

A Report for
**Network Rail and the Office of
Rail Regulation**
from
Asset Management Consulting
Limited (AMCL)

Version 1.0
28th April 2010

**IR CP4: Remit 3
Response to CP3
Recommendations**

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APPROVAL				
Version	Date	Compiled by	Reviewed by	Authorised by
1.0	28th April 2010	D McLeish	MCJ Pilling	RJ Edwards
Asset Management Consulting Limited File Ref: 007/217				

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AMENDMENT HISTORY		
Version	Sections	Amendment Details
Draft A	All	Draft A release for review of factual accuracy
Draft B	All	Incorporation of factual accuracy review comments
1.0	All	Final revision following tripartite review

Original held by Asset Management Consulting Limited at
 221 St. John Street, Clerkenwell, London, EC1V 4LY
 Tel +44 (0) 20 7688 2828 Fax +44 (0) 20 7688 2829

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Executive Summary

As the Independent Reporter (Part B: Asset Management) to Network Rail and the Office of Rail Regulation (ORR) for Control Period 4, AMCL was commissioned to undertake an audit of Network Rail's initiatives and progress in response to the recommendations pertaining to the following audits, undertaken during Control Period 3:

- 1) Audit of Rail Defects and Rolling Contact Fatigue (RCF) data;
- 2) Audit of the Fault Management System (FMS);
- 3) Audit of E&P Asset Condition Data;
- 4) Audit of Access to Engineering Documentation;
- 5) Audit of Provision of Information to External Stakeholders; and
- 6) Audit of the Asset Management Improvement Programme (AMIP).

Key areas where progress or clarity of progress had been limited include:

- Asset Condition Data for E&P assets;
- Development of the Corporate Network Model in relation to provision of information to external stakeholders; and
- Clarity on Network Rail's response to the recommendations relating to the Asset Management Improvement Programme.

A number of these key areas and other specific recommendations where progress has been limited are anticipated to be influenced by the forthcoming revision of the Network Rail Asset Information Strategy.

A final summary of Network Rail's progress against the 37 Asset information Strategy recommendations considered in this audit is shown in the table below:

Criticality	Progress Assessment				
	Red	Amber	Green	Completed	Grand Total
High	5	2	0	0	7
Medium	5	4	1	4	14
Low	7	2	4	3	16
Grand Total	17	8	5	7	37

Table 1 Summary of Progress

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1 Introduction

1.1 Background and Context

Asset Management Consulting Limited (AMCL) was reappointed as the Independent Reporter (Asset Management) to Network Rail and the Office of Rail Regulation (ORR) for CP4 (Control Period 4) in April 2009.

As part of the equivalent role in CP3, AMCL had undertaken a sequence of audits of Network Rail's Asset Information Strategy (AIS) to support the ORR's decision on technical compliance with Condition 24 of the then Network Licence. The AIS audits during CP3 culminated in a final Summary Report¹, which identified a series of recommendations outlining further opportunities relating to eleven separate audits:

- 1) Audit of Network Rail's response to AMCL Recommendations;
- 2) Audit of Rail Defect Management System (RDMS);
- 3) Audit of Rail Defects and Rolling Contact Fatigue (RCF) data;
- 4) Audit of Signalling assets in Ellipse;
- 5) Audit of the Fault Management System (FMS);
- 6) Audit of Civils Asset Register and electronic Reporting Systems (CARRS);
- 7) Audit of E&P Asset Condition Data;
- 8) Audit of Access to Engineering Documentation;
- 9) Audit of Asset Data Management (ADM) and Asset Data Assurance Procedures;
- 10) Audit of Provision of Information to External Stakeholders; and
- 11) Audit of the Asset Management Improvement Programme (AMIP).

1.2 Scope

The scope of this audit was to assess Network Rail's initiatives and progress in response to the 37 recommendations generated by the following specific audits:

- 1) Audit of Rail Defects and Rolling Contact Fatigue (RCF) data;
- 2) Audit of the Fault Management System (FMS);
- 3) Audit of E&P Asset Condition Data;

¹ Independent Reporter – AIS Audit 2008 – Summary Report: AMCL, 9th February 2009

- 4) Audit of Access to Engineering Documentation;
- 5) Audit of Provision of Information to External Stakeholders; and
- 6) Audit of the Asset Management Improvement Programme (AMIP).

1.3 Objectives

The objectives of this audit were:

- To provide independent assurance to the ORR that Network Rail is considering and actioning the identified opportunities in an appropriate and timely manner, consistent with the conditions of its Network Licence; and
- To provide appropriate good practice guidance and input to Network Rail to support its responses to the recommendations.

2 Methodology

2.1 General

The key stages of the methodology for undertaking this project were:

- 1) Review and mitigation of any audit overlaps or duplication of effort;
- 2) Identification of stakeholders;
- 3) Development, agreement and dissemination of briefing document;
- 4) Review of the completeness and status of responses;
- 5) Review of the effectiveness of responses;
- 6) Review of the integration of responses with stakeholders;
- 7) Review of ILM workshop outputs (FMS only);
- 8) Draft findings in Draft A Report for Network Rail review of factual accuracy;
- 9) Incorporate factual accuracy comments in a Draft B report; and
- 10) Publish final report consolidating comments, agreed in a tripartite forum, from Network Rail and the ORR.

2.2 Assessment

All Asset Information Strategy recommendations identified during CP3, including the sub-set included within the scope of this audit were assessed for Criticality. This was undertaken by considering the overall potential business impact of the recommendation over the remainder of CP4. Equally, this could be considered as the potential business loss of not implementing the recommendation. The Criticality assessment was based on the following criteria.

Criticality	Criteria
High	(Business Impact >£10M over CP4)
Medium	(Business Impact £1M- £10M over CP4)
Low	(Business Impact <£1M over CP4)

Table 2 Recommendation Criticality Criteria

The criticality assessment for each CP3 Asset information Strategy recommendation is part of a separate tripartite exercise and was not part of the scope of this audit.

This audit provided a detailed assessment of Network Rail's Progress against each of the 37 CP3 Asset Information Strategy recommendations included in the scope. Progress was assessed using the methodology identified above and categorised into one of the following criteria.

Progress	Definition
Completed	Recommendation has been fully actioned or is no longer relevant
Green	Response is 'on target' and has appropriate plans and resources
Amber	Response is 'off target' but is recoverable and sufficient plans and resources are in place
Red	Response has insufficient plans and/or resources

Table 3 Progress Assessment Framework

3 Summary of Audit Findings

3.1 Introduction

Network Rail has made inconsistent progress against the 37 asset information related CP3 recommendations assessed within the scope of this audit, as summarised in the chart below.

Criticality	Progress Assessment				Grand Total
	Red	Amber	Green	Completed	
High	5	2	0	0	7
Medium	5	4	1	4	14
Low	7	2	4	3	16
Grand Total	17	8	5	7	37

Table 4 Summary of Audit Progress Assessments

Where a lack of progress has been identified the key factors have been myriad but include a moratorium on development due to awaiting the pending revision of the Network Rail Asset Information Strategy (AIS) and a lack of clarity on how the AMIP recommendations are being progressed. Also, in some cases, specific recommendations have not been progressed since the recommendations were generated or the last relevant audit.

3.2 Areas for Improvement

Key areas of lack of progress, against the specific recommendations considered, relate to:

- The planning, development and implementation of appropriate requirements, assessment and collation processes and management of asset condition information within the Electrification and Plant asset groups.
- The further development of the Corporate Network Model to support the provision of information to external stakeholders. This had been halted pending an internal review of systems development work being undertaken by Network Rail's Engineering function.
- Clarity on and evidence of Network Rail's response to the recommendations relating to the Asset Management Improvement Programme.

3.3 Progress and Successes

Key areas of progress, against the specific recommendations considered, relate to:

- The functional enhancement of the FMS system to facilitate enhanced coding-off of faults and ongoing analysis of FMS data quality.
- The initial roll-out of the enhanced corporate content management system (CCMS2) across the Civils asset group.
- The ongoing, although not finalised, development of the Gauging Data Strategy and the Network Capability Management Procedure in relation to the management of information for both internal and external stakeholders.

3.4 Plans and Development for Improvement

Network Rail currently has a range of plans and initiatives, at various stages of development, aimed at improving the quality and management of asset information for various stakeholders.

It is currently unclear how all the relevant ongoing initiatives are integrated and managed, such that an appropriate approach to asset information can be assured across the organisation. It is understood that the Head of Asset Information is now responsible for achieving this via the implementation of the forthcoming Asset Information Strategy (AIS) update. Based on good practice the revised AIS should therefore include the integration and parallel development of not only the prominent workstreams, such as the Transformation Programme and the associated Systems and Data initiative, but also the varying range of plans and statements of development intent from all asset information stakeholders within the organisation. It should also clarify Network Rail's plans for managing its responsibilities to external stakeholders.

4 Findings by Sub-Audit

4.1 Rail Defects and Rolling Contact Fatigue

4.1.1 Introduction

Network Rail manages rail defect data, including rolling contact fatigue defects, using a paper based system to meet necessary safety case requirements, which is supported by the Rail Defect Management System.

Two recommendations relating to the management of Rail Defects and Rolling Contact Fatigue (RCF) data, which emanated from CP3, were considered under the scope of this audit. These were:

- 4.2 - Whilst data assurance has improved there are variable methods utilised to provide audit trails of issued paperwork, these tend to suit local practice but it is recommended that these be formally recorded as part of the local management system to facilitate auditing.
- 4.3 - Formal guidance on disaster recovery is required in the event of RDMS failure, although it is noted that MDU's understand how they can manage without RDMS.

Both of these recommendations were assessed as Low Criticality in terms of overall business impact.

It should be noted that three recommendations were originally raised against this subject during CP3. Due to relevant synergies recommendation 4.1 has subsequently been considered within the scope of another, separate independent audit².

4.1.2 Summary of Findings

In general terms, Network Rail's response to the two recommendations was presented as business as usual activities, supported by the fact that the Rail Defects Management System (RDMS) is not a safety critical element of the rail defects management process but an enabling tool. The system itself is subject to Network Rail Information Management's standard disaster recovery processes and guidance, whilst an auditable trail for all rail defects is provided by the use of unique reference numbers detailed on all relevant paper records. Network Rail argued that the existing unique reference number process was sound and the improvement of it was not a priority that it was considering in the short-term.

² ADM and Data Assurance Processes, AMCL, February 2010

AMCL found that the unique reference number applied to all rail defects did provide a manageable audit trail process and that the existing disaster recovery processes were suitable for a non-safety critical system such as RDMS. Evidence was provided by Network Rail to support these findings.

4.1.3 Conclusions and Forward Actions

It is AMCL's opinion that recommendations 4.2 and 4.3 are being managed as part of Network Rail's 'business as usual' processes and further independent audit is not required in the short-term unless circumstances change.

4.1.4 Detailed Findings

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
4.2	Whilst data assurance has improved there are variable methods utilised to provide audit trails of issued paperwork, these tend to suit local practice but it is recommended that these be formally recorded as part of the local management system to facilitate auditing.	Low	Green	<p>Network Rail has stated:</p> <ul style="list-style-type: none"> - There is no safety case based requirement for this. - The audit trails are all manageable via a unique reference number (URN). - No issues or evidence of failure have been identified regarding the current system and process. - There is no intent to change or improve the system or process. <p>This is a low criticality opportunity and the underlying URNs associated with all rail defects and the associated and mandated process, form a manageable approach to audit trails and their auditing. Evidence of the URN based approach was provided for different delivery units in different routes.</p>
4.3	Formal guidance on disaster recovery is required in the event of RDMS failure, although it is noted that MDU's understand how they can manage without RDMS.	Low	Completed	<p>Network Rail has stated that RDMS is a non-safety case related, support system for the paper based approach to the management of rail defects. RDMS failure would therefore not cause an issue to safety critical defect management. Business continuity is provided by standard IM support and server based back-up processes. Evidence was provided of the formal guidance published on MESD Online and the briefing process undertaken to make users aware of this and the procedures they have to follow during relevant events.</p>

Table 5 Detailed Findings by Recommendation

4.2 Fault Management System

4.2.1 Introduction

Network Rail manages the recording and actioning of infrastructure failures via the Fault Management System (FMS). FMS data is mainly inputted at the railway control centres and provides a failure history for relevant analyses.

There were nine FMS related recommendations from CP3 which were considered under the scope of this audit. These were:

- 6.1 - Ensure appropriate engineers review the Top 20 proposals in detail, to ensure its benefits for fault analysis are maximised.
- 6.2 - Undertake a cost benefit assessment of implementing the Top 20 coding project compared with a potential FMS replacement
- 6.3 - Extend the use of TRUST and FMS data analysis used by Maintenance Performance and evaluate the approach for driving down to a more detailed level through better linkages between the systems
- 6.4 - Explore the possibility of focussing on ICC use of FMS rather than FMS and CCIL
- 6.5 - Develop fault tree analysis for high impact and critical assets, to gain better value from improved FMS data.
- 6.6 - A programme of training should be undertaken to improve FMS operator's technical knowledge of railway systems, as well as their understanding of the FMS system and its criticality to the business.
- 6.7 - Ongoing analysis of FMS data should be undertaken by Network Rail to establish the impact of the improvement actions being undertaken by periodically monitoring the allocation of defects, cause and competent data to failures.
- 6.8 - Additional improvement actions should be identified in the event that this data does not improve to a level appropriate for undertaking reliability analyses.
- 6.9 - An audit should be undertaken by Network Rail to establish the success of the FMS Data Entry Spreadsheet.

A tenth FMS recommendation was related to the provision of data from Network Rail projects to inform the asset register and allow FMS users to verify the faulty assets. This recommendation was considered within the scope of another, separate independent audit³.

The nine remaining recommendations were assessed as Low or Medium Criticality.

4.2.2 Summary of Findings

Development of the FMS against the specific requirements of the CP3 recommendations had generally progressed well. The key activity completed being the introduction of the 'Fault Code Simplification Initiative' (formerly the 'Top 20 Coding Initiative'). This audit found that Network Rail had implemented this initiative in a more enhanced and wider ranging format than had originally been scoped and subsequently identified in the previous CP3 audit. The initiative had also been implemented in a cost effective manner using internal resources to develop a solution which enabled the improved functionality and process without the use of external software support.

The amended system simplifies the coding input required at Control Centres and was built on the key requirements of the relevant stakeholders to assure relevant data is available for further analyses. System users verified the improvements in the system and evidence was provided of regular data completion and verification monitoring, reporting and issue management, via an FMS User Group. System users were also clarified as being part of the User Group and verified the benefits provided by the initiative to users.

With respect to recommendation 6.3, the use of FMS data for analysis alongside TRUST based service delay data had progressed well, with significant improvements over the last 18 months in how Network Rail analyses the data and reviews and acts on the information. The process for identification, prioritisation and management of infrastructure reliability issues is in the early stages of implementation but appears sound and is managed and being further developed by the Network Infrastructure Reliability Group (NIRG). However, the linkages between the two systems still remain as previously and require manual review of the fault codes to ensure alignment between faults and service delay costs if the initial fault code in FMS is later updated by technicians to reflect the root cause.

Significant progress had yet to be achieved on the development of technical training programmes for FMS users and the integration of the FMS and CCIL (Control Centre Incident

³ ADM and Data Assurance Processes, AMCL, February 2010

Log) systems to mitigate potentially inconsistent data sets and duplicate data entry at Control Centres.

4.2.3 Conclusions and Forward Actions

It is AMCL's opinion that:

- Recommendations 6.1, 6.2, 6.5 and 6.9 have been completed by Network Rail and can be formally closed.
- Recommendations 6.7 and 6.8 are being managed as part of Network Rail's 'business as usual' processes and further independent audit is not required in the short-term, unless circumstances change.
- Recommendations 6.3, 6.4 and 6.6 should remain open and Network Rail's progress or resolution of them monitored and audited as appropriate by the ORR.

4.2.4 Detailed Findings

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
6.1	Ensure appropriate engineers review the Top 20 proposals in detail, to ensure its benefits for fault analysis are maximised.	Medium	Completed	Clear evidence of this process being undertaken has been provided, with the resulting documentation published on MESD Online. The FMS Top 20 briefing material and the updated FMS systems also evidence the inclusion of the asset group specific developments following the initial project.
6.2	Undertake a cost benefit assessment of implementing the Top 20 coding project compared with a potential FMS replacement	Low	Completed	No formal documentation of the cost benefit analysis has been provided. However, evidence was provided that outline costs necessary to establish the business case were considered, including a detailed quote from an external organisation. It was estimated by the systems development teams that the internal development work for the 'Top 20' coding initiative cost up to £50,000 of existing resource time. Initial work to consider a replacement for FMS, including integration with CCIL identified a development and implementation cost of £4,000,000 to £5,000,000. These findings were further supported by the output of the Strategic Fault Management Investment Logic Map workshop, which identified that process and data quality issues, as opposed to system functionality and performance, were the main stakeholder issues.
6.3	Extend the use of TRUST and FMS data analysis used by Maintenance Performance and evaluate the approach for driving down to a more detailed level through better linkages between the systems	Medium	Amber	Clear evidence was provided by Network Rail of extensive analysis undertaken to utilise FMS and TRUST data to establish the business impact of failures. This was centred around the use of 'Mean Time Between Service Affecting Failures' (MTBSAF) but did also consider non-service affecting failures (MTBF). The development of these analyses was stated as being largely undertaken over the past 18 months and reflected a positive step in Network Rail's prioritised management of infrastructure reliability. The process is overseen by the National Infrastructure Reliability Group (NIRG), which has senior management attendees and significant analysis support at its disposal. At the time of the audit the process for actioning the NIRG analysis 'on the ground' had been subject to key trials only but appeared sound. The NIRG was also in the process of implementing a national infrastructure reliability and action management process at the individual Delivery Unit level. This was anticipated to commence in April. Overall, Network Rail had made significant improvements in its use and analysis of FMS and TRUST data. However, the linkages between the systems remained unchanged. A TRUST reference number is a mandated field in FMS and theoretically provides the linkage necessary for analysis. However, this can cause an issue when the initial fault, for example, is assigned to a Signal but subsequent to rectification is established as a Track Circuit issue. In this situation, the technician updates FMS to reflect the findings of the rectification work but not TRUST. The fault code assigned in TRUST therefore has to be reviewed and updated manually against the FMS records. There were no

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
				current plans identified to rectify this, although it was a known and recognised issue, but it may be considered by the forthcoming Network Rail AIS.
6.4	Explore the possibility of focusing on ICC use of FMS rather than FMS and CCIL	Low	Red	The 'Top 20' coding initiative has improved the general use of FMS and facilitated an interim improvement in the process. However the issue of data entry duplication remains. The Asset Information Asset Systems team is currently reviewing the issue in terms of the scale of the issue/opportunity and the associated business case. The work is likely to include the consideration of an integrated replacement for FMS and CCIL. The analysis is anticipated to be complete by mid-May 2010. The opportunity may also be considered by the forthcoming Network Rail AIS.
6.5	Develop fault tree analysis for high impact and critical assets, to gain better value from improved FMS data.	Medium	Completed	As per recommendation 6.1
6.6	A programme of training should be undertaken to improve FMS operator's technical knowledge of railway systems, as well as their understanding of the FMS system and its criticality to the business.	Medium	Red	Network Rail argued that the previous audit was undertaken immediately after the re-organisation that instigated integrated control centres and that experience and knowledge within the control centres has since improved. The requirement for asset knowledge has also been mitigated by the 'Top 20' coding initiative and supported by the associated briefing document. However, it is clear from the current system that a degree of understanding is still required across all the asset groups in order to fully complete the current FMS fields. System users clarified that as well as system training via the system developer, they undertake in house training on the job, with new users sitting beside experienced operatives, to ensure that new users have the basic asset knowledge required. All parties stated that the issue is a combination of asset knowledge on behalf of the generic data enterer and potentially insufficient communication between the user and the technical expert in the field. In short, no programme of training has been undertaken to date. However, evidence was provided that the FMS User Group is now considering the need for such training.
6.7	Ongoing analysis of FMS data should be undertaken by Network Rail to establish the impact of the improvement actions being undertaken by periodically monitoring the allocation of defects, cause and competent data to failures.	Low	Green	Periodic reporting of Unverified Assets, Incomplete Coding and No Fault Found was evidenced. Unverified assets are also considered in the ADQR. The reports are considered by the FMS User Group for action as required.
6.8	Additional improvement actions should be identified in the event that this data does not improve to a level appropriate for undertaking reliability analyses.	Low	Green	As per recommendation 6.7
6.9	An audit should be undertaken by Network Rail to establish the success of the FMS Data Entry Spreadsheet.	Medium	Completed	The FMS Data Entry Sheet approach was replaced by the ' Fault Code Simplification Initiative' which rendered the data entry spreadsheet redundant.

Table 6 Detailed findings by Recommendation

4.3 E&P Asset Condition Data

4.3.1 Introduction

Following a recent reorganisation, Network Rail has split the Electrification & Plant (E&P) asset group. However, the following CP3 recommendations, relating to the drivers for, assessment of and management of asset condition, remain relevant to both asset groups.

There were six CP3 recommendations relating to the condition of Electrification and Plant assets considered in the scope of this audit, these were:

- 8.1 Network Rail should ensure that the national rollout is completed as planned in early 2009 in order to fully realise the benefits of the new processes and to collect sufficient data to provide final validation.
- 8.2 Where Network Rail chooses to use 'Excel' spreadsheets to calculate condition data it must ensure that the formulation of the calculation is well documented for future reference.
- 8.3 The proposed use of greater quantitative data for AC and DC substation asset condition assessment is in line with good practice, however, it is recommended that its use should be commensurate with the risk(s) that the data will be used to manage.
- 8.4 The proposal to re-consider the level of granularity of an asset or asset system being assessed is recommended for implementation.
- 8.5 It is recommended that Network Rail monitors the OLE asset condition data banding concern as the sample size increases and ensures that there is no material impact on asset investment decisions as a result.
- 8.6 As per the original report on the E&P asset condition assessment system, it is recommended that a formal project plan is produced that covers the development of asset condition assessment activities for all Electrification assets and Plant assets.

The recommendations were a mix of High, Medium and Low Criticality – full details can be seen in Section 4.3.4. The High Criticality rating was assigned to the first of the recommendations above which related to the rollout of an asset condition assessment process for E&P assets.

4.3.2 Summary of Findings

Progress was found to be limited across the majority of the recommendations. New condition assessment work instructions (NR/DIST C19a and NR/DIST C19b) for key distribution assets were implemented in October 2009, with compliance mandated from December 2009. However,

as of February 2010 no condition data had been received by HQ. The use of quantitative data and assessment within the final work instructions was also much reduced from original plans.

Work instructions for the collation of OLE condition data have not yet been implemented and their development is estimated to be approximately one-year behind those for Distribution.

There was no progress identified with respect to Points Heaters which were also included in the original pilot.

At the time of the audit there was no evidence provided of forward plans or strategies for the development of asset condition information within the Electrification and Plant asset group(s).

4.3.3 Conclusions and Forward Actions

It is AMCL's opinion that this area remains a serious concern and that monitoring of asset condition and deterioration rates within one of Network Rail's major asset groups would, in general practice, be necessary for the optimised management of the assets and the justification of budgetary submissions. If this is not the case then Network Rail should be able to produce clear justification of why this condition information and related processes are not required.

Detailed findings against each recommendation are provided below but all but one has been assessed as Red in terms of Progress. Progress against the remaining recommendation was assessed as Amber.

4.3.4 Detailed Findings

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
8.1	Network Rail should ensure that the national rollout is completed as planned in early 2009 in order to fully realise the benefits of the new processes and to collect sufficient data to provide final validation.	High	Red	New work instructions (NR/DIST C19a and NR/DIST C19b) for key distribution assets were implemented in October 2009, with compliance mandated from December 2009. However, as of February 2010 no condition data had been received by HQ, although this could have in part been due to the failure of the Ellipse module during the trial period. At the time of the audit HQ was waiting for paper based records to be submitted from the MDUs for direct entry to the condition analysis spreadsheet. The processes cannot therefore be considered as integrated or validated at this stage. There was a stated intent to validate and review the appropriateness of the approach as the long-term condition data was collated and analysed but no specific plans. There was also only limited progress identified with respect to Points Heaters and OLE equipment which were included in the original pilot.
8.2	Where Network Rail chooses to use 'Excel' spreadsheets to calculate condition data it must ensure that the formulation of the calculation is well documented for future reference.	Medium	Amber	As the Ellipse module does not currently have the functionality to undertake the necessary analysis, Excel is the selected format for undertaking the calculations. The formulation of the calculation is not explicitly captured in any documented process or procedure. However, the spreadsheets, including the integral formulae, are stored in the Core Content Management System (CCMS) and will be subject to an informal briefing note currently being developed for handover purposes following the recent reorganisation.
8.3	The proposed use of greater quantitative data for AC and DC substation asset condition assessment is in line with good practice, however, it is recommended that its use should be commensurate with the risk(s) that the data will be used to manage.	Low	Red	Due to issues with achieving consistent comparison across different asset types and makes, a number of quantitative measures, such as partial discharge testing, have been withdrawn from the formally issued work instructions. Relay and circuit breaker timing tests are used for AC distribution equipment. Historical defect and fault data is not considered as part of the condition assessment process. There were no currently identified plans to consider the cost/risk trade-off. There was a stated intent to validate and review the appropriateness of the approach as the long-term condition data was collated and analysed but no specific plans.
8.4	The proposal to re-consider the level of granularity of an asset or asset system being assessed is recommended for implementation.	Low	Red	There was no evidenced or identified progress against this recommendation. There was a stated intent to validate and review the appropriateness of the approach as the long-term condition data was collated and analysed but no specific plans.

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
8.5	It is recommended that Network Rail monitors the OLE asset condition data banding concern as the sample size increases and ensures that there is no material impact on asset investment decisions as a result.	Medium	Red	Work instructions for the collation of OLE condition data have not yet been implemented and their development is estimated to be approximately 1-year behind those for Distribution. This was stated as due to the ongoing review of a potentially more efficient and quantitative approach using the New Measurement Train. It was stated that the issue concerning condition group banding would be reviewed as part of this process.
8.6	As per the original report on the E&P asset condition assessment system, it is recommended that a formal project plan is produced that covers the development of asset condition assessment activities for all Electrification assets and Plant assets.	Medium	Red	The development and rollout of condition data collation and analyses processes for E&P assets is behind the schedule previously stated, although no formal plan has been seen. The issue remains as prominent as previously.

Table 7 Detailed Findings by Recommendation

4.4 Access to Engineering Documentation

4.4.1 Introduction

In Network Rail nomenclature, Asset Information refers to asset data only. Engineering Documentation is used to refer to drawings, records and other documentation 'traditionally' provided in hardcopy format. The following range of recommendations, relating to Engineering Documentation, was considered within the scope of this audit:

- 9.1 It is recommended that the aspirational nature of the EDM Feasibility Study strategy is reviewed against progress to date and consideration given to formal development of the strategy and its recommendations.
- 9.2 There is an opportunity to cross reference the strategy and its recommendations with good practice guidance, such as BSI PAS 55.
- 9.3 It is recommended that, subject to an appropriate business case, the Engineering Document Matrix is formally developed and implemented.
- 9.4 It is recommended that the planned document rationalisation and metadata cleansing is applied with the same level of rigour when the rest of the Civils and Operational Property community engineering documents are transferred to CCMS2.
- 9.5 It is recommended that Network Rail reviews the compliance levels of signalling projects in returning updated documents to the NRG, in accordance with its project management requirements.
- 9.6 Whilst noting the planned use of collaborative tools as a means to acquire engineering document content from third parties, it is recommended that the implementation of this as a standard process is expedited.
- 9.7 Whilst it is noted that in the long term no corporate content will be 'allowed' to be stored on network and/or personal drives, it is recommended that Network Rail continues to assure itself that the decision not to have these potential sources of content in scope for transfer to CCMS2 does not expose any risk.

The recommendations were assessed as a mix of Low and Medium Criticality only. Recommendations 9.4, 9.5 and 9.6 were those assessed as Medium Criticality.

4.4.2 Summary of Findings

Progress across the identified range of recommendations was varied. For the medium Criticality recommendations, the initial rollout of the CCMS2 system across the Civils asset group was

evidenced as being undertaken in a robust and rigorous manner, although it was noted that completion of the rollout process was still to be achieved in the final maintenance area. Network Rail also provided clear evidence of the completion of Recommendation 9.5 with periodical analysis of document return being reported in the Monthly Business Report (MBR). The level of compliance remains something which Network Rail should continue to monitor internally but the requirements of this recommendation have been met.

The planned use of Collaborative Tools to support the management of Engineering Documentation was less advanced. An IM Collaboration Strategy had been produced which appeared sound and it is anticipated would satisfy the requirements of the recommendation. However, this is still under internal review and not at the implementation stage.

With respect to the Low Criticality recommendations, Network Rail provided suitable assurance that, pending implementation of an organisation wide approach to CCMS2, no data would be deleted or removed. As such there is a negligible risk of a loss of critical data and any residual risk is being managed as part of business as usual processes. Network Rail stated that definition of corporate content vis-à-vis its transfer to CCMS2 will be undertaken by the relevant discipline responsible for the documentation (track, signalling, etc.) or associated processes. Progress relating to the Engineering Document Management (EDM) Feasibility Study (Recommendations 9.1, 9.2 and 9.3), identified in the previous audit as a sound starting point for the development of Network Rail's management of Engineering Documentation, was found to have faltered. Some specific, individual recommendations have or are being implemented across a range of initiatives and works programmes. However, the outputs of the Feasibility Study have never been formally approved or funded for implementation by Network Rail.

A good example of this is the Engineering Document Matrix identified by the Feasibility Study, which has subsequently been included in a project remit for the updating of the NRG Health and Safety File standard. At the time of the audit this was yet to be fully approved and subsequently implemented.

4.4.3 Conclusions and Forward Actions

Having completed the audit it is AMCL's opinion that:

- Recommendation 9.5 has been completed by Network Rail and can be formally closed.
- Recommendations 9.4 and 9.7 are being managed as part of Network Rail's business as usual processes and further independent audit is not required in the short-term.

- Recommendations 9.1, 9.2, 9.3 and 9.6 should remain open and Network Rail's progress or resolution of them monitored and audited as appropriate by the ORR.

4.4.4 Detailed Findings

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
9.1	It is recommended that the aspirational nature of the EDM Feasibility Study strategy is reviewed against progress to date and consideration given to formal development of the strategy and its recommendations.	Low	Red	The EDM Feasibility Study Strategy produced some 64 recommendations, which Network Rail did not formally sign off due to budgetary and timescale constraints. However, some, specific recommendations have been implemented by various previous or existing programmes of work There is currently no evidence of formal development of the strategy or the recommendations but this was stated as considered by Network Rail and rejected for the reasons stated above. The approach to managing access to engineering documentation was stated as being considered in the forthcoming Network Rail AIS.
9.2	There is an opportunity to cross reference the strategy and its recommendations with good practice guidance, such as BSI PAS 55.	Low	Red	This has not yet been undertaken because of the reasons stated in 9.1. The approach to managing access to engineering documentation was stated as being considered in the forthcoming Network Rail AIS.
9.3	It is recommended that, subject to an appropriate business case, the Engineering Document Matrix is formally developed and implemented.	Low	Amber	The development of an Engineering Document Matrix, as part of a general Document Management workstream, was initially considered by but not progressed as part of the Network Rail Transformation Programme, as well as a number of other potential implementation mechanisms. It has subsequently been included in a project remit for the updating of the NRG Health and Safety File standard. At the time of writing the Project Remit was drafted and agreed in principle, including the development of the existing Appendix A to create a comprehensive Engineering Document Matrix. The project remit was due for final approval by the end of February 2010, with, subject to approval, a Working Group (including representatives from NRG, Projects, Asset Management and other relevant stakeholders) being formed in March 2010 to manage its development. The stated timescales were to have the Standard and Engineering Document Matrix published in September 2010, with compliance due by December 2010. The stated plans were supported by the project remit. However, this recommendation will require further review at an appropriate point in time after the implementation of the standard and associated matrix. Due consideration of any impacts on this work of the forthcoming Network Rail AIS would also have to be considered.

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
9.4	It is recommended that the planned document rationalisation and metadata cleansing is applied with the same level of rigour when the rest of the Civils and Operational Property community engineering documents are transferred to CCMS2.	Medium	Green	CCMS2 has now been applied nationally for Civils asset information. Safety compliance and standards are also live. Non-asset data is also being considered, with two different models under consideration. This will be reviewed as part of the forthcoming Network Rail AIS. The effectiveness and integration of the CCMS2 rollout has been well established within the Civils community and the benefits of the single system approach provided by CCMS2 is facilitating improved management, sourcing and sharing of relevant documentation. The final territory (South-East) is currently completing the final 'walk around' stage of the implementation, in accordance with the sound rollout process, which has been clearly supported by evidence. The SE territory work is expected to be completed in early March 2010, leaving the data cleansing process as the only ongoing works. The application of rigour and effectiveness of the extended rollout has been assured.
9.5	It is recommended that Network Rail reviews the compliance levels of signalling projects in returning updated documents to the NRG, in accordance with its project management requirements.	Medium	Completed	Network Rail has provided clear evidence of the active management and monitoring of the compliance levels regarding signalling projects returning updated documents to the NRG. This has included a detailed Project Advisory Notice and reporting on compliance via the monthly MBR reports. The process for resolution of issues, including mandated project processes have also been clarified and evidenced. The level of compliance remains something which Network Rail should continue to monitor internally but the requirements of this recommendation have been met.
9.6	Whilst noting the planned use of collaborative tools as a means to acquire engineering document content from third parties, it is recommended that the implementation of this as a standard process is expedited.	Medium	Amber	ProjectWise, eB and MS Sharepoint have been piloted and are used by various elements of the organisation, such as Thameslink. However, there is currently no standardised process in place across the organisation. A collaboration strategy has been drafted by IM and is currently under review. The strategy identifies a proposed integrated approach to collaborative working and sharing of Engineering Documentation across the organisation which should satisfy the requirements of the recommendation. However, this recommendation will require further review at an appropriate point in time after the implementation of the IM Collaboration Strategy. Due consideration of any impacts on this work of the forthcoming Network Rail AIS would also have to be considered.

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
9.7	<p>Whilst it is noted that in the long term no corporate content will be 'allowed' to be stored on network and/or personal drives, it is recommended that Network Rail continues to assure itself that the decision not to have these potential sources of content in scope for transfer to CCMS2 does not expose any risk.</p>	Low	Green	<p>It was stated that Network Rail IM currently have no plans for the decommissioning of shared drives and that this was a long-term aspiration only. It will not be considered until a currently under development proposal concerning core content hierarchies and naming conventions is fully implemented. This is being governed by the Improving Access to Asset Information Steering Group and is due out in early 2010. The work of establishing what should be Corporate Content and what should remain on Shared Drives has been completed for the Civils asset group and has been fully evidenced (Ref. Card 02). Undertaking this process forms a clear mitigation of the risk of core content being lost. The development of equivalent clarification for other asset groups is pending the aforementioned proposal. Even after completion of this process, a residual risk of loss of data would remain, however, the risk is removed by the nightly back-up of personal (H:) drives and shared drives, following business as usual Network Rail IM processes, ensuring that all data is fully maintained.</p>

Table 8 Detailed Findings by Recommendation

4.5 Provision of Information to External Stakeholders

4.5.1 Introduction

The provision of information from Network Rail to external stakeholders is a critical part of the service provided by Network Rail as the steward of the national rail network. A range of the processes and data integral to the supply of information to external stakeholders have come under close scrutiny over the past two years, particularly in relation to gauging data.

The relevant CP3 recommendations that Network Rail's progress was assessed against within the scope of this audit were:

- 11.1 Network Rail to develop and publish guidance on the provision of asset information to external stakeholders to help stakeholders to access the right information with minimal effort. Such guidance would need to be readily accessible to external stakeholders and should include:
 - A list and description of the asset information included in each of the three types of information request
 - How the information is made available to and requested by external stakeholders, and who will provide the information
 - The quality of the information provided in terms of timeliness, accuracy, format and completeness
 - How the information is managed and the frequency of relevant updates by Network Rail
 - Provide an assurance level of reliance - considering currency and accuracy - that external stakeholders can place on the information for different business purposes such as gauge clearance analysis.
- 11.2 Network Rail to publish the following three new asset information items on the CNM:
 - Tight Curves
 - Platform heights; and
 - GSM-R coverage and performance.
- 11.3 Network Rail to consider the provision of frequency curve information to simplify the EMC analysis for external stakeholders - this to be evaluated from a technical and benefits perspective.
- 11.4 Network Rail to clarify how the plans for enhancing the CNM are linked to an overall view of asset information from external stakeholders.

- 11.5 Network Rail to review the effectiveness and roll out of the data integrity process under development by the ICP and how it can be applied to all asset information provided to external stakeholders.

The recommendations were all assessed as Low Criticality, in terms of overall business impact prior to the end of CP4, with the exception of recommendation 11.5, which was assessed as Medium Criticality.

4.5.2 Summary of Findings

Only recommendation 11.3 has been fully actioned and closed after it was established that whilst a single frequency limit (curve) may be feasible, it would be overly restrictive in order to protect the signalling systems and therefore not satisfactory.

Recommendations 11.2 and 11.4, which both related to the further development of the Corporate Network Model (CNM) tool, were found to have not progressed. The CNM has been subject to a development hiatus since the last audit pending an internal review of systems development work being undertaken by Network Rail's Engineering function.

The rollout of the Data Integrity Process, now known as the Network Capability Management Procedure, under the auspices of the Infrastructure Capability Programme (ICP) has progressed (recommendation 11.5). The procedure appears robust and comprehensive and defines and mandates the management processes for changes to the Network Capability, including updating the published Network Capability statements in the Sectional Appendix. It covers Track and Route mileage, Line-Speed, Gauge and Route Availability. However, the standard is not due for compliance until 6th March 2010. As a result it has not been possible to fully audit the effectiveness of the new procedure at this stage, or Network Rail's stated intent to incorporate monitoring compliance with the new procedure as part of the ongoing NCAP process.

Recommendation 11.1 has progressed in a number of the areas identified. The recently published Gauging Data Strategy appears a sound approach and aligns with a number of elements of the recommendation but is too early in its implementation to assess the effectiveness of. For Network Capability the National Electronic Sectional Appendices and the National Gauging Database were identified as key mechanisms. Network Rail also stated its approach for any information not provided through a recognised mechanism is via the CRE (Customer Relationship Exec.) already appointed for each TOC and FOC. Network Rail also identified that new rolling stock tenders are managed via the DfT, with appropriate contacts supplied for inclusion in the Invitation to Tender documentation. However, formal evidence of

this was not established. An enhanced approach to the management of information provided to external stakeholders has been stated by Network Rail as being a key part of the forthcoming AIS.

4.5.3 Conclusions and Forward Actions

Having completed the audit it is AMCL's opinion that:

- Recommendation 11.3 has been completed by Network Rail and can be closed.
- Recommendations 11.1, 11.2, 11.4 and 11.5 should remain open and Network Rail's progress or resolution of them monitored and audited as appropriate by the ORR.

4.5.4 Detailed Findings

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
11.1	<p>Network Rail to develop and publish guidance on the provision of asset information to external stakeholders to help stakeholders to access the right information with minimal effort. Such guidance would need to be readily accessible to external stakeholders and should include:</p> <ul style="list-style-type: none"> • A list and description of the asset information included in each of the three types of information request • How the information is made available to and requested by external stakeholders, and who will provide the information • The quality of the information provided in terms of timeliness, accuracy, format and completeness • How the information is managed and the frequency of relevant updates by Network Rail • Provide an assurance level of reliance - considering currency and accuracy - that external stakeholders can place on the information for different business purposes such as gauge clearance analysis. 	Low	Amber	<p>The effectiveness of the new Gauging Data Strategy is too early in its implementation to review but in general the approach looks sound. It has also been established that contact details for external stakeholders wishing to establish EMC related discussions are on the Network Rail website. There was no clear explanation of why this is the case for EMC issues but not others.</p> <p>For Network Capability the National Electronic Sectional Appendices and the National Gauging Database were identified. Network Rail also stated its approach for any information not provided through a recognised mechanism is via the CRE (Customer Relationship Exec.) already appointed for each TOC and FOC. Network Rail also identified that new rolling stock tenders are managed via the DfT, with appropriate contacts supplied for inclusion in the Invitation to Tender documentation.. Formal evidence of this was not established.</p> <p>As part of its overall approach, Network Rail intends to consult with industry on its general information and access requirements.</p> <p>Generally, the main areas of concern appear to be covered by Network Rail, including the recent development of the 'Gauging Data Strategy' and 'Network Capability Management Procedure'. An enhanced approach to the management of information provided to external stakeholders has been stated by Network Rail as being a key part of the forthcoming AIS.</p> <p>This recommendation requires further clarification following the implementation of the forthcoming Network Rail AIS.</p>
11.2	<p>Network Rail to publish the following three new asset information items on the CNM:</p> <ul style="list-style-type: none"> • Tight Curves • Platform heights; and • GSM-R coverage and performance. 	Low	Red	<p>Network Rail has stated that the relevant information continues to be collated; as part of business as usual for tight curves, the Gauging Data Strategy for Platform Heights and the relevant programme rollout for GSM-R coverage. However, there is currently no coordinated plan for the publication of the information via the CNM, the development of which has been subject to a hiatus since the last Independent audit.</p> <p>This recommendation requires further clarification following the implementation of the forthcoming Network Rail AIS.</p>
11.3	<p>Network Rail to consider the provision of frequency curve information to simplify the EMC analysis for external stakeholders - this to be evaluated from a technical and benefits perspective.</p>	Low	Completed	<p>Network Rail has reviewed this opportunity, via the relevant technical experts, and concluded that a single frequency limit (curve) is insufficient to explain the safe operation of signalling assets that are susceptible to a bandwidth of frequencies. The limits depend on the measurement method used. A single frequency curve would be over-restrictive in order to protect the signalling systems..</p>
11.4	<p>Network Rail to clarify how the plans for enhancing the CNM are linked to an overall view of asset information from external stakeholders.</p>	Low	Red	<p>Since the last relevant audit by AMCL there has been a general hiatus on CNM development, pending the development of the forthcoming Network Rail AIS.</p> <p>This recommendation requires further clarification following the implementation of the forthcoming Network Rail AIS.</p>

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
11.5	Network Rail to review the effectiveness and roll out of the data integrity process under development by the ICP and how it can be applied to all asset information provided to external stakeholders.	Medium	Amber	<p>Via the ICP, Network Rail has developed the 'Network Capability Management Procedure', which defines and mandates the management processes for changes to the Network Capability, including updating the published Network Capability statements in the Sectional Appendix. The standard covers Track and Route mileage, Line-Speed, Gauge and Route Availability. The standard appears comprehensive but is not due for compliance until 6th March 2010. As a result, although the development of the procedure has progressed well and the roll-out approach appears sound and in compliance with Network Rail's standardised approach, it has not been possible to fully audit the effectiveness of the new procedure at this stage.</p> <p>Network Rail has stated its intent to incorporate monitoring compliance with the new procedure as part of the ongoing NCAP process. This monitoring process has not yet been clarified or documented but is being actively pursued by the Operations Capability and Operations Compliance teams. The intent is to achieve the inclusion of a line item within the National Core Audit Programme within the 1st Quarter of 2010.</p>

Table 9 Detailed Findings by Recommendation

4.6 Asset Management Improvement Programme

4.6.1 Introduction

During CP3 AMCL undertook an audit of Network Rail's Asset Management Improvement Programme (AMIP) for Asset Information and Asset Systems. The original scope of that audit was to review the early outputs from the Asset Information and Systems workstreams of the Network Rail AMIP. However, soon after the start of this audit, the AMIP was superseded by the Transformation Programme within Network Rail. This resulted in delays to the start of the Asset Information and Asset System improvement projects and the audit therefore concentrated on the plans for these workstreams only.

The audit documented in this report assessed Network Rail's progress against the recommendations emanating from the CP3 audit outlined above. These were:

- 12.1 Network Rail should consider adopting the emerging requirements and guidance in the ISO8000 standard for data and information quality, which will help Network Rail to develop a robust asset information strategy and plan.
- 12.2 Network Rail should commence the asset information and asset system improvement workstreams within the Transformation Project to ensure the on-going governance framework for asset information is delivered as soon as reasonably practicable.
- 12.3 Network Rail should consider the development of an Asset Policy and Asset Policy justification for asset information as part of the asset information workstream of the Transformation Project to ensure the same rigour is applied to justifying expenditure on asset information as is applied to investment in railway infrastructure.
- 12.4 An overall integration architecture should be developed, based around managing the common reference data that is needed to support data integration across different systems.
- 12.5 Governance processes for data, processes and systems should be established as well as an organisational structure.
- 12.6 The Business/Data and IT Architectures should be brought together so that the former can be used to drive the latter.
- 12.7 Projects should draw on, and contribute to, the enterprise architecture, with the enterprise architecture being where the business and systems that support it are documented.
- 12.8 Network Rail should develop an enterprise data model of information requirements as a jointly understood specification by both the business and NRIM.

Due to the potential short-term impact on asset information, the recommendations above were all assessed as High Criticality, except recommendations 12.1 and 12.7, which were assessed as Medium Criticality.

4.6.2 Summary of Findings

Updates were provided for each recommendation during the course of the audit and Network Rail invited AMCL to a presentation of the enterprise-wide view of Network Rail's business being undertaken by the Systems & Data workstream. Systems & Data is a separate Transformation Programme workstream supporting the Programme in its delivery of CP4 efficiencies, wider asset management across Network Rail and other business areas.

Interviews were undertaken with key Systems & Data team members and based on statements made during the interviews and the material presented it was established that the Systems & Data workstream was working in a number of areas which should represent progress against the specific recommendations, as well as wider remits.

However, no documentary evidence was provided to support these statements. This was stated by Network Rail as being because the work Systems & Data workstream was under internal scrutiny at the time. This was also stated as the reason why the Systems & Data workstream outputs had not been communicated to a wider internal audience.

It was also stated by Network Rail that the outputs of the Systems & Data workstream would have to be reviewed in light of requirements identified by the forthcoming revision of the Asset Information Strategy.

Some degree of progress was established against recommendations 12.2 and 12.5, as a result of the clear initiation of work against the previously identified Asset Information and Asset System improvement projects, the establishment of a Head of Asset information role and the continuation of the existing Asset Data Management procedures. However, progress against the full extent of these recommendations could not be established.

4.6.3 Conclusions and Forward Actions

Due to the lack of documentary evidence provided, AMCL has been unable to form substantiated opinions on the progress against the relevant recommendations. As a result, progress in this area remains a key concern. AMCL concludes that Network Rail's progress should continue to be monitored and audited as appropriate by the ORR.

4.6.4 Detailed Findings

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
12.1	Network Rail should consider adopting the emerging requirements and guidance in the ISO8000 standard for data and information quality, which will help Network Rail to develop a robust asset information strategy and plan.	Medium	Red	The publically available elements of ISO8000 and other GIP were stated as having been considered as part of the Transformation AI03 workstream and whilst no formal view to adoption has been taken, Network Rail stated that it was keen to understand lessons learned from leaders and best practitioners in the field. However, no documentary evidence was provided during the audit. This area may be considered as part of the forthcoming network Rail AIS.
12.2	Network Rail should commence the asset information and asset system improvement workstreams within the Transformation Project to ensure the on-going governance framework for asset information is delivered as soon as reasonably practicable.	High	Amber	The work is understood to have commenced within the Transformation Programme, including workstreams relating to Intelligent Infrastructure, Video Inspection, asset data improvement and the Systems and Data workstream. This area may be considered as part of the forthcoming Network Rail AIS.
12.3	Network Rail should consider the development of an Asset Policy and Asset Policy justification for asset information as part of the asset information workstream of the Transformation Project to ensure the same rigour is applied to justifying expenditure on asset information as is applied to investment in railway infrastructure.	High	Red	Work on a policy justification for asset data was started as part of the Data Control and Specification element of the AI03 workstream. The S&D workstream is also understood to be developing a framework for which the organisation should develop its asset information system projects, although it is not clear how this is going to be fully aligned with asset management information requirements, or the to be developed AIS. No documentary evidence was provided during the audit to support this understanding. This area may be considered as part of the forthcoming Network Rail AIS.
12.4	An overall integration architecture should be developed, based around managing the common reference data that is needed to support data integration across different systems.	High	Red	This is understood to have been considered as part of the Systems and Data workstream, although at the time of the audit outputs had yet to be determined. This area may be considered as part of the forthcoming Network Rail AIS.
12.5	Governance processes for data, processes and systems should be established as well as an organisational structure.	High	Amber	The ADM Governance processes have been audited as part of a separate workstream. Governance processes for systems are understood to be under consideration as a core part of the forthcoming AIS. Network Rail's recent reorganisation has established a Head of Asset Information role which should have full responsibility for all asset information.
12.6	The Business/Data and IT Architectures should be brought together so that the former can be used to drive the latter.	High	Red	The Systems and Data programme has advanced ahead of the ongoing development of the AIS, raising issues regarding the potential for the IT architecture to lead the business and data architectures. Network Rail did, however, state that the AIS and other business requirements would be the appropriate drivers for change.
12.7	Projects should draw on, and contribute to, the enterprise architecture, with the enterprise architecture being where the business and systems that support it are documented.	Medium	Red	There appears to be a range of relevant projects relating to asset information ongoing with no clear integration with an overall strategy. This recommendation is understood to have been considered as part of the Systems and Data Programme but at the time of the audit the outputs of the workstream could not be evidenced as they were still being determined and formulated and subject to internal review within Network Rail.

Rec. No.	Recommendation	Criticality	Progress	Audit Findings
12.8	Network Rail should develop an enterprise data model of information requirements as a jointly understood specification by both the business and NRIM.	High	Red	This is understood to have been considered as part of the Systems and Data Programme but appears at a high level and full clarification and documentary evidence was not provided during the audit.

Table 10 Detailed Findings by Recommendation

5 Summary

5.1 Conclusions

Network Rail has progressed in a number of areas, with 7 of the 37 recommendations being assessed as Completed and 5 assessed as Green in terms of progress, due to them progressing robustly and to plan, or being managed as part of Business As Usual activities. However, none of those assessed as Completed or Green for Progress were High Criticality recommendations.

Key areas where progress or clarity of progress has been limited include:

- Asset Condition Data for E&P assets;
- Development of the Corporate Network Model in relation to provision of information to external stakeholders; and
- Clarity on Network Rail's response to the recommendations relating to the original Asset Management Improvement Programme.

A number of these key areas and other specific recommendations where progress has been limited are anticipated to be influenced by the forthcoming revision of the Network Rail Asset Information Strategy.

A final summary of Network Rail's progress against the 37 Asset information Strategy recommendations considered in this audit is shown in the table below. This shows that a total of 25 of the original 37 recommendations considered in the scope of this audit remain outstanding (i.e. those not assessed as Completed or Green).

	Progress Assessment				
Criticality	Red	Amber	Green	Completed	Grand Total
High	5	2	0	0	7
Medium	5	4	1	4	14
Low	7	2	4	3	16
Grand Total	17	8	5	7	37

Table 11 Summary of Progress

5.2 Further Related Work

As part of the ongoing management of the full suite of Asset Information Strategy recommendations from CP3, the ORR instigated a separate tripartite exercise to simplify the

overall range of outstanding recommendations and provide a sharper focus and greater clarity of the key issues for Network Rail.

As a result, the 25 outstanding Asset information Strategy recommendations identified as part of this report (i.e. those not assessed as Completed or Green) have been subject to a consolidation and rationalisation review, taking due account of the findings of this audit. At the time of writing, the consolidation and rationalisation exercise has reduced the number of recommendations identified as outstanding during this audit from 25 to 10, as shown in the table below.

	Rationalised Progress Assessment				
Criticality	Red	Amber	Green	New	Grand Total
High	0	0	0	2	2
Medium	1	3	0	0	4
Low	3	0	0	1	4
Grand Total	4	3	0	3	10

Table 12 Rationalised Summary of Recommendation Status

The following sections provide a summary of the consolidation and rationalisation process where relevant to the recommendations audited in this report. These represent a summary at the time of writing. However, the suite of recommendations is subject to continuous monitoring and reviews via the regular tripartite meetings chaired by the ORR

5.2.1 Rail Defects and Rolling Contact Fatigue

There were no outstanding recommendations relating to Rail Defects and Rolling Contact Fatigue following this audit.

5.2.2 Fault Management System

The outstanding Fault Management System recommendations have not been consolidated or rationalised.

5.2.3 E&P Asset Condition Data

The six outstanding recommendations relating to E&P Asset Condition Data have been consolidated into the following single recommendation:

N5 (E&P Asset Condition) – Network Rail should assure the ORR that its approach to E&P asset condition data is suitable to support its CP5 budgetary submissions.

5.2.4 Access to Engineering Documentation

Recommendations 9.2 and 9.3 have been consolidated into recommendation 9.1.

5.2.5 Provision of Information to External Stakeholders

Recommendation 11.2 has been rolled-up into recommendation 11.4 and to simplify the wording and extent of recommendation 11.1 it has been changed to the following:

N8 (External Stakeholders) – Network Rail is to develop and implement guidance to external stakeholders on how to request and access asset-related information.

5.2.6 Asset Management Improvement Programme

The eight AMIP recommendations, all of which remain open after this audit, have been consolidated into the following single recommendation:

N7 (AMIP) – Network Rail should produce an Asset Information Strategy and provide an understanding to the ORR of how that strategy is going to be implemented.

Appendix A: Consolidated and Rationalised Recommendations

Rec No.	Recommendation	Criticality	Progress
6.3	Extend the use of TRUST and FMS data analysis used by Maintenance Performance and evaluate the approach for driving down to a more detailed level through better linkages between the systems	Medium	Amber
6.4	Explore the possibility of focussing on ICC use of FMS rather than FMS and CCIL	Low	Red
6.6	A programme of training should be undertaken to improve FMS operator's technical knowledge of railway systems, as well as their understanding of the FMS system and its criticality to the business.	Medium	Red
9.1	It is recommended that the aspirational nature of the EDM Feasibility Study strategy is reviewed against progress to date and consideration given to formal development of the strategy and its recommendations.	Low	Red
9.6	Whilst noting the planned use of collaborative tools as a means to acquire engineering document content from third parties, it is recommended that the implementation of this as a standard process is expedited.	Medium	Amber
11.4	Network Rail to clarify how the plans for enhancing the CNM are linked to an overall view of asset information from external stakeholders.	Low	Red
11.5	Network Rail to review the effectiveness and roll out of the data integrity process under development by the ICP and how it can be applied to all asset information provided to external stakeholders.	Medium	Amber
N5 E&P Asset Condition	Network Rail should assure the ORR that its approach to E&P asset condition data is suitable to support its CP5 budgetary submissions.	High	N/A
N7 AIS	Network Rail should produce an Asset Information Strategy and provide an understanding to the ORR of how that strategy is going to be implemented.	High	N/A
N8 External Stakeholders	Network Rail should develop and implement guidance to external stakeholders on how to request and access asset-related information.	Low	N/A

Table 13 Consolidated and Rationalised Recommendations

Appendix B: Interviewees

Audit Area	Interviewees
Rail Defects and Rolling Contact fatigue	James McGee (Asset Systems Manager) Glen Gerrard (Business Systems Sponsors Agent) Ian Tankard (Senior Asset Management Specialist)
Fault Management System	Ian Griffiths (Senior Renewal & Enhancement Engineer [Signals]) Ian Rush (Asset Data Quality Manager) Ashur Toma (Data Quality Specialist) Brian Halliday (Asset Systems Analysis Manager) James McGee (Asset Systems Manager) Glen Gerrard (Business Systems Sponsors Agent) Dave Lundy (Incident Controller) Erday Bilsoy (Maintenance Improvement Analyst) Ian Tankard (Senior Asset Management Specialist)
E&P Asset Condition Data	Richard Stainton (Professional Head Electrical Power) David McQuillan (Senior Technology Engineer – Distribution) Ian Tankard (Senior Asset Management Specialist)
Access to Engineering Documentation	Trevor Dawton (Records Operations Manager) Stuart Shaw (Records Technical Manager) Steve Cowser (Senior Asset Management Specialist) David Marr (Business Systems Sponsors Agent) Ian Tankard (Senior Asset Management Specialist)
Provision of Information to External Stakeholders	David Rayner (Operations Capability Manager) Andy Kirwan (National Route Support Manager) Ian Tankard (Senior Asset Management Specialist)
Asset Management Improvement Programme	Rob Thomas (Special Projects Manager) Marie Heracleous (Project Manager 1 (Info. Management)) John Dick (Programme Manager) Peter Buffham (Enterprise Architect) Ian Tankard (Senior Asset Management Specialist)

Table 14 List of Interviewees