, publicly available through the ORR website). The scope of this project does not include an assessment of the effectiveness of model contracts in relation to the effectiveness of asset management systems, however this project would influence how the contracts are designed in future. Within the scope of this project and to explain asset management good practice, model contracts would be established, and those contracts would

for example include a range of strategic services that are continually monitored at a service portfolio level that the assets enable. For example, taking into account the broader future requirements for depot plant across the whole estate and continually looking to improve broader service levels and improving value for money for stakeholders. We did not find ownership for this type of activity.

3. The tactical activities that deliver the services and value that the beneficiaries want. These are the combined resources, roles and responsibilities that enable the service to be delivered.

   General Findings: With exception to the DFO, the resources, the roles and activities and plant that creates the value that the DFO benefits from is everyone/everything in Figure 6.

   This is not how asset management for depot plant assets is managed at the moment. In general, the value delivered to the DFO is not considered as value across the depot estate but instead at each depot level when it should be both. The value is depot/DFO centric, there is no wider or longer-term view taken from a strategic perspective. The individual needs of the DFO are defined within the contract and managed through the local Asset Engineer who expedites the local demand if budget allows. The forecast investment budget is influenced by the remaining life of the asset and the local demands of the DFO. Although on rare occurrences, if funding is not available, then there is the case where the DFO has funded the investment themselves in order to uphold the integrity of the performance of the depot assets and hence the availability of for example of the DFO's rolling stock.

3a. Necessary audit and assurance activity needs to take place to make sure that what is being created as value still remains valuable and if not why. Value always diminishes over time, situations change, so this is why for example area 3 is so important.

   General Findings: The regular audit and assurance activity is supposed to be carried out by competent staff from the Technical Authority. From the time of this project report the audit and assurance activity was stopped over four years ago. This has reduced the capability of the asset management system by:

   - Limiting the understanding of compliance that needs to be upheld for example in relation to maintenance against the standards therefore potentially limiting Network Rail's understanding as to whether current practices have had a detrimental impact on the life expectancy of depot assets. The outcome of this could potentially see a surge in failing assets thus resulting in reduced availability of services and/or increased expenditure.
   - There being no feedback mechanism that would be used as input to improve capabilities, techniques and standards across the wider depot plant estate. In other words, the general competency and capability within Network Rail is diminishing over time.
   - Asset Engineers (who are not classed as competent staff to understand the technicalities of depot plant) are potentially reliant upon the DFO to make investment requests which inform future investment decisions.
   - Limiting the integrity of any future budget and future investment plan both at a local level and Network Rail wide level.

2. At an operational level there is the need to act and respond to day-to-day tactical and operational demands as well as be cognisant of local influences e.g., enhancements that would have a positive impact on asset management. It is important to note that the decision to make these enhancements at a local level should be made in area 3 not locally because area 2 should be more focussed on delivery. For example, it is possible that area 2 may make a local decision that has a detrimental impact on the overall asset management system or may have a negative impact on other depots as an unintended consequence.

General Findings: We are of the opinion that some of the applied specialisms are no longer available. For example, in the past Network Rail Asset Engineers would seek guidance from a number of parties for example:

- Technical Authority: provides support regarding technical matters in interpreting the standards and good practice. This capability has not been available for the past 4 years.
- Rail Vehicle Engineering: provides insights and advice around best practice in relation to depot plant at a consultative level.

Typically Rail Vehicle Engineering would provide advanced knowledge about new techniques and concepts that could be evaluated and rolled out across the whole depot estate. This may include new technologies/cost saving practices etc. It appears the initiative to implement improvements is only managed at a depot level.

1. This area represents the combined delivery parts of the organisation, 'the doing part' and it is this part that creates the value that the beneficiaries take advantage of or buy into. It is very important to point out that this definition of value has been derived through the combined effort of all of the management activities described above. This combination of activities makes the overall system viable. Taking away feedback loops or downgrading any part of this system will upset the effectiveness of the delivery of the overall system and it is then difficult to understand the effectiveness of value.

   General Findings: The majority of the operational activity is carried out directly by the DFO. In which case the DFO is the primary source of knowledge of the condition and performance of the depot plant assets. The following observations are made:

   - Network Rail use an asset management system (currently OPAS) which is intended to maintain records of the condition of depot plant assets. The quality of the data is poor in this system and in most cases Asset Engineers rely upon the DFO's asset records.
   - Value is only contained within the immediate interests of the specific depot DFO. Any additional requirement for any additional DFO capability e.g., new plant assets to support a new service would either be funded and managed by the DFO and/or go through a change control process to change the scope of the contract.
   - There are limited integrated improvement plans e.g., plans for interventions that Network Rail need to carry out and plans for interventions that the DFO need to carry out are not cognisant of each other causing potential service disruption as well as under-optimising work in general. For example, this level of activity would normally be covered by area 3 above.

5 Response to the project objectives and scope

In direct response to the questions posed as part of the objectives and scope detailed in Section 2:

1. Assess the conditions of depot plant

Throughout the conversations held with the regional asset management teams and the depot facilities owners, it became clear that the more detailed asset condition information sits with the individual depot facilities owner at each depot location. Information is passed between the DFO and the regional asset engineers on a 'per depot' basis which is then inputted into OPAS, but it is acknowledged across the board that the quality and detail of this information is lacking.

The exception being Scotland who have formally acknowledged the issues with the condition data held and taken positive action to benchmark their asset condition and contract suitably qualified external parties to undertake subsequent surveys.

Routine surveys are undertaken by Network Rail, these are considered superficial as they are undertaken as part of the general buildings survey.

- *Executive Summary cl.2, 4*
- *Recommendation 1, 4*
- *Annex C – Throughout*
- *Annexe D cl.5.1, 5.4-5.7, 5.15, 8.1-8.2*

2. Assess the management process and supporting asset management strategies

The responsibility for asset management activities currently sits with the regions, they follow an established model of engagement with the DFO which delivers a productive short-term asset management strategy, medium and long term strategies are challenged by the poor quality of asset condition data, absence of strategic stakeholder input with future planning primarily driven by the DFOs risk prioritisations and budgetary limitations. Where risk prioritisations change and budgetary constraints do not allow for this change, lower risk activities may be cascaded in to following control period plans as a result.

- *1. Introduction*
- *Executive Summary cl.2*
- *4.Findings & Discussion – Throughout*
- *Annex B - Throughout*
- *Annex C – Throughout*

3. Be assured that maintenance and renewal (M&R) strategies agreed between Network Rail and Depot Facility Operators to manage depot plant are adequate to support rolling stock to deliver the level of customer service required and do not limit the operation of national infrastructure

For any given depot location, the delivery of the train operators fleet in to passenger service occurs on a daily basis – for this happen the DFO must undertake the planned preventative maintenance of the plant assets that is required of them, where a fault or breakdown is identified, the DFO notifies NR. In a number of circumstances described to us, a DFO has had to take remedial action (with or without authorisation from NR) in order to be in a position to discharge their duties to the operator. There are not any KPIs of any kind, hence no record these 'out of course' events, and as a result

- *1. Introduction*
- *4.Findings & Discussion – Throughout*
- *Recommendation 3*
- *Annex C – Throughout*

4. Understand any impact of current conditions of depot plant on Network Rail's planning for Control Period CP7 with respect to asset sustainability and renewal plans

A number of factors affect Network Rails ability to plan effectively for Control Period CP7, these include the short term nature of the regions asset management strategy, the quality of the depot plant asset condition information and the arbitrary design life attributed to each asset in line with Network Rail policy.

- *1. Introduction*
- *Recommendation 2, 3*
- *Annex C – Throughout*

6 Observations

The observation are made within the context of the project objectives and scope described in section 2.

- Management systems in general require a range of standard components and functions. At a basic level there is the need for an assurance activity that provides checks and balances against the qualitative and quantitative aspects of what the management system is delivering. It is unusual that a decision has been made to remove this element of the management system as the removal of assurance will have consequences. We were not able to establish why this decision was made.

7 Recommendations

The recommendations are made within the context of the project objectives and scope described in section 2. The intent of the following recommendations is to stipulate the need to continually support depot plant assets in the long, medium and short term.

1. Within the context of assessing the condition of the depot plant; the remaining life (or condition) of depot plant assets is not fully understood. Asset investment is being managed at an operation level, on a need to repair or upgrade basis, only addressing short-term interventions to address the requirements in the (Railtrack) Depot Access Conditions.

   R1. The way in which the Policy explains remaining design life is not conducive to how the actual design life is considered due to the nature of the plant. Plant goes through several generations of upgrades before it is retired sometimes longer than that described in the Policy. The Policy should be changed to reflect this and those practices to determine asset condition and future short-, medium- and long-term rolling investment should be upheld within a strategic, tactical and operational context and be monitored and managed.

2. Within the context of the management process supporting asset management strategies. The Policy is not being followed on a number of fronts.

   R2. Reinstate existing or improve upon practices described in Policy as represented in Figure 7 that have been part of the organisations activities in the past e.g. assurance audits, technical engineering support; or as part of ongoing CP7 works. This should include future scrutiny of regional strategic asset management plans carried out by the Technical Authority. Regional strategic asset management plans are not produced at the moment, and neither is there capability and capacity in the regions to do so. In addition these plans should be supported by more appropriate and emerging commercial frameworks that allow sufficient flexibility to accommodate future operating practices. We would see the requirement to develop this capability and capacity within the regions as a necessity in order to uphold the integrity of the CP7 Plan.

3. Within the context of knowing if the maintenance and renewal strategies agreed between Network Rail and the Depot Facility Operators to manage depot plant are adequate to support rolling stock to deliver the level of customer service required and do not limit the operation of national infrastructure. In this regard Network Rail only know what is needed to maintain and renew depot plant within the confines of the Depot Access Conditions, not for example knowing beyond the Depot Access Conditions as a sustainable depot plant asset management service going into the future. We would see this as a significant limitation to understanding the overall impact depot plant has on the overall operation of national infrastructure.

   R3. See R2 and incorporate effective ways and means of capturing risks and taking advantage of new opportunities with internal and external stakeholders such as the Department for Transport, Local Authorities and other business partners. Carry out a review of the model form of contracts for the Depot Access Condition to determine if they are still going to be an effective means to manage stakeholder expectations and are not barriers to future growth.

In terms of understanding any impact of current conditions of depot plant on Network Rail's planning for Control Period CP7 with respect to asset sustainability and renewal plans, refer to R1, R2 and R3, at the moment any proposed renewal plans provided by Network Rail by definition can only be based upon combined short-term needs of each local DFO.

4. Network Rail should maintain a general understanding and overall knowledge of asset condition and asset remaining life. Network Rail should not have to rely upon knowledge from the DFO to inform strategic decisions for investment. This strategic condition information was previously monitored for example by the Technical Authority as an assurance activity against the asset performance feedback

provided from the DFO. This level of asset information and assurance has been lost and should be reinstated to support future strategic investment and guide policy for Network Rail.

Annex A - Scope

The scope of the project involved carrying out a review which focused on the following aspects or questions. We gathered evidence from the questions, and provided comments based upon specialist knowledge and industry good practice.

This project only covered depot plant assets in depots leased to DFOs with the Depot Access Conditions, where DFO has responsibility for maintenance and Network Rail retains responsibility for renewal and certain repairs based on the Depot Access Conditions.

We engaged with The Technical Authority, Asset Engineers, Depot Portfolio Surveyors and Depot Station Access stakeholders across Network Rail's Routes.

The following areas of investigation were covered:

1. Organisation Structures

- Key roles and responsibilities of staff for asset management of depot plant within each region in Network Rail - including RACI or equivalent for all key activities required.
- Systems thinking and collaboration - how the identified staff above collaborates with each other and region's Operational Property asset management team to manage depot building and depot plant as a system.

5. Depot Plant Asset Inventory & Conditions

- Gather the full list of depot plant assets in each region – the list should include number of depot plant assets by type, criticality and condition rating.
- What system is being used by regions to manage and record depot plant asset conditions? Is the system fit-for-purpose?
- Comment and assess upon any implications of current conditions of critical depot plant assets on the renewal planned in CP6 and beyond.

6. Management of Risks to the Operation of the Depot Plant Assets

- What are the maintenance strategy and regime being adopted to manage depot plant conditions?
- What processes are in place to identify criticality of depot plant assets and specify associated maintenance requirement for assets critical to operations? What roles and activities are Network Rail regions involved in the above?
- Details of regional audit and assurance process of maintenance activities – including responsibilities, record of the last audit and corresponding outcomes and actions taken.
- Any maintenance and renewal backlog in each region - if yes, what arrangements are in place by regions to address backlog and ensure delivery of maintenance and renewals in order to remain compliant?
- Any Key Performance Indicators (KPIs) or PIs established by either Depot Facility Operator (DFO) or Network Rail to monitor performance of depot plant assets.
- Provide a view on whether Network Rail regions have been undertaking an effective 'landlord' role in reviewing, managing and auditing Depot Facility Operator (i.e., lease holder) compliance with covenants in depot leases and putting actions where it is not compliant.

7. Remaining Design Life & Asset Replacement

- Network Rail regions' approach to renewal of depot plant assets – for example, any trigger(s) established for renewal of depot plant? what factors are considered when prioritising renewals?

- Regional approach to inform cost-risk balance decision - for example, to run plant or equipment until the end of design life, or whether to make provision for regular and pre-emptive renewal works.
- How are maintenance strategy, activities and performance factored by regions in their renewal planning of depot plant?
- Are there any gaps identified between maintenance and renewal strategies? If yes, provide views on implications on safety, performance and long-term management of assets.

8. Stakeholder Management

- How are the needs (e.g., maintenance requirements of rolling stocks that may access the depot) of key stakeholders or end users (i.e., TOCs) factored in M&R strategies? Comment whether they are effective.

9. Failure History & Lesson Learned

- How are fault data reported from DFO to Network Rail?
- Any evidence of lesson learned by regions to prevent future depot plant asset failures to railway operations based on failure history.
- Comment and assess regional understanding of different important and consequence of depot plant asset failures.

10. Availability of Spare Parts

- Any recognition of ongoing supply of spare parts and cater for the problems surrounding obsolescence.

The consultant will provide a report supported by details of analysis findings:

- identifying what is considered current best practice;
- providing assessment of findings and robustness of maintenance and renewal (M&R) strategies to effectively manage depot plant asset conditions; and
- providing recommendations on how Network Rail/regions should improve for CP7 planning and in long term.

Annex B - General requirements of a viable asset management system

Introduction

You should read this section first. The following guidance explains the general requirements of a viable asset management system applied to the context of this project and the area of focus being Network Rail's Asset Management Systems in relation to managing Depot Plant Assets. We do not explain everything about asset management here only the relevant points so we can place the value of our observations in context.

We refer to ISO 55000 suite of standards and related guidance. In general, we describe good practice, why it is what it is and how the practice is applied in context.

We also highlight some of the potential impacts on the asset management system if some of the requirements or features of the system are missing. What impact that would have on the asset management system to work effectively in isolation and then what the wider impact could be if those missing parts of the system are not developed. For example, this would be a direct reflection on Network Rail's existing capability.

The asset portfolio

The asset portfolio is the entirety of assets that comprise the enterprise. In this particular project we consider the scope of the asset portfolio to be represented by the total scope of Plant Assets in every depot. However, within the context of railways and in order for the railways to work, the majority of railway assets are interdependent. Meaning, the failure of one asset system may cause unintended consequences or stop other assets from working.

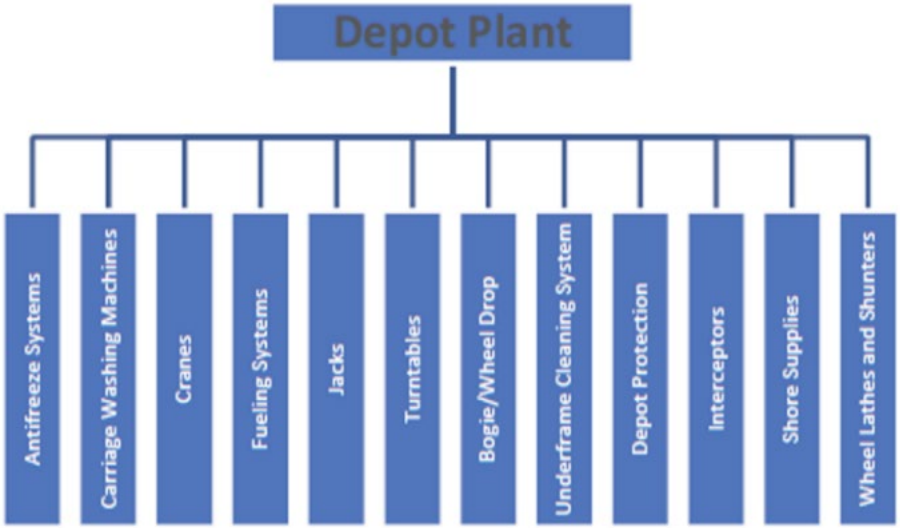

Figure 9 Scope of Depot Plant based on Network Rail CP6 Plant and T&RS Asset Policy

To overcome this the organisation must establish ways and means of understanding those interdependencies. One way of doing this is to appreciate what services the assets enable e.g., the outcome or reliance on the asset's utility or agency.

The scope of plant assets is shown in Figure 9. These plant assets are used across many depots are relied upon by many stakeholders or operators and ultimately all of the assets work together to enable the passenger service to operate. A plant asset failure can prevent a train operator providing a passenger service.

The asset management system

The asset management system are the management practices established that manage the asset portfolio. The management system comprises Competency provided by people, Policies, Procedures, Guidelines and Processes as well as the feedback loops that regularly evaluate the effectiveness of the asset management system. The asset management system includes the adoption of engineering techniques that support risk/opportunity and investment decision making and where beneficial tools that simplify or partly automate effort potentially resulting in cost savings. Ultimately there is a dependency on advanced engineering know-how.

The asset management system should primarily be influenced by predefined corporate goals. Typically, these are described as higher-level service capabilities that the organisation wants to be identified with and aspire towards and are discharged through the effectiveness of the asset management system/s and hence the resulting performance of the assets. The availability of services is directly related to the effectiveness of the asset management system.

Figure 10[3] shows a general structure or hierarchy of the relationship between organisational objectives, the asset portfolio (depot plant assets being a subset of Network Rail's overall asset portfolio), the management of asset systems and managing individual assets.

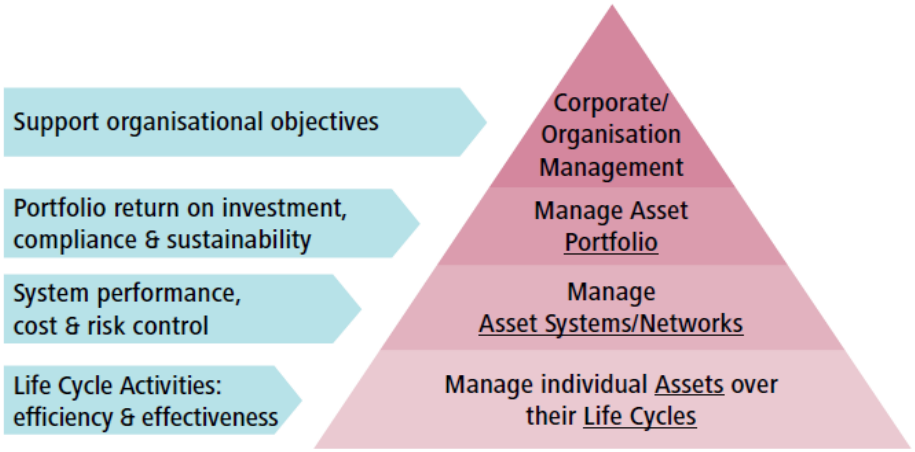

Figure 10 Hierarchy of assets within an integrated management system

An example of a corporate goal within the context of Network Rail's organisational objectives in the provision of providing plant assets for example for train operators is described in Table 2.

Here it can be seen how the corporate goal sits at the top of the pyramid in Figure 10, how the scope of the asset portfolio is managed and the overall return on value or investment/compliance is managed and how that is disseminated through understanding asset systems performance and why it is important to manage asset lifecycles.

A broad range of work needs to be carried out when managing assets which includes considering for example demand analysis. This is where the organisation looks to both assess and influence demand for and levels of service from the organisation's assets. In context, Network Rail's revised Delivery Plan for 2019-2024 states that passengers deserve a reliable railway and that is why Network Rail's promise is 'putting passengers first'. This promise needs to be assimilated at various levels of abstraction for example at

[3] An Anatomy of Asset Management – Version 3 – December 2015; available at https://theiam.org/media/1486/iam_anatomy_ver3_web-3.pdf

systems levels and sub-systems levels such that interdependencies of performance of systems can be fully understood. In particular, those systems that have the potential to impact Network Rail's ability to hold its promises require special attention. A risk and opportunity based approach is usually adopted for organisations to manage service and customer expectation delivery.

In the case of depot plant, Network Rail should be cognisant as to what the future demands for plant are in relation to future railway capacity development. This may be informed by external factors such as National or Regional Transport Policy, supported by Local Government / Agency investment and future investment plans as well as understanding future demands of for example the train operators who plan to fulfil that future transport growth. To put this strategic position into context we provide a draft 'corporate goal' in Table 2.

It is important to note that Network Rail's Asset Management Depot Plant Policies does not as much say this, but we have interpreted the intent of them and produced this 'goal statement' in relation to good practice. When considering good practice, we have assumed this position as a business driver for Network Rail in supporting the asset management of depot plant. This statement easily accommodates Network Rail's promise statement as 'putting passengers first'. In fact, it goes beyond that because it accommodates current and future demands of any rail user and the wider social, economic, and societal benefit that Network Rail could potentially enable within a depot plant context.

'Network Rail provides strategic value to its customers (e.g. a train operating company and the impact that rail transport services have in relation to wider social, economic and environmental impacts) through continuous capability improvement in addressing the current and future needs of regional and nationwide transport growth through investment in transport infrastructure including depot plant technologies, tools and techniques ensuring that the needs of Stakeholders are fully supported through their growth now and in the future, supporting increases in network capability and capacity.

Table 2 Example of corporate goal supporting the asset management of depot plant assets

The Asset Management system itself comprises several generic functions and in general those functions manage the continuous development of the organisation's strategic plan, people and the asset management organisation, decision making, asset information, the asset lifecycle and risks and monitoring. These functions are reflected in Figure 11.

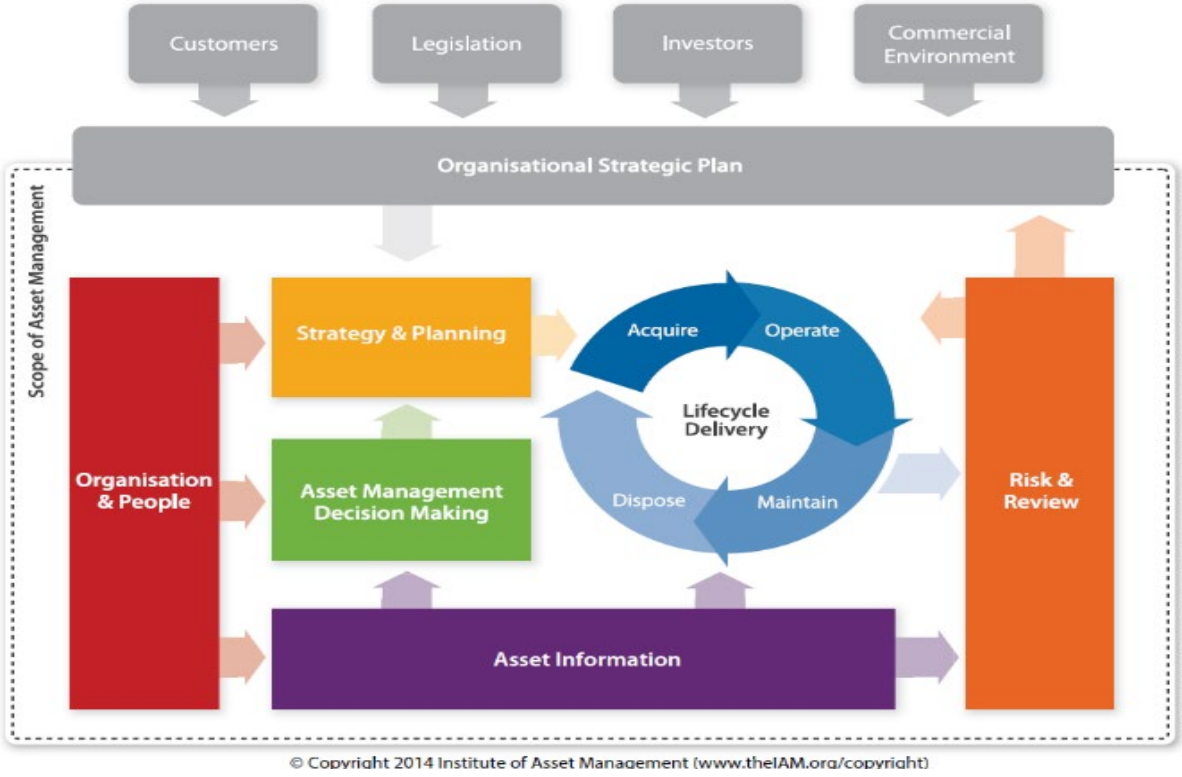

Figure 11 The IAM's Conceptual Asset Management Model

However, whilst the scope of these functions are described within guidance it is up to the organisation to interpret how these functions are interpreted, designed operated and implemented within the organisation. Each organisation is different as their circumstances are not the same and the guidance is there to inform and to create insights, not to necessarily copy.

What can be explained however is how the interdependencies work within context so that a management system is designed or remains viable. For example, understanding the impact on the wider system if one of those functions is taken away or is not working as effectively as it should be. This is explained within context in the next section.

The integrity of the asset management system

The integrity or viability of an asset management system (or any system) can be analysed from first principles. This can be done in terms of first identifying and understanding the necessary parts of a viable system in general and then assimilating those parts across to a real-world scenario. In this case we will reflect on what we think Network Rail's Depot Asset Management System should be and then use this as the basis to gather evidence against the line of enquiry.

The integrity of the asset management system is shown in Figure 12 followed by a supporting narrative for each area shown in the diagram within the context of Depot Plant Asset Management.

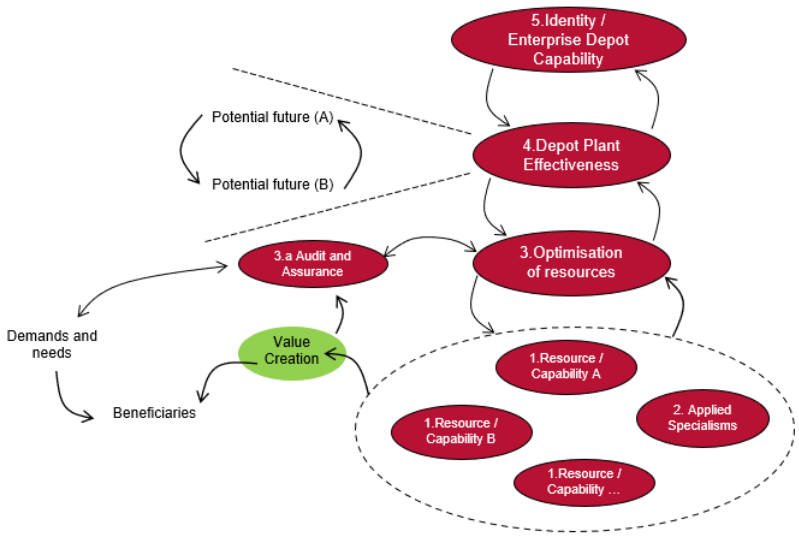

Figure 12 The Integrity of the Asset Management System

5. The ‘Depot Plant Asset Management System’ covers the entirety of depot plant assets across the whole of Network rail and its value and identity is described for example through a corporate goal as described in Table 2.

4. In order to deliver and develop depot plant asset management systems effectively there is a requirement to continually monitor stakeholder’s needs and expectations, this will inform and develop the current and future overall and individual depot and plant capabilities further across the estate as well as protect that capability within Network Rail, so its value is not depreciated.

3. The overarching management activity manages within a tactical context all of the capabilities and resources needed to deliver the goals and therefore designs and manages the tactical and operational aspects of the parts of the organisation that creates value that the beneficiaries want.

3a. Represents the necessary audit and assurance activity that has to take place to make sure that what is being created as value still remains valuable and if not why. Value always diminishes over time, so this is why for example area 3 is so important.

2. At an operational level there is the need to act and respond to day-to-day tactical and operational demands as well as be cognisant of local influences e.g., enhancements that would have a positive impact on asset management. It is important to note that the decision to make these enhancements at a local level should be made in area 3 not locally because area 2 should be more focussed on delivery. For example, it is possible that area 2 may make a local decision that has a detrimental impact on the overall asset management system or may have a negative impact on other depots as an unintended consequence.

1. This area represents the combined delivery parts of the organisation, ‘the doing part’ and it’s this part that creates the value that the beneficiaries take advantage of or buy into. It is very important to point out that this definition of value has been derived through the combined effort of all of the management activities described above. This combination of activities makes the overall system viable. Taking away feedback loops or downgrading any part of this system will upset the effectiveness of the delivery of the overall system and it is then difficult to understand the effectiveness of value.

We have mapped the depot plant asset management capability across the requirements of a viable system in Table 3. The application of this approach is explained at a high level in the report in Section 3. Methodology.

Annexe B: Outline of a Viable Systems Model (VSM) for the Asset Management of Depot Plant Assets.

The following describes the various sub-systems (1 to 5) using generalised behaviours to describe an organisational model cross referenced with the various 'players' within the asset management process looking after the depot plant assets.

Sub-System Ref.	Definition	Current / Expected activities within Network Rail
1	• The "doing" part & front end of stakeholder expectation. • Keeping assets functioning; • Stakeholder success dependent on fulfilment of service expectation; • May require several 1's for different engineering domains e.g., multiple depots	**Depot Plant Asset Maintenance Function** • PPM of plant assets (in-house or via OEM) • Leading fault rectification (authorised by NR) • Interface between DFO and NR Asset Engineer • Supply asset condition information to NR.
2	• Applied specialisms, knowledge & capabilities; • Embedded intelligence and learning part of the business. • Specialisms enable continuous improvement of how the SS1's work. • Insight and knowledge about reliability, systems engineering or configuration management.	**Region and Routes Asset Management Structure** • Actively manage building and plant assets; • Manage interface between NR and the DFO. • Informal 'look see' assurance activities of maintenance plans and activities; • Scheduled inspection of depot plant assets; • Develop local alliances to increase impact of activities.
3	• Coordination and optimisation of resource; • Ensure disciplines across the business cooperate to deliver and optimise the overall service; • May merge with 2 to provide an "operations" function; • SS3 act for the sake of improving service optimisation; • SS3 people understand 2 activities but rely on their expertise; • Responsible for audit and assurance activity; • Checks that SS1 to 3 are acting to ensure their outputs are effective; • Awareness of driving efficiency to the detriment of business management systems.	**Depot Plant Asset Technical Authority** • Develop policy and standards; • Limited resource for assurance activities; • Responsibility for asset management strategy passed to the regions.
4	• The development part of the system; • Externally facing viewpoints to identify system risks and threats; • Identify opportunities that would influence SS1 to 3 activities; e.g., Depletion of fossil fuels, change in government policy, or threats to a unique selling proposition or strategic advantage.	**NR Management** • Provide a strategic approach across Technical Authorities; • Develop national and international workstreams with cross-sector
5	• The setting of organisation identity and differentiators, belief system and governance.	**Internal NR & External Leadership** • Purpose of NR as a public body as defined by inputs from DfT, ORR, RSSB, RDG etc.

Table 3 Depot plant asset management capability mapping across a viable system

Annex C - The existing organisation - Consolidated view of the interviews

Our findings are presented as a direct response to each line of enquiry (question set) from the scope of our work. Where appropriate we have explained our findings in context based upon the reference to good practice in the Annexes. The findings are supported by further detail and feedback collected from the interviews with stakeholders.

1	Organisation Structures
1.A	Key roles and responsibilities of staff for asset management of depot plant within each region in Network Rail - including RACI or equivalent for all key activities required.

Technical Authority: –

The Technical Authority (TA) - Plant Assets is responsible for the authoring and update of NR Plant Asset Policy and standards through the engagement with working groups consisting of technical specialists regional policy leads. The TA holds the remit for assurance activities, auditing the Depot Facilities Owner (DFO) as depot plant maintainer is fully in compliance with the plant policy and standards that have been set; audit activities have been in hiatus for around 4-5 years. Audits re-started recently with two being undertaken in 2021.

The organisational design and responsibilities of roles are unclear.

There does not appear to be understanding of the overall makeup of the organisation and has limited view. The TA team not aware of the wider role of the department.

Due to re-organisation, a number of the TA team have been lost leading to much reduced numbers. Indirect change of remit for the Plant TA that is inconsistent with the activities of the other TA departments.

Audit activities have been in hiatus for around 4-5 years. Audits re-started recently with two being undertaken in 2021. This has meant no feedback loop to evaluate the effectiveness of standards / implementation of the standards / TA interaction with external stakeholder.

Further audits to be undertaken on a risk-based approach. It is presumed that this is done on a reactive basis and driven from contracts and not the TA's own schedule - acting on the priorities of others?

Is the TA now sufficiently resourced (financially and staffed with competent individuals) to undertake this role again?

Regions: -

There are no specific responsibilities or accountabilities regarding Fixed Depot Plant assigned to individuals within the Regional Asset Management (Buildings) Teams, but it is recognised that the M&E asset engineers are best placed to support the responsibilities identified in the national Asset Accountability Matrix. The obligations of NR within the Depot Access Conditions supporting the leases in regard to the day to day asset management of depot plant although they are not the technical standards owner.

The Depot Portfolio Surveyors are responsible for managing the contractual relationship between NR and the DFO set out in the Depot Access Documentation including the Lease, the Letting Conditions, the Access Conditions, the Depot Specific Annexes and the Connection Agreements and ensuring the regulatory requirements arising from them are dealt with, principally being depot change.

Asset engineers liaise directly with the DFO, being the day-to-day stakeholder link to be the conduit for asset condition data and enable the immediate requirements of the DFO. Safety bulletins - bigger incidents, national building services meeting on a bi-monthly basis to share lessons learnt otherwise little sharing of information between regions.

[Southern] Buildings Asset Management Portfolio teams consisting of Asset Engineers and Surveyors in the roles of Professional Head, Senior Engineers & Engineers.

[Eastern] Eastern region Regional Asset Management (RAM) Team is a team of both Building Fabric and Building Services (M&E) Engineers (MS & CM).

Technical Function within the Eastern region that sits between the TA and Routes (AC - Principal Engineer). This is an additional engineering capability to support the Eastern routes, inconsistent with the other regions.

[NW&C] Regional contact with TA Plant Assets during works on Allerton depot on what equipment to source. The TA contact has since retired and not been replaced.

[W&W] The key regional team include Senior Asset Engineers, Asset Engineer, Depot Portfolio Surveyors for each of the routes

Depot Plant does not form part of our competency framework. If this is the case, this presents an issue over the asset management decision making process.

[Scotland] The roles of Professional Head of Plant and Rail Vehicle Engineering are acknowledged as being missing from the Network Rail organisation.

1.B	Systems thinking and collaboration - how the identified staff above collaborates with each other and region's Operational Property asset management team to manage depot building and depot plant as a system.

Technical Authority: –
Responsibility for depot assets has largely been passed down to the regions, the TA currently does not have the staffing resource or budget to undertake this role

Regions: -

Historically, the Building Services Asset Engineers have acted to support the management of Depot Plant through the Depot Access Conditions (DAC) using interfaces with the Depot Facility Owner (DFO) at Level 2 & 3 Property Liaison Meetings where issues arising from the service and maintenance of the Fixed Depot Plant by the DFO are discussed.

The RAM(B) team also provide through the Operational Property Helpdesk (OPHD) a 24-hour facility for the DFO to raise a work request for NR to provide resource to repair Fixed Depot Plant assets. Where the capability for that request to be assigned to the DFO incumbent maintainer through the DFO as NR Buildings and Civils commercial agreements with framework contractors do not always hold the specialist capabilities required to support the Fixed Depot Plant assets.

The DFO's typically use this feature to get the work delivered as it provides the most expedient means of returning the asset to service after a break down. Scheduled maintenance of the depot plant assets sits with the DFO, the DFO has awareness of asset condition and holds the responsibility to update NR accordingly – this information forms the best available asset intelligence.

NR instruct Surveyors to undertake visual surveys of the Depot Plant every 2 years which is uploaded to OPAS (NR Asset Management Database) detailing the PARL (percentage of asset remaining life) and any defects; this information is used to assist in estimating remaining life of assets, guide overhaul and justify renewal. The remaining life of a particular asset is determined through the application of the "Asset Life Expectancy Life List" along with the subjective views of the surveyor and use of a standardised life expectancy calculation in addition the measurement rules handbook Though the depot buildings and depot plant are reviewed in the same activity, they are considered separately and not as part of the same system.

OPAS data typically from a visual survey, emphasis on visible condition – corrosion, exterior damage, current operating performance etc. caution should be used as this will not necessarily detect emerging issues e.g., internal wear & degradation, until they impact on operating performance. OPAS is in the process of being replaced with the new CITADEL database.

[Southern] Receipt of fault information – level 1 faults, monitoring, reports, trending – gives rise to a fix / renew decision.

Strategic plans aligned with control periods – CP6 plan is current, CP7 being developed now.

Items identified for control period strategic plans are undertaken during that CP as depot plant is considered critical.

Use of cost / issue analysis. ORR / DfT funding sought for more strategic renewals.

[Eastern] If there are discrepancies / uncertainties, consideration of the assets maintenance records / fault reports should be made.

[NW&C] No additional comments.

[W&W] Asset condition information from property liaison meetings used to inform minor works interventions which are managed/delivered by the Regional Asset Management (Buildings) Team (RAM(B)) through NR Delivery Teams or the DFOs own maintainer via the Depot Plant Minor works Budget.

Larger renewals are managed through the Strategic Business Plan (SBP) and are delivered by NR or through the DFO via a funding agreement and Asset protection agreement.

Historically the SBP work bank for each control period has been reviewed with RVE at the draft submission stage, agreeing the 'GRIP 0' estimates for the work based on National data. The Depot Plant Asset Condition Audits undertaken by RVE pre 2017 were used to verify the renewals plans.

The current status of auditing Depot Plant Condition indices previously undertaken by RVE is unclear since the re-organisation. The RAM(B) team do not currently hold the competency for that audit process.

[Scotland] No additional comments.

2	Depot Plant Asset Inventory & Conditions
2.A	Gather the full list of depot plant assets in each region – the list should include number of depot plant assets by type, criticality and condition rating.

Technical Authority: –
The asset lists for each depot are listed within the Depot Access Conditions (Depot Access Conditions) for that depot.

The TA holds an asset list from circa 2005 and cannot be considered accurate. It will not identify new assets or removed assets.

The list in theory could have been updated as part of the audit process, no known actions have been taken by the TA to develop an accurate asset list.

Regions: -

The assets under the remit of NR are listed in a schedule of the Depot Access Conditions as part of the lease documentation.

The DFO holds their own asset inventory as part of their own asset management strategy – their inventory reflects all assets they operate.

Assets are recorded in the NR asset management system OPAS, along with associated survey reports. Some regions believe the data collected in OPAS not to be accurate. Mention of ELLIPSE has also been made [W&W] though none of the asset teams have access.

End of franchise reviews undertaken, but initial asset condition data is considered poor. Use of asset schedule in Depot Access Conditions, but this has limited detail.

Only Scotland Region have made efforts to baseline asset condition data.

[Southern] For assets listed in the Depot Access Conditions, the DFO is the maintainer. We know the information in the Depot Access Conditions not to be current / updated effectively.

NR reimburse or provide a threshold payment.

OPAS data is not seen as accurate, reliance upon 'beneficiaries own asset management systems' Landlord reliant on the tenant for the data that defines their own scope of responsibilities.

[Eastern] End of franchise reviews undertaken, but initial data is considered poor, use of asset schedule in Depot Access Conditions, but has limited detail. No initiatives to baseline the data.

Dilapidation Surveys are undertaken, however prior records do not have a sufficient level of detail This cannot be considered an effective process

When assets are removed from site when no longer required, they remain on the documentation (Depot Access Conditions & Collateral agreements) No process perused to complete the update of the Depot Access Conditions.

[NW&C] Because the central asset list is out of date, asset lists are requested from the DFO / TOC.

Portfolio surveyors have assets lists as part of the Depot Access Conditions , not known if they are correct level of detail in the asset information is not comprehensive. Information in practical terms is maintained by the DFO.

[W&W] Assets which when unavailable would immediately impact on the timetable through non availability of rail vehicles or impact on customer experience and/or operational efficiency e.g., Fuelling, Lube Oil, & Coolant Systems, CET, Train Washing, Shore supplies and AdBlue Systems.

Other assets e.g., Jacks, Cranes, Wheel Lathes etc if unavailable would impact on train service routine and would only affect the timetable over a period of time and would thus not be defined as critical.

[Scotland] There is a full asset list for all established Scotland region locations on a centralised open source system this was brought about as previous spreadsheet based systems did not perform well.

2.B	What system is being used by regions to manage and record depot plant asset conditions? Is the system fit-for-purpose?

Technical Authority: -

NR asset management system is called OPAS, the quality of data within OPAS is limited - this is the central asset management system and presumably drives the survey schedule.

Asset Inventory schedule is included within each of the Depot Access Conditions.

DFO use their own asset management systems.

Regions: -

The DFO is responsible for undertaking planned preventative maintenance, monitored by the Network Rail Depot Portfolio Surveyor. Depots (DFO) typically have their own in-house facilities management, whereas maintenance activities are outsourced.

The asset Engineer has visibility of the maintenance schedule – though DFOs willingness to share varies from location to location.

[Southern] This varies different TOCs use different systems DFOs have a definitive list of plant assets, these will include both NR responsible items and DFO responsible items.

Asset Engineers have previously requested maintenance schedules from depots, they have yet to provide.

[Eastern] No additional comment.

[NW&C] Maintenance schedules from the DFO are generally forthcoming

[W&W] This activity was an RVE function, and we believe the asset inventory was held in Ellipse according to the Asset Accountability Matrix, the RAM (B) have never had access to Ellipse.

There has never been a formal transfer of asset accountability for the asset list or the condition monitoring of those assets to the RAM(B) Team.

[Scotland] OPAS has never captured the appropriate level of detail.

Hand held devices loaded with Invida software Access to the inventory ScotRail are looking to interface with the Network Rail systems to share the data

2.C	Comment and assess upon any implications of current conditions of critical depot plant assets on the renewal planned in CP6 and beyond.

Technical Authority: –

Standards identified require update due to process requirements i.e., periodic review; external factors e.g., legislation change, group standards change, change in equipment available.

NR have made a decision to standardise some items of equipment on depot though the work to author the guiding documentation has undertaken by resource external to NR.

No evidence of standard updates has been driven by inputs from client stakeholders or the regions.

Regions: -

Exams are undertaken on all building assets – depot plant is picked up as part of this process e.g., the 5 yearly examination, which is a detailed inspection. Assets also receive an annual visual inspection.

Asset Engineers experience / knowledge of project history relied on to determine NR depot plant responsibility.

Longer term planning used for half-life overhaul or end of life renewal – no surprises for DFO. Bathtub curve analysis used to ensure that action is taken before impact is felt. It was noted that the service life of many plant items has been set at arbitrary values e.g., 25 years.

[Southern] Knowledge of asset condition and planned replacement is planned a few years in advance - see investment plans. However, the recorded condition (e.g., 25-year life expectancy is not realistic) requested forward investment plan for CP7

[Eastern] The granularity of the asset information that drives the inspection may be limited i.e., an LMD site is divided into 'blocks', a block may relate to a building which may contain a significant number of plant assets.

[NW&C] No additional comment.

[W&W] Western have interventions planned at 2 of the 5 LMDs with fuelling systems in CP6 and 1 in CP7.

The other 2 have new installations. Renewal at Laira is important due to age of the asset & recent concerns of environmental risks. Wales have fuelling system renewals planned for CP7. Western have significant intervention planned at Laira - Lube Oil Storage renewal in CP7. Depot Protection systems replacement at Bristol St Phillips Marsh, Laira & Canton in CP6.

The oldest Western carriage wash scheduled for renewal in CP6. Replacing the Laira and Long Rock machines, not suitable for stock located at depots. This renewal enabled by deferment of BSPM Wheel Lathe to CP7, this was agreed with the DFO. Carriage washers in Wales in good order, no interventions planned in CP6 and 7.

Many Western shore supplies due to be made redundant with withdrawal of HST Fleet. Now to be retained to support 'Castle' Class and 800 fleet at Laira and Long Rock, interventions undertaken to enable life extension. The replacement / overhaul of many of the lube oil and coolant systems delayed / deferred over several control periods due to resourcing constraints and mitigated by minor interventions, while critical are non-complex to maintain and were all subject to works during the PP@LMD project (2005-2009).

[Scotland] No additional comment.

3	Management of Risks to the Operation of the Depot Plant Assets
3.A	What are the maintenance strategy and regime being adopted to manage depot plant conditions?

Technical Authority: -

Refer to 2.C

Regions: -

The Fixed Depot Plant is not maintained by Network Rail; the responsibility being devolved to the DFO through the access conditions supporting the lease.

Historically the compliance of that regime would have been evaluated by RVE through the Fixed Depot Plant Audits. The parties responsible for maintenance and repair/renewal of plant are set out in the individual Depot Annexes and are agreed for new assets or amended quantities of assets at franchise change. Bottom-up approach as responsibility for the asset management of depot plant has been delegated to the regions i.e. there is no direction from the top (TA).

Reliance on forward investment plan and regular maintenance regime as well as feedback from DFO. Level 2 meetings held with each TOC to raise current issues & non-compliances.

National Operational Help Desk – DFO to report failed plant assets, NR will determine whether to repair or replace.

[Southern] Where they happen, TD / CH would only see audit reports by exception.

Asset Engineers have previously requested maintenance schedules from depots, they have yet to provide.

[Eastern] Consumables are generally considered DFO responsibility.

OPAS holds the information for NR interventions.

Our budget is to repair/replace only, NR tasked with 7 day / 8 hr / 2 hr response times depending on the criticality of the asset.

Neville Hill depot have historically used a spreadsheet-based approach for tracking depot plant assets, with Northern Trains now taking over the depot as DFO they are introducing a database system that will interface with NR.

[NW&C] Maintenance schedules from the DFO are generally forthcoming

[W&W] The RAM(B) monitor depot plant condition though the number of OPHD raised by the DFO for FDP repairs and the issue of POWAs for minor interventions up to £25K of works and any concerns on our part are discussed with the DFO at the Level 2 and 3 Property Liaison meetings.

[Scotland] No additional comment.

3.B	What processes are in place to identify criticality of depot plant assets and specify associated maintenance requirement for assets critical to operations? What roles and activities are Network Rail regions involved in the above?

Technical Authority: -

The backdrop to 'criticality' although this is mainly based upon availability of assets is a gap that needs to be explored because of the way in which asset remaining life is considered the main activity is coming from the DFO / Asset Engineers (bottom up).

Network Rail would not necessarily know the detail of the processes - these are carried out by DFOs but there are level 1 (daily/weekly meetings) and level 2 (e.g., monthly meetings) that discuss issues / pending issues - Note the TA does not get involved in this area

Regions: -

Critical Equipment is listed in the Depot Annexes along with the Maintenance Specification (NR or other relevant industry standards), Base Utilisation Level and Output Specification.

Reliance on the flow of maintenance data from the DFO. Asset criticality fed from the DFO to NR to drive the heavy maintenance plans and renewals.

Criticality of the assets need for renewal is driven by its function and its urgency for renewal. Deviation from this are driven by budget, where this is exhausted lower criticality assets may be deferred to the next control period or unforeseen failure of another asset.

[Southern] Criticality of assets understood, and maintenance/upgrades planned well in advance - see AMP for CP7

There is a gap between maintenance & renewal – could undertake interventions with DFO maintainers to further understand asset condition. Replacement due to the asset being end of life (and knowing that it is end of life) and not because it can no longer be repaired / obsolete etc. typically assets are allocated arbitrary service lives by NR which are not necessarily representative of the OEMs intent.

[Eastern] Criticality scoring to determine prioritisation vs. budget and what is to form part of the backlog.

[NW&C] Financial planning could be improved with TA audit reports

Criticality scoring to determine prioritisation vs. budget and what is to form part of the backlog.

Fault data held by OPHD - not routinely interrogated

[W&W] The RAM(B) Team do not identify critical Depot Plant outside of our basic definition. No guidance has been received from the TA on the assignment of a definition or the impact on any maintenance requirements to be delivered by the DFO.

Our assumption is that the maintenance requirements for FDP are aligned with the M&E assets within the LMD which are to be in accordance with OEM instructions where specific or to SFG 20.

[Scotland] The use of building surveyors to assess plant equipment was deemed poor so the assessment of M&E plant was outsourced to a specialist this established a baseline for all assets.

Criticality assessments at least upper location are generally discussed upper tier meetings.

Scotland Region RAM team have personnel who are audit qualified, time served, FMEA, trained in root cause analysis and six sigma.

Scotrail's maintenance records are routinely asked for by and shared with network Rail.

3.C	Details of regional audit and assurance process of maintenance activities – including responsibilities, record of the last audit and corresponding outcomes and actions taken.

Technical Authority: -

Audit and assurance activities – request for asset certification to support landlord/tenant relationship.

Not aware of any recent reports being produced due to staff cuts.

Regions: -

No audits carried out due to cuts in budget - The national depot team do not audit, covered as part of a general plan with other assets. Operational property inspections (OPI) look at everything - this data is fed into OPAS - 3 yearly and annual. Reliance on local knowledge and OPI reports.

Similar across all regions there are depot buildings surveys carried out that are outsourced but these are mainly for the general 'fabric' of the buildings. These are high level and do not go into the detail about the performance of the depot plan assets.

End of franchise reviews are undertaken, but initial data is considered generally poor, use of asset schedule in the Depot Access Conditions is made but this has limited detail. Dilapidation Surveys are undertaken, however prior records do not have a sufficient level of detail.

[Southern] There is a gap in NR activities going into depots to verify activities undertaken by the DFO.

Audit function performed by the Buildings & Architecture team.

[Eastern] No additional comment.

[NW&C] This may depend on the details of the particular lease as to what activities are undertaken by the DFO

[W&W] We have not audited the FDP portfolio for maintenance activities or quality. The last assurance we are aware of was carried out by the former RVE Team.

We have however carried out a review of the FDP Assets and condition as a driver to the preparation of our draft CP7 submission which needs to be presented to TA for endorsement.

[Scotland] Scotland have undertaken regional audits with no involvement from the technical authority activities are taking place at station locations but not at depots.

Scotland have undertaken regional audits with no involvement from the technical authority.

3.D	Any maintenance and renewal backlog in each region - if yes, what arrangements are in place by regions to address backlog and ensure delivery of maintenance and renewals in order to remain compliant?

Technical Authority: -

Some backlog to parts deliveries due to availability.

Backlog is not covered by the TA because of staff shortages - however they “should” monitor non-conformance.

Regions: –

[Southern] Limited, none identified.

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] We have a deferred scheme register which records works deferred and mitigation. This is held by the Snr Asset Engineer (Building Management) within the RAM(B) Team.

The current FDP deferred renewals are to form part of our CP7 submission. The most significant deferred renewal is that of the BSPM Wheel Lathe covered earlier.

[Scotland] There is no maintenance backlog on the depot plant assets ScotRail outsource planned preventative maintenance of plant and audit this applies accordingly.

3.E	Any Key Performance Indicators (KPIs) or PIs established by either Depot Facility Operator (DFO) or Network Rail to monitor performance of depot plant assets.

Technical Authority: -

We understand no audits are taking place.

The TA facilitates the timely update of NR internal standards in relationship to depot plant, this will be driven by a managed tracker.

Regions: -
No specific KPI for the NR asset management teams, the TOC measure the availability of their fleet and through their own QA process.

Service availability KPI listed in the Depot Access Conditions.

[Southern] Availability / reliability reported - No e.g., NCRs reported.

[Eastern] DFO may drawdown for quick response small projects

No issues with NR lack of response. DFO can act proactively if NR cannot respond - DFO acts and then claims costs back afterwards

No failures of assets known that have affected the functionality of the depot - communications with the depot are important. Timely actions have been undertaken.

Bad planning has occurred - during the renewal of a wheel lathe by Northern, lathe installed but the building was not surveyed - the roof had a leak. NR had to install a temporary roof with a permanent solution 18 months later as per the NR plan / budget.

[NW&C] No additional comments.

[W&W] Only KPI aware of relates to availability of Carriage Washers (27 out of 28 days ea. period) and need for washer to achieve the required wash performance identified in NR/L2/RVE/0130.

Aware of NR Standards regarding output quality of wheel profile turning.

Our position is one of every asset being available every day, as without the critical assets, the timetable served from a particular LMD would be undeliverable by the TOC.

This criticality of many of the FDP Assets is why we offer through OPHD the range of attendance priorities to support the DFO, however it must be recognised that in the event of a failure of any FDP, the DFO first call is usually to the incumbent maintainer and not necessarily the NR RAM(B) Team.

[Scotland] No additional comments.

3.F	Provide a view on whether Network Rail regions have been undertaking an effective 'landlord' role in reviewing, managing and auditing Depot Facility

Technical Authority: -
Responsibility delegated to the Regions; landlord / tenant relationship managed at a local level.

We do not believe there is a view of this from the TA and we do not believe this sits under the TA terms of reference.

Regions: -
Managed as per 1B and also through the landlord's consent system, the depot change process and the claims processes as contained in the Depot Access Conditions.

[Southern] There appears to be a conflict with what the policy says and what is actually happening - that is not to say that the operations are critical

[Eastern] Northern have on occasion bypassed the landlords consent process and NR have refused to take responsibility for the asset - the DFO is then responsible for the removal of the asset at the end of the lease.

[NW&C] No additional comments.

[W&W] This is a question to Frazer Nash and not one for NR RAM(B) Team comment,

[Scotland] Structured meeting regime between the DFO and the asset engineers

Tier 1: DFO; Representatives of main contracts; Network Rail property works specialists.

Tier 2: DFO; Senior Asset Engineer; Network Rail property works specialists.

Tier 3: DFO; Regional Asset Manager; Regional Head of Property Services; Civils Programme Manager; Manager Head of Service Quality.

Tier 4: DFO; Regional Asset Manager; Civils Programme Manager; Director of Engineering and Asset management for Network Rail and ScotRail.

Network Rail are proactive to bring in the M&E designer's in order to do things better e.g. move to low carbon solutions.

3.G	Operator (i.e., lease holder) compliance with covenants in depot leases and putting actions where it is not compliant.

Technical Authority: -

Non-compliance we believe should sit with the NR Depot Portfolio Surveyor and fed to Legal. From all of our meetings with the stakeholders all of them have said they have no non-compliance records.

Where we identify earlier than anticipated interventions, higher than anticipated reactive interventions or early need for asset renewal, we do review the PPM activities of the DFO and where we believe the DFO to be derelict in his duty to comply with the lease and its associated covenants it is reported to the DPS.

We also work with the DPS to review submissions from the DFO for any claims against the threshold agreements in place to cover what levels of expenditure the DFO should be making into FDP Maintenance.

Regions: -

Managed as per 1B and also through the landlord's consent system, the depot change process and the claims processes as contained in the Depot Access Conditions

[Southern] No additional comments.

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] Our only comment is that where we identify earlier than anticipated interventions, higher than anticipated reactive interventions or early need for asset renewal, we do review the PPM activities of the DFO and where we believe the DFO to be derelict in his duty to comply with the lease and its associated covenants it is reported to the DPS.

We also work with the DPS to review submissions from the DFO for any claims against the threshold agreements in place to cover what levels of expenditure the DFO should be making into FDP Maintenance.

[Scotland] No additional comments.

4	Remaining Design Life & Asset Replacement
4.A	Network Rail regions' approach to renewal of depot plant assets – for example, any trigger(s) established for renewal of depot plant? what factors are considered when prioritising renewals?

Technical Authority: -

The TA has stated that this is driven from a bottom-up approach and is derived from level 1,2 & 3 meetings. However, the guidance in the Policy is inconsistent.

Regions: -

ASPRO (Asset Protection & Optimisation) undertake asset assurance for new assets e.g., DFO delivered enhancements. Planning for buildings is driven by both national and regional policies. Depot plant falls within the buildings work bank.

No regional depot plant strategy as this has always been communicated from central NR.

'Deferral Renewals Risk Register' for assets that need to be actioned but cannot be funded within the current period – risk profile not sufficiently high. Deferred assets are mitigated, and control measures implemented.

Due to the TA devolving asset management responsibility to the Regions & Routes, they have the ability/autonomy to provide specific strategy or priorities in this area to serve the TOC's.

There is no meaningful strategy for asset renewal over and above immediate and emerging need.

[Southern] General conflict between design life and actual life remaining

Asset renewal triggered by breaching a set number of key parameters.

Renewals done on a condition-based approach as design lives are arbitrary.

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] Typically, the basic premise for planning the renewal of FDP is the NR model covering the Anticipated Asset Life Expectancy of specific asset types. These can be found in the lifecycle model in the provided data set.

These ALEs are used as guidance for planning renewals however renewal may be brought forward or deferred out based on asset condition, criticality to train timetable or performance and funding constraints and the aspirations of our DFO Colleagues.

Examples of this can be seen in the deferment of the SPM Lathe to CP7, the early replacement of the Laira and Long Rock CWMs and the deferred scheme register.

[Scotland] No additional comments.

4.B	Regional approach to inform cost-risk balance decision - for example, to run plant or equipment until the end of design life, or whether to make provision for regular and pre-emptive renewal works.

Technical Authority: -
There does not appear to be a regional approach or guidance that covers this subject. There appears to be a reliance upon local knowledge by the DFO/Asset Engineer.

There is no real understanding of the asset design life.

The design life specified in the policy is arbitrary and not interpreted in the same way as for the cost/risk balance decisions.

Regions: -

Moves to standardise kit to be installed.

Moves towards open protocol control software to be less reliant on single source suppliers.

Projects of <£50k over the long-term fall within the strategic plan. This is classed as emerging capex and can be direct awarded. This speeds up the process. Projects of >£50k undertaken on an ongoing basis e.g., reliability.

The approach to any decision on sweating an asset by deferring a renewal, early renewal asset or otherwise is one taken after discussion with the DFO. Our Annual Minor Work and Control Period plans are shared with the DFO and should there comes a need to change those delivery plans, the DFO are informed and if necessary, consulted.

[Southern] This is not clear, although this may be kept at a local level and reported back to Route Asset Manager

[Eastern] Criticality scoring to determine prioritisation vs. budget and what is to form part of the backlog.

[NW&C] No additional comments.

[W&W] The approach to any decision on sweating an asset by deferring a renewal, early renewal asset or otherwise is one taken after discussion with the DFO.

Our Annual Minor Work and Control Period plans are shared with the DFO and should there comes a need to change those delivery plans, the DFO are informed and if necessary consulted. Where works are delayed during delivery, the DFO will be informed through the Level 2 Property Liaison Meetings. Where a renewal is to be deferred, the DFO is consulted to ensure the decision is adequately mitigated.

It must also be noted that some changes to the NR Renewals plans are DFO driven, where NR are responding to a change not anticipated in our long-term plans, such as the introduction of the 800 fleet in the South West to replace the majority of the Class 43 Fleet, where the washers were not suitable to clean the new stock.

[Scotland] No additional comments.

4.C	How are maintenance strategy, activities and performance factored by regions in their renewal planning of depot plant?

Technical Authority: -
Insight into compliance around maintenance strategy / performance is not seen by TA due to re-organisation.

Regions: -
Reliance on information from DFO for asset criticality.

[Southern] There is a schedule of upgrades/work split between TOC/NR

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] Maintenance of FDP sits with the DFO under the DEPOT ACCESS CONDITIONSs supporting the lease.

The DFO will monitor the performance of the asset and the incumbent maintainer through their processes.

As covered previously we monitor that remotely through the numbers and type of interventions we are asked to fund by the DFO during the life of the assets, the reported asset condition from the depot audits which used to be carried out by RVE and by our own assessment during depot visits by our asset engineers.

These are used to inform deviations to the planned asset renewals in the lifecycle model.

[Scotland] An example of taking strategic actions – wheel lathes – Scotrail has invested in a mobile wheel lathe. ScotRail made the case for the procurement in conjunction with the strategic planning team at Network Rail (enhancements) as this would give the required level of flexibility.

ScotRail has strategic input from external stakeholders - communications between ScotRail and Network Rail – refer to 3F.

4.D	Are there any gaps identified between maintenance and renewal strategies? If yes, provide views on implications on safety, performance and long-term management of assets.

Technical Authority: -

It appears TA does not have sight over this due to staff layoff.

Regions: –

[Southern] No additional comments.

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] The biggest gap as we see it currently is the need to have the resource and competence within the RAM(B) Team to undertake the FDP Audits previously provided by RVE, which should not only include an assessment of plant condition but also of the maintenance provision undertaken by the DFO.

[Scotland] No additional comments.

5	Stakeholder Management
5.A	How are the needs (e.g., maintenance requirements of rolling stocks that may access the depot) of key stakeholders or end users (i.e., TOCs) factored in M&R strategies? Comment whether they are effective.

Technical Authority: -

The TA interact with their (internal) stakeholders within the limitations of writing and updating standards.

The historical remit of the TA is also to undertake audit activities which would further the interactions with their internal stakeholders and assure the services provided by internal stakeholders for the benefit of NRs external stakeholder.

It is not exactly clear how this is managed.

With the effective remit of the TA being reduced, the TAs ability to influence the needs of stakeholders (internal and external) is limited.

Regions: -

Third party TOC use of depot facilities is under the Depot Access Agreement regime, being contracts between the DFO and Users.

NR is not a party to such agreements, so is not sighted on User comments in this regard.

[Southern] Limited to Depot Access Conditions / lease agreements

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] We are not consulted by the DfT or ORR when discussions are held with the DFO or TOCs about changes to the stock and the implications to the LMDs and the installed equipment.

The provision of the 800 fleet and the required enhancements to our depots was undertaken without our engagement until the DFO were ready to implement the enhancement project agreed with and funded by the DfT

It was the RAM(B) team who raised with GWR that the Washers at Laira and Long Rock had not been included in the scope of their enhancement project to support the fleet change.

Another example is the refurbishment of the HST Shed at Penzance which was delivered by the TOC in association with the Depot enhancement for new stock, yet no one accounted for the new 9 car units being too long for the HST Shed.

With Exeter, the TOC led project to deliver a new LMD carried out value engineering exercises descoping works and deciding to retain the existing Olds View Depot without any engagement with the NR Asset Team to inform the renewals plan for the old depot which was to be demolished.

[Scotland] No additional comments.

6	Failure History & Lesson Learned
6.A	How are fault data reported from DFO to Network Rail?

Technical Authority: -

We have no reason to believe this is monitored by the TA as it is managed by the Asset Engineers.

Regions: -

Through OPHD which records repairs interventions as NR fund repairs to FDP.

We are not sighted on breakdowns resolved in house by the DFO Plant teams which relate to maintenance activities.

[Southern] Catalogue of recognised faults / failure modes / reported from e.g., TOCs

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] No additional comments.

[Scotland] No additional comments.

6.B	Any evidence of lesson learned by regions to prevent future depot plant asset failures to railway operations based on failure history.

Technical Authority: -

We have reason to believe that there have been no new requirements for updating standards because of any new strategy.

If anything, any updating of standards may be enforced by the introduction of new equipment (lagging).

Regions: –

[Southern] No additional comments.

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] We have made significant input into the updated depot plant standards, particularly Carriage washers arising from breakdown information from the DFO and OPHD.

We no longer specify the use of ABS Pipe, we require plant rooms to be pipes in metallic pipe, we specify the use of flexible sections of pipe to allow for thermal expansion and to provide vibration transmission insulation.

We also require the use of swept bends and not elbows in pipes which has significantly improved our CWM availability and reliability since CP4.

[Scotland] The information flow from ScotRail to Network Rail happens via the ScotRail service desk and come through the tier meetings.

Issues are raised at the appropriate level and when not actioned in the required manner they can be escalated to the next level up.

6.C	Comment and assess regional understanding of different important and consequence of depot plant asset failures.

Technical Authority: -

The TA do not believe this is within the Terms of Reference of the TA.

The TA understand all depot plant assets are treated as 'critical'.

Regions: –

[Southern] Limited understanding - dealt with at a depot level

[Eastern] CM suggested – Software systems that speak to each other.

AC suggested – Depot plant TA sits outside of the ‘Buildings & Architecture’ portfolio unlike at a regional level – a more consistent approach needed.

[NW&C] No additional comments.

[W&W] After signalling locations, our most important assets are the LMD’s and within the LMD’s the systems required to turn around the fleet overnight.

A station along the line of route with a closed platform is an inconvenience compared to having no fleet available from an LMD to provide the timetable.

We also clearly understand that FDP includes some of the primary assets to support the fleet availability to deliver the timetable.

A loss of the fulling provision at Penzance for example would create havoc delivering the timetable nationally and locally. The loss of CET at the same location would likewise be a significant issue for long distance services from the depot.

The carriage washer being U/S will not stop the trains but will impact the external train appearance KPI for the TOC.

The loss of the lathe at Laira will have a different impact as vehicles will need to be routed elsewhere (SPM or Reading) for reprofiling.

[Scotland] No additional comments.

7	Availability of Spare Parts
7.A	Any recognition of ongoing supply of spare parts and cater for the problems surrounding obsolescence.

Technical Authority: –

N/A

Regions: -

[Southern] Yes - strategic spares kept.

[Eastern] No additional comments.

[NW&C] No additional comments.

[W&W] The provision of service items sits within the provision of the DFO's responsibility under the DEPOT ACCESS CONDITIONSs.

We do however recognise the potential for obsolescence of parts and have previously purchased parts to support assets until renewal.

We carried out an exercise with the DFO and Hegenscheidt to safeguard the 108 at SPM to enable it to run out to CP7.

We have also secured things like CWM Control units to support Laira and Long Rock to their early renewal thus negating a ½ life overhaul.

We recognise that the renewals over the last 15 years have brough an increased reliance on electronics and computer technology which requires a more proactive programme of renewals to replace those technologies more periodically than was required for electromechanical control systems.

[Scotland] No additional comments.

Annex D - RAG – Compliance Comparison

Annex E: A Summary of Responses

'Status - Primary Factors' – this assessment gives an indication of compliance with an acknowledged responsibility/obligation within the process being considered.

- Assessments have been marked as 'Active' which identifies a level of compliance evidenced from the conversations held with the regional asset teams and DFOs.
- Assessments have been coloured 'Amber' where they have been identified as actions/behaviours in in part supporting of the process, or incompletely fulfilled.
- Assessments have been coloured 'Red' where they have been identified as systemic failings, or unfulfilled actions.

'Comment – Secondary Factors' – this assessment looks at the follow-on impacts of the compliance/non-compliance, this could include circumstances where the process as envisaged is not fulfilling its purpose.

- Secondary assessments have been coloured 'Green' where they have been identified as actions/behaviours in support of the process, or as an example of good practice.
- Secondary assessments have been coloured 'Amber' where they have been identified as actions/behaviours in in part supporting of the process, or incompletely fulfilled.
- Secondary assessments have been coloured 'Red' where they have been identified as systemic failings, or unfulfilled actions.

Ref.	Q. Ref.	SS Ref.	Department	Responsibility	Status – Primary Factors	Comment – Secondary Factors
1.1	N/A	SS5	Office of Rail & Road	"We regulate access to light maintenance depots by approving depot access agreements in accordance with the terms of the Railways Act 1993" [www.orr.gov.uk)	Active – All new depot access agreements are regulated by the ORR.	This is an established process and occurs through necessity and should be undertaken in line with Section 18 of the Railways Act 1993.
1.2	2.A	SS1-3	Process Governance	To effectively manage the depot plant asset inventory	Active – The update of the Equipment Inventory [Appendix 3 to Annex 1 of the Depot Access Conditions] can be made under the General Approvals process where (cl. 7. a. i.) an already listed item of equipment has been listed as present on depot (i.e., an item previously in storage, and recommissioned on depot), (cl. 7. a. ii.) the quantity of an asset has increased or (cl. 7 b.) the Description of an existing asset has been revised. Otherwise, the process as per Part C of the Depot Access Conditions shall be followed. [General Approval for depots (2017)]	**A number of the Regional asset management teams cite the Depot Access Conditions Equipment Inventory schedule as being the official record of depot plant assets that falls within the remit of Network Rail:** **Consideration should be made if the current Depot Access Conditions format and change procedures are appropriate since a number of the regions have identified this document as the definitive asset inventory list and that changes are not actively sought; given its legal standing in the arrangements between landlord and tenant.**
1.3	2.A	SS1-3		To effectively manage the depot plant asset inventory	For detailed depot plant asset information, Asset Engineers default to the information held by their tenant (DFO) on their own asset management databases. It is not clear to what degree the DFO is obligated to provide this information.	**Network Rails own records, including Depot Access Conditions may contain mention of assets disposed of and no longer within the remit of Network Rail and omit new assets currently being used on depot.** **This has been echoed across all the NR asset management teams.** Scotland Region hold detailed asset information of all NR remit equipment within their depot buildings using their own proprietary asset management system – their DFO (Scotrail) is investigating linking into that system to share information. This information is deemed current and accurate.
1.4	2.A	SS1-3		To effectively manage the depot plant asset inventory	A number of the Regional asset management teams cite the Depot Access Conditions Equipment Inventory schedule as being the official record of depot plant assets that falls within the remit of Network Rail. It is not clear if this was the original intention of the document supports this or whether this has just come about over time.	**In the current format of the Depot Access Conditions template (Railtrack format), the Equipment Inventory holds little detail and is generally considered inaccurate. Where information is considered useful, there is motivation to ensure keep it current – currently this is not the case.**
2.1	3.F	SS3	Plant – Technical Authority (TA)	"Defines the minimum requirements for all technical and engineering activities related to Plant and T&RS assets" [Buildings and building services fall under a separate TA]	Active - Writing and update of technical standards for Depot Plant.	Undertaken through technical working groups to undertake review, propose changes and comment on document changes – all regions invited to contribute, though not all do. **The technical competency may no longer be present within the TA to be able to undertake or advise on changes to standards, a number of CP6 standards updates have been undertaken by external parties within the NR process.**
2.2	3.F	SS3-4	Plant – Technical Authority (TA)	"Provides information on the safe acquisition, introduction, operation and use of Plant and T&RS assets from an engineering perspective throughout their intended life"	**Undertake the role of Network Technical Head of Plant.**	**This capability no longer exists in the Plant TA.**
2.3	3.F	SS2-3			**Undertake the 'Rail Vehicle Engineering' role.**	

Ref.	Q. Ref.	SS Ref.	Department	Responsibility	Status – Primary Factors	Comment – Secondary Factors
2.4	3.F	SS2		[NR/L1/RMVP/0001 - Plant and Traction & Rolling Stock Policy, Briefing Note – Scope clause (a)]	**In the past it was possible to consult the TA in order to guide procurement strategies.**	The governance for Scotland Region is different as they fall under the remit of 'Transport for Scotland' (TfS). Strategy determination is undertaken between TfS, NR and Scotrail at a high level effectively replacing a role that the TA would have traditionally held.
2.5	3.F	SS3			It should be noted that standards are containing more guidance as to specification and procurement of depot plant assets e.g., Update of NR/L2/RMVP/27035 (2020), NR/L2/RMVP/27176 (2020), NR/L2/RMVP/01327 (2021).	**It is understood that the technical knowledge for these updates are source externally to NR.** **With the absence of substantive depot plant technical experience / competency and direct feedback loops from depot level, standards updates may only be driven by the review schedule i.e., review every 2 years or external factors e.g., legislation, technology. Internal operational changes may not be captured.**
2.6	3.F	SS3	Plant – Technical Authority (TA)	"Describes the arrangements in place to allow Network Rail to fulfil responsibilities defined in legislation; and" [NR/L1/RMVP/0001 - Plant and Traction & Rolling Stock Policy, Briefing Note – Scope clause (b)]	Active - Writing and update of technical standards for Depot Plant.	Undertaken through technical working groups to undertake review, propose changes and comment on document changes – all regions invited to contribute, not all do.
2.7	3.F	SS2-3			**The responsibility for depot plant assets sits with the regions.**	**Strategy sits with each of the five regions, there is no evidence of synergy between strategies or cross working between regions for the benefit of the network.**
2.8	3.F	SS3	Plant – Technical Authority (TA)	"Provides Transport Undertakings with assurance that a controlled structure is implemented to demonstrate that Network Rail's Plant and/or T&RS assets are safe to operate and use" [NR/L1/RMVP/0001 - Plant and Traction & Rolling Stock Policy, Briefing Note – Scope clause (c)]	**4 – 5-year hiatus following re-organisation and loss of resource / budget, activities recommenced with a much-reduced capability [two audits completed to date].**	**The TA takes a 'risk based' approach to undertaking audits, though the drivers are unclear, the low frequency of audits will not provide sufficiently representative data to support the assurance requirement, this is no longer a standards assurance activity.**
2.9	3.F	SS3	Plant – Technical Authority (TA)	Plan/do/check/act following the implementation or update of standards.	**Insufficient budget & resource to recommence as required.**	**The TA is currently unable to ensure the effectiveness of new or updated standards implemented & establish whether there is a need to act further.**
2.10	3.F	SS3	Plant – Technical Authority (TA)	Able to identify assets and asset types to aid the development of strategy, policy and standards.	**The TA holds an asset register from circa 2005, it is unclear to what extent it has been updated but is taken as incomplete / out of date.**	**There is no comprehensive, centrally held depot plant asset list. The centralised systems available to track the assets have not been effective and are not actively being used.** **NR does not have visibility of their current or future depot plant asset liability.**
3.1	2.A 2.B	SS2-3	Operational Property Asset System (OPAS)	Asset data collection and asset management tool.	Partial – information resulting from depot plant asset surveys is inputted into OPAS to support the decision-making process.	**OPAS asset data is not considered complete or accurate. In the event of requiring accurate asset data, Asset Engineers defer to the DFO held records.** **Depot plant asset surveys are generally superficial in nature as they are undertaken by buildings specialists rather than depot plant specialists.** Scotland Region have a comprehensive asset register (Invidia) for all established depots (newer depots pending) which also tracks maintenance activities. Each assets data can be accessed via an enabled device or via QR code. **In line with the Asset Accountability Matrix, the asset inventory is also held within the ELLIPSE system, though it is understood that RAM teams do not have access. It is not clear to what extent this information is maintained**.
4.1	-	SS2-3	Regional Principal Engineer	To provide an additional engineering function that sits between the TA and the Routes.	Only active in the Eastern Region.	On face value will aid consistency between approaches on each route within the region. Will aid the interface with the TA and will cover some of the technical leadership roles previously undertaken by the TA.
5.1	2.B	SS1	Regional Asset Management Teams – Asset Engineers.	Provide a team of Building Fabric and Building Services (M&E) Engineers to support the Depots.	This team of Asset Engineers (AEng) interface with the Depot Facilities Owner (DFO) to receive asset condition information	The AEng and DFO work closely through formal tier 1 & 2 meetings and on an informal basis. The information received by the AEng from the DFO is seen as the best asset intelligence given the current system.

Ref.	Q. Ref.	SS Ref.	Department	Responsibility	Status – Primary Factors	Comment – Secondary Factors
5.2	3.A 3.B 3.C	SS2		Provide a team of Building Fabric and Building Services (M&E) Engineers to support the Depots.	Partial – provision of asset maintenance schedule differs from depot to depot / region to region.	**In the absence of the TA led audit activities, this activity holds added importance. It is not clear from the DEPOT ACCESS CONDITIONS template (available online) whether Asset Engineers have the mandate to require the maintenance schedules.** This documentation will influence the timing and scope of mid-life overhauls and ultimate design life.
5.3	3.A 3.B 3.C	SS3	Regional Asset Management Teams – Asset Engineers.	Ensure Network Rail (NR) visibility of DFO maintenance activities.	Partial – OPAS holds details of NR interventions.	**In line with the Asset Accountability Matrix asset information is held in ELLIPSE (system for managing and recording asset maintenance activities) it is understood that RAM teams do not have access to ELLIPSE.** **Where TA audits occur, Asset Engineers would only expect to see the outputs by exception – this highlights that the audit process has not been used to drive continuous improvement through the organisation.** Neville Hill depot have used spreadsheet-based approaches for tracking plant assets, with the change in DFO they are introducing a database system that will interface with NR – this is understood to be unique. Scotland Region have a comprehensive asset register (Invidia) for all established depots (newer depots pending) which also tracks maintenance activities. Each assets data can be accessed via an enabled device or via QR code. This is an open access code and Scotrail are looking at ways to interface with it.
5.4	3.A	SS2	Regional Asset Management Teams – Asset Engineers.	Receive asset condition information.	Active – forms part of the regional investment plans and control period plans: CP6 (current) and CP7 (in draft).	**There is evidence of past multi-decade planning in the Eastern Region, but this has been side-lined in favour of the current and next CP approach as per other regions.** **There is no long-term business / service continuity plan beyond 2029 (end of CP7).**
5.5	3.A	SS2			There is some trending of condition data (surveys) and maintenance data (DFO) in order to supplement the arbitrary design lives attributed to assets.	**The viability of data trending is highly dependent on the availability and quality of input data which is not currently available.**
5.6	3.A	SS2			**There is no visibility by the asset Engineers of breakdowns resolved by the DFO.**	There is also evidence of the DFO circumventing the Network Rail procurement process, thus taking asset responsibility away from NR.
5.7	6.A 6.B	SS2	Regional Asset Management Teams – Asset Engineers.	Establish asset criticality to determine overhaul or renewal from asset condition information.	Active – there is a process in place which appears appropriate given the limitations placed upon the regional asset management teams.	Assets have been attributed with generic asset service lives, in many cases 25 years. **Anecdotal evidence that there is not always joined-up review of depot buildings and plant asset plans to ensure alignment of activities e.g., wheel lathe replacement and lathe building roof replacement following 18 months later & requiring an interim temporary roof.** **Granularity of asset information is often limiting.** A shift in technology to computer control systems means that a more pro-active renewals program is required than has been required with electromechanical control systems. e.g., Out-date operating systems / software no longer supported. e.g., Renew vs. overhaul cost / benefit.
5.8	7.A	SS2-3	Regional Asset Management Teams – Asset Engineers.	To manage strategic activities at a depot level and across multiple depots.	**Partial – there is evidence that this takes place for high value, long lead time items e.g., wheel lathes, where one is replaced, spares may be accumulated from the old machine to support the continued operation of other similar lathes.**	Coupled with the absence of a unified asset list, it would prove difficult to develop strategy to provide benefit on a cross-region basis without dedicated resource and budget.
5.9	7.A	SS3			End of life management of high value items through engagement with the OEM and DFO.	This allows co-ordination with other associated activities e.g., civils. [refer to line item above]
5.10	7.A	SS2-3			Examples of the management of obsolescence being achieved through inventories of procured parts.	**The approach seems inconsistent across the regions, though this presumably will be undertaken on a needs basis. The TA no longer has the mandate to provide leadership to guide the approach taken.**

Ref.	Q. Ref.	SS Ref.	Department	Responsibility	Status – Primary Factors	Comment – Secondary Factors
5.11	6.B	SS1-2			Close working between asset engineers within a given region.	This organisational interface (and the professional working relationships that have been developed over time) more than any other in the process are the key to why the process works despite is evident limitations.
5.12	6.B	SS3			**No evidence of collaboration between regions, no co-ordination at a strategic level within NR.**	The governance for Scotland Region is different as they fall under the remit of 'Transport for Scotland' (TfS). Strategy determination is undertaken between TfS, NR and Scotrail at a high level effectively replacing the role that the TA would have traditionally held – this is evident in their approach.
5.13	2.B	SS2	Regional Asset Management Teams – Asset Engineers.	Scheduled survey of depot assets.	Active - undertake visual surveys of the Depot Plant which is uploaded to OPAS detailing the PARL (percentage of asset remaining life) and any defects; this information is used to assist in estimating remaining life of assets, guide overhaul and justify renewal.	This activity is undertaken by Buildings specialists rather than depot plant specialists, information gathered tends to be through visual inspection and checks of functionality. Scotland Region have undertaken a baseline activity and used outsourced competency to establish condition of all depot plant assets and have stated that the 'traditional' civils led survey is unsatisfactory. W&W have stated that depot plant does not form part of the RAM teams competency framework.
5.14	2.B	SS2	Regional Asset Management Teams – Asset Engineers.	Dilapidation & End of Franchise surveys – undertake condition assessments to establish a change of condition over the elapsed period.	Partial – The surveys are undertaken, initial data feeding into the survey process is generally considered poor and with insufficient detail.	For such surveys, DFO asset data cannot be used and so information from the asset schedule of the DEPOT ACCESS CONDITIONS is used instead – this typically has limited detail. **Undertaking a change in condition survey where the starting information is poor can only be of limited value. How can an errant DFO be taken to task in these circumstances?**
5.15	2.B 5.A	SS1-3	Regional Asset Management Teams – Asset Engineers.	Contribute to Level 2 & 3 Property Liaison Meetings	Active – L2: Changes to the agreement or relationship between the DFO and NR are not updated in the DEPOT ACCESS CONDITIONS and lease documents. L3: Day to day business.	The Asset Engineers are acutely aware that the best asset condition information in terms of amount and content will be provided by the DFO, and the L2 & 3 meetings are the principal formal engagement. **Changes to the Depot Access Conditions are not pursued due to the onerous nature of the process.**
6.1	5.A	SS1	Regional Asset Management Teams – Portfolio Surveyor	Manage the relationship between the DFO and Network Rail through the Depot Access Conditions (DEPOT ACCESS CONDITIONS) and other lease documents.	Active – The relationships are actively managed, working closely with the DFO and the NR AEng.	This organisational interface (and the professional working relationships that have been developed over time) more than any other in the process are the key to why the process works despite is evident limitations.
6.2	2.A	SS3			**Changes to the agreement or relationship between the DFO and NR are not updated in the Depot Access Conditions and lease documents**	**The Depot Access Conditions are not updated in a timely manner and the asset schedule appended to the Depot Access Conditions may be out of date with little useful information.**
6.3	5.A	SS1-2		Chair Level 2 Property Liaison Meetings	Active - detail / ongoing monthly - (chaired by Surveyor, with asset engineers, DFO) any emerging strategic activities are discussed in detail away from this meeting	This organisational interface (and the professional working relationships that have been developed over time) more than any other in the process are the key to why the process works despite is evident limitations.
7.1	6.B 6.C	SS1	Operational Property Help Desk (OPHD)	Receive reports of Depot Plant assets (NR responsibility) requiring repair/renew maintenance attention.	Active – through OPHD, the reports from the DFO will be changed into work orders for actioning.	NRs response time is dependent on the impact of the breakdown, NR have no KPI placed upon them though the Beneficiary is measured ultimately on unit availability. The DFO may be authorised to take immediate action to resolve the issue and then recompensed later. **Breakdowns resolved in-house by the DFO are not reported via the OPHD.**
7.2	6.B	SS1	Operational Property Help Desk (OPHD)	Hold records of NR interventions	The OPHD have records of all work orders raised, which can be tallied against work order close out actions.	W&W have used to DFO and OPHD sourced data to help improve the carriage wash installations in their region e.g., elimination of ABS plastic piping and pipe elbows, use of flexible sections for thermal expansion, vibration transmission insulation. This has been fed back to strengthen the standards. This approach is inconsistent across the regions, the TA no longer has the mandate to provide leadership to guide the approach taken.
8.1	3.A	SS1	Depot Facilities Owner (DFO)	Undertake planned preventative maintenance (PPM) on depot plant assets in line with the requirements of the depot lease agreement.	Active – the DFO are maintaining the depot plant assets as the DFO have an obligation to the depot Beneficiary for the equipment to be serviceable and available for the maintenance and preparation of train fleets.	The relationship between the DFO and Beneficiary is self-regulating, for trains to be delivered for service the depot and its facilities must work when required. This metric is not necessarily representative of a DFO executing its responsibilities in line with the depot lease agreement.

Ref.	Q. Ref.	SS Ref.	Department	Responsibility	Status – Primary Factors	Comment – Secondary Factors
						DFO's have stated that they must act proactively because 'they cannot wait' for NR to act suggesting that an element of fault finding, and fault rectification is undertaken that is not reported to them – is the data held in OPAS therefore present the complete picture of asset condition?
8.2	5.A	SS3			Active - Through the management of the lease agreement there is depot by depot oversight by the Portfolio Surveyor and engagement with the Asset Engineer.	The Portfolio Surveyor and Asset Engineer are focussed on the content of the lease agreement, their ability to ascertain compliance with NR standards is limited and not within their remit.
8.3	3.F	SS3	Depot Facilities Owner (DFO)	Undertake planned preventative maintenance (PPM) on depot plant assets in line with the requirements of the applicable Network Rail standards.	**In the absence of an effective assurance regime, it is not clear the extent to which the maintenance is undertaken in line with NR standards.**	**Are the NR standards fit for purpose / is the maintenance being undertaken in line with the NR standards?**
8.4	3.A	SS2			Maintenance regimes are not always shared with Asset Engineers and may not always be best placed to provide technical oversight.	**It is not clear from the Depot Access Conditions template (available online) whether Asset Engineers have the mandate to require the maintenance schedules.**
8.5	7.A	SS3	Depot Facilities Owner (DFO)	Hold a stock of spare parts and consumables required as part of the planned and preventative maintenance regime for the depot plant assets.	Active – this is being undertaken, the prime driver for the activity is the need for the DFO to provide the Beneficiary with the required asset availability.	Strategic spares are held by some DFOs in some circumstances. Typically, there is little justification on the basis that repair / replacement responsibilities / liabilities sit with NR.
8.6	2.A-C	SS2-3	Depot Facilities Owner (DFO)	Maintain a comprehensive inventory of all assets held on their owned or managed sites.	Active – DFO's will operate different asset management systems and methodologies but will hold inventory of all assets in their custody.	DFO asset lists are viewed by all parties as being the definitive list of depot assets – these will include those assets that are the responsibility of NR under the terms of the lease and those that sit outside of the lease and are solely the responsibility of the DFO including 'enhancements'. Neville Hill depot are looking to implement an inventory system that will interface with NR systems. Scotland Region have a comprehensive asset register (Invidia) for all established depots (newer depots pending) which also tracks maintenance activities. Each assets data can be accessed via an enabled device or via QR code. ScotRail are looking to interface directly with this system.
8.7	6.C	SS1	Depot Facilities Owner (DFO)	Have understanding of the mission criticality of each depot plant asset.	Active – this is better understood at a depot level as they fully understand the commitments made between themselves and the Beneficiary, there is also understanding of what contingency exists in the event of a failure that can be mitigated through operating the fleet in a different way.	This does not seem to be communicated well across all regions. Better communication would allow the needs of the end customer (Beneficiary) to be acknowledged by NR through the lease agreements and prioritised.
8.8	3.E	SS1	Depot Facilities Owner (DFO)	Take urgent action to address issues with 'critical' assets.	Active – to ensure that the required availability of units is achieved each day in line with the obligations of the Train operating company (TOC).	In line with comments from (W&W) these will include Fuelling, Lube Oil, & Coolant Systems, CET, Train Washing, Shore supplies and AdBlue Systems as loss of serviceability will have an immediate impact. No realistic work-around can be put in place.
8.9	3.E	SS1	Depot Facilities Owner (DFO)	Take action to address issues with 'non-critical' assets.	Active – to ensure that the routine (or out of course) maintenance of units is achieved in order for the maintainer to ensure the maintenance schedule in line with their obligations to the Train operating company (TOC).	In line with comments from (W&W) these will include Jacks, Cranes, Wheel Lathes etc. which will impact service delivery over a period of time.

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