AMEM End of CP4 and CP5 Trajectories Report

Version 1.11

A Report for Network Rail and the ORR
from Asset Management Consulting Limited (AMCL)

The Institute of Asset Management PATRON
IAM TRAINER

amcl

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Compiled by: A J Sharp
Reviewed by: M C J Pilling
Authorised by: Richard Edwards

Version History:

Version 1.11 - Format changes for printing
Version 1.1 - Amendments to Version 1.0
Version 1.0 - Inclusion of all Draft B comments and 'Network Rail Benchmark' information
Draft B - Inclusion of all Draft A comments and proposed CP5 trajectories
Draft A - Draft A for comment on factual accuracy

Executive Summary

On the 13th April 2012 AMCL published an update to its Network Rail Asset Management Roadmap[1] which defines a revised set of Capabilities, Improvement Specifications and Success Criteria that would enable Network Rail to achieve the Asset Management capability maturity targets agreed between Network Rail and the ORR in March 2011[2]. The updated 2012 Asset Management Roadmap (2012 Roadmap) was produced following AMCL's latest assessment of Network Rail's Asset Management capabilities using the AMCL Asset Management Excellence Model™ (AMEM)[3&4] in 2011. The 2012 Roadmap report considered the Asset Management capability maturity targets set for the end of the current regulatory control period, but took into account the progress Network Rail had made since the publication of an original Roadmap in 2010.

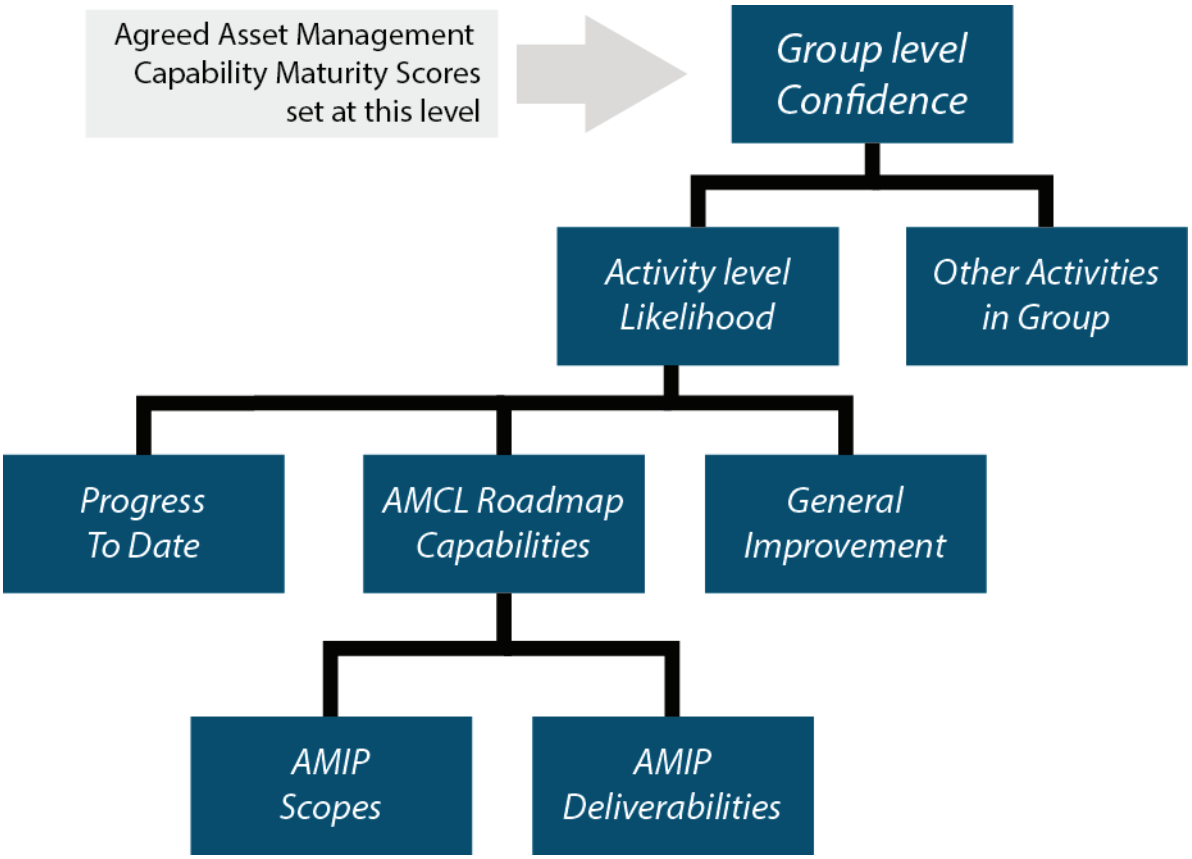
Mandate reference BA/027 'Assessment of Network Rail's Asset Management Capability at SBP' contained three phases. Phase 1 required the setting of new trajectories for CP5, subject to the outcomes of Phases 2 and 3. Phase 2 required an AMEM assessment to test Network Rail's Asset Management capability maturity at publication of the SBP (the SBP AMEM Assessment[5]). This report presents the findings of Phase 3 which required a qualitative assessment of the likelihood of Network Rail achieving its end of CP4 Asset Management capability maturity targets, as agreed between the ORR and Network Rail Boards in January 2011. In addition to this, commentary was also required to relate the findings of the SBP AMEM assessment in May 2013[5] to the quality of Network Rail's SBP and the potential for identifying further efficiencies.

The assessment of the likelihood that Network Rail will achieve the End of CP4 target Asset Management maturity scores as agreed between the ORR and Network Rail Boards has been considered at several levels. This report describes how these elements have been brought together for each Activity and Group, as summarised by the diagram overleaf.

The agreed targets are at Group level; however, these are averaged from Activity level targets which in turn are influenced by the achievement of AMCL Roadmap Capabilities, the rate of Asset

1 *Network Rail Asset Management Roadmap Update, Version 1.0, issued 13th April 2012*
2 *http://www.rail-reg.gov.uk/upload/pdf/nr-cp4-success-010311.pdf*
3 *2011 AMEM Assessment, Version 1.1, issued 6th December 2011*
4 *AMEM Assessment IIP update report, version 1.0 issued 2nd May 2012*
5 *SBP AMEM Assessment (Phase 2) report, version 1.0, issued 23rd May 2013*

Management maturity capability development to date, and any other general improvements. For clarity in this report, the term 'likelihood' is used at the Activity level, and the term 'confidence' is used at the Group level.



This report assesses the achievement of End of CP4 AMCL Roadmap Capabilities first (Section 3) and then assesses the overall confidence for each of the six AMEM Groups by considering the individual Activity likelihoods and the other factors (Section 4).

The Group level confidence was assessed as follows:

- **High confidence** was allocated if the Group score has already been achieved, or if the majority of Activities within the Group scored 'high likelihood' to achieve target, and there are no material risks identified in any of the Activities which could feasibly prevent the Group score gap being closed.
- **Medium confidence** was allocated if there is a mix of likelihoods that Activities in the Group will achieve target, and there are some material risks identified in any of the Activities which could feasibly prevent the Group score gap being closed.

- **Low confidence** was allocated if the majority of Activities within the Group scored 'low likelihood' to achieve target, and there are significant material risks identified in any of the Activities which could feasibly prevent the Group score gap being closed.

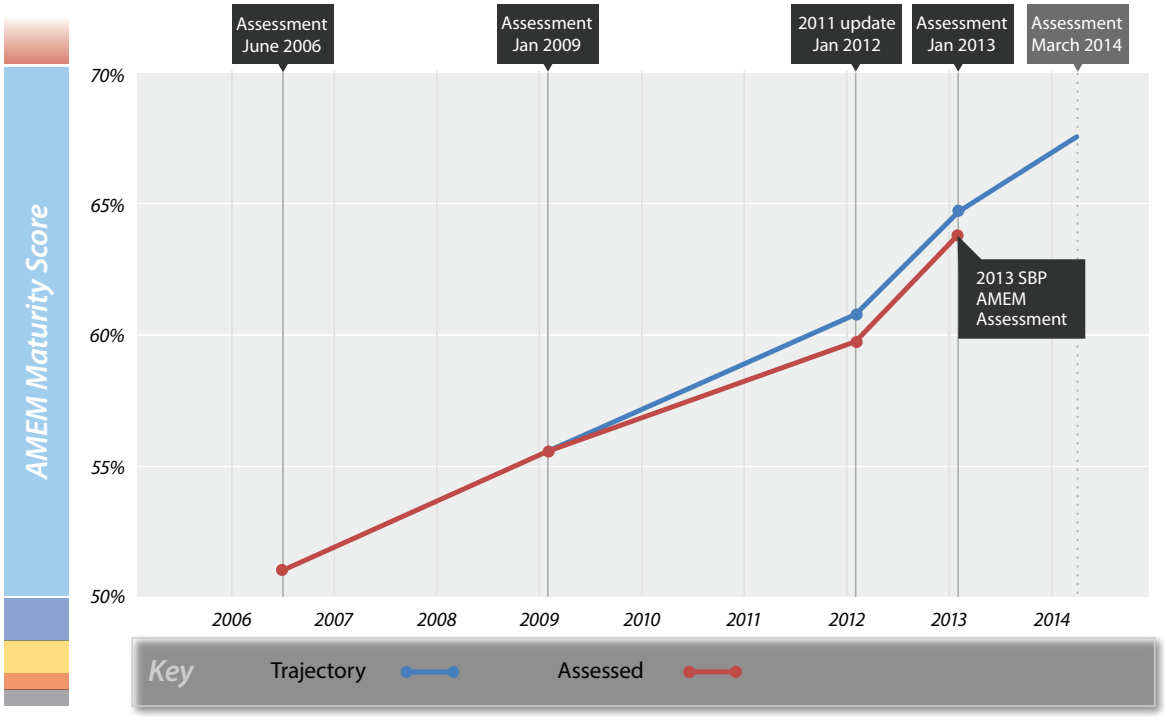
The conclusion is that there is high confidence that Network Rail will achieve target in two of the six AMEM Groups, with a medium confidence in a further three, and a low confidence in one, as shown in the table below.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence of achieving AMCL Roadmap Target for End of CP4
1 - Strategy & Planning	64.7%	65.8%	67.3%	High Confidence
2 - Whole-life Cost Justification	59.7%	58.7%	63.5%	Medium Confidence
3 - Lifecycle Delivery	70.5%	69.2%	72.3%	Medium Confidence
4 - Asset Knowledge	63.5%	60.7%	67.2%	Medium Confidence
5 - Organisation & People	71.1%	67.3%	73.6%	Low Confidence
6 - Risk & Review	58.1%	60.8%	60.8%	High Confidence

It is recommended that Network Rail review the findings of this report for each AMEM Activity and its related AMCL Roadmap Capabilities and:

- Defines the importance of the Activity and its related AMCL Roadmap Capabilities to Network Rail's current plans to determine if further action is merited, or to accept that progress is going to be slower than originally anticipated in some areas.
- Based on the information in this report, and the assessment of priority defined above, defines appropriate actions to update its own Asset Management Improvement Programme (AMIP) to accelerate progress against or otherwise mitigate any shortfalls.
- Where mitigations have been identified review these with AMCL and incorporate them into Network Rail's AMIP as appropriate.

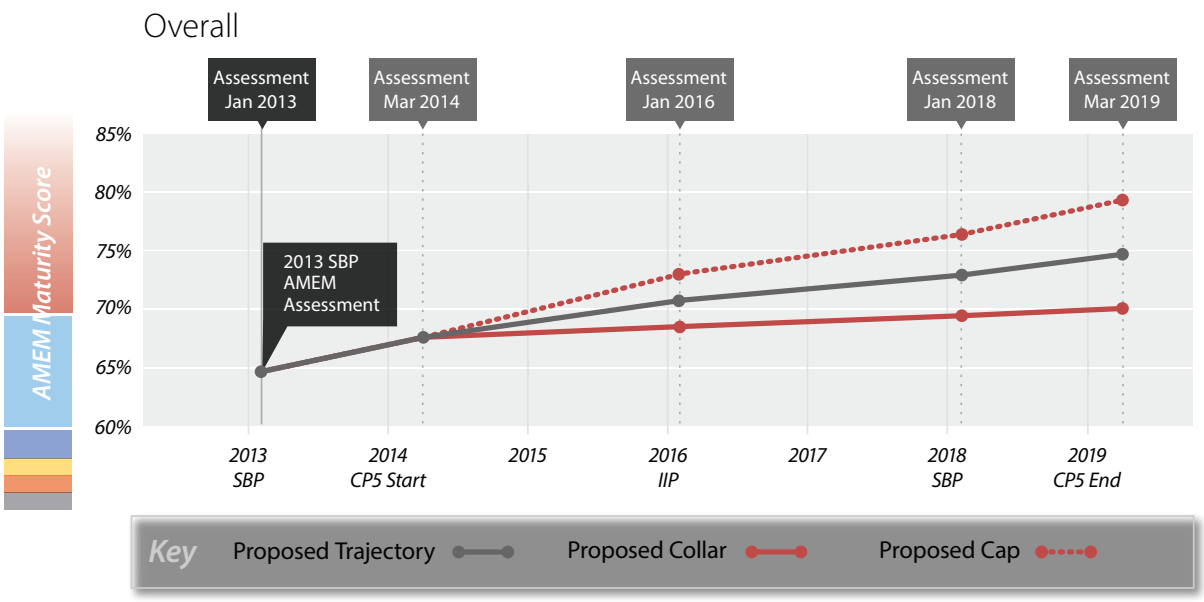
Network Rail's overall progress to date throughout CP4 is shown in the diagram below, and gives in indication that the End of CP4 target is achievable.



In addition to assessing the level of confidence in Network Rail meeting its End of CP4 targets, this report also contains proposed trajectories for CP5 which have been developed in accordance with the methodology defined in Phase 1 of this mandate. The application of this methodology and the results are described in more detail in Section 7 and Appendix I. A summary of the overall proposed trajectories are shown in the table and diagram overleaf. The following two points should be noted about the presentation of these proposed 'cap and collar' trajectory ranges and targets:

1. AMCL has provided trajectory information developed in line with the Phase 1 methodology. It is AMCL's view that any specific trajectory that falls within the 'cap and collar' ranges identified will arguably meet Network Rail's and the ORR's objective for Excellence in Asset Management. The proposed ranges and the mid-point lines are therefore provided as a starting point for Network Rail and ORR to utilise how they wish in order to agree targets and measurement approaches.
2. The proposed trajectories are based on the '39 Subjects' version of Network Rail's SBP AMEM Assessment results, and as such the 'NR as assessed 2013 SBP' averaged Group scores shown in the second column of the table overleaf differ from those calculated from the usual '23 Activities' version of the results, which are reported in the main assessment report. This does not mean that the underlying scores are different, only that the methodology chosen by the ORR to average at the Group level produces different results when applied to '23 Activities' or '39 Subjects' versions of the scores.

	Assumed Target for Entry CP5 (Mar 2014)	Proposed Target for CP5 IIP (Jan 2016)	Proposed Target for CP5 SBP (Jan 2018)	Proposed Target for End of CP5 (Mar 2019)
1 - Asset Management Strategy & Planning	66.8%	71.2%	73.2%	75.2%
2 - Asset Management Decision-Making	63.6%	67.1%	70.6%	72.6%
3 - Lifecycle Delivery Activities	70.5%	72.2%	73.9%	74.8%
4 - Asset Knowledge Enablers	68.3%	72.4%	74.8%	76.9%
5 - Organisation & People Enablers	73.3%	74.8%	75.5%	76.0%
6 - Risk & Review	62.7%	66.6%	69.8%	72.2%
Overall AMCL Proposed Trajectory	67.5%	70.7%	73.0%	74.6%



In addition to the development of the proposed CP5 trajectories outlined above, the report has presented some benchmarking information sourced from the AMEM database (see Section 6). From these activities, it is recommended that:

- Network Rail incorporates the benchmark analysis into a broader assessment of good Asset Management industry practice to help identify organisations that could be approached to agree mutually beneficial sharing of approaches.

- Network Rail and the ORR use the proposed CP5 trajectories as the basis of a new agreement for CP5, and utilise the principles for assessment set out in Section 7.2 of this report to develop and agree the assessment approach.

Contents

1 Introduction

This report contains the required outputs from Phase 3 of the BA/027 Mandate 'Assessment of Network Rail's Asset Management Capability at SBP'.

1.1 Objective and Scope

Mandate BA/027 contained the following objectives for Phase 3. This report contains outputs relating to all of these objectives, as follows:

1. Assess the likelihood of NR achieving its end of CP4 asset management maturity targets, as agreed between the ORR and NR Boards in January 2011. In areas of shortfall, provide a commentary on the materiality of that shortfall and recommend actions required to recover progress (this may include prioritised recommendations for AMIP update). Provide AMCL's view of the likely end-of-CP4 capability and compare this to the agreed trajectory.
2. If required, provide an updated set of CP5 trajectories (as recommended in phase 1) based on likely end-of-CP4 capability.
3. Assess the implications of the AMEM scores at SBP for the quality of Network Rail's SBP, including robustness, sustainability, whole-life cost optimality and deliverability of the CP5 plans by asset category and route where possible. (The reporter should draw on, and not duplicate other reporter studies relating to PR13.)
4. Assess the implications of the AMEM assessment for potential areas of CP5 efficiency, quantified as percentages as far as possible, and broken down into M&R opportunities. This should include discussion of efficiencies achieved resulting from increased asset management capability seen in other organisations. It should evaluate the efficiencies available in CP5 from reaching and remaining at best practice under two scenarios:
    a. NR achieving agreed end-of-CP4 capability; and
    b. NR achieving AMCL's assessed likely end-of-CP4 capability.

1.2 Activities

The following activities have been completed to undertake this review:

1. Based on the evidence provided during the SBP AMEM assessment, AMCL has assessed the likelihood of Network Rail achieving each of the AMCL Roadmap Capabilities defined for the End of CP4 (see Section 3). The methodology for this is based on the same methodology used in the AMIP to AMCL Roadmap Validation report[6].
2. Based on the output from Activity 1 and Network Rail's scores at the SBP AMEM assessment, AMCL has assessed the confidence of Network Rail achieving the End of CP4 target Asset Management capability maturity scores as agreed between the ORR and Network Rail Boards in January 2011 (see Section 4).
3. Where there is considered to be an area of material shortfall identified in Activity 2, actions required to mitigate the identified risks have been proposed against each of the AMCL Roadmap capabilities assessed under Activity 1 (see Appendix B through to Appendix H).
4. An overall qualitative assessment of the implications of the AMEM scores at SBP for the quality of Network Rail's SBP, including robustness, sustainability, whole-life cost optimality and deliverability of the CP5 plans, has been completed. This assessment also includes a discussion of the potential areas of further efficiency that could be delivered in CP5 through the continued development of Network Rail's Asset Management capabilities (see Section 5).

In addition to assessing the level of confidence in Network Rail meeting its End of CP4 targets, this report also contains proposed trajectories for CP5 which have been developed in accordance with the methodology defined in Phase 1 of this mandate. The application of this methodology and the results are described in more detail in Section 7 and Appendix I.

6 *AMIP to AMCL Roadmap Validation Report, Version 1.0, issued 24th August 2012, MRN/BA021*

2 Methodology

The assessment of the likelihood that Network Rail will achieve the End of CP4 target Asset Management maturity scores as agreed between the ORR and Network Rail Boards in January 2011 has been considered at several levels. This report describes how these elements have been brought together for each Activity and Group, as summarised by Figure 1 below.

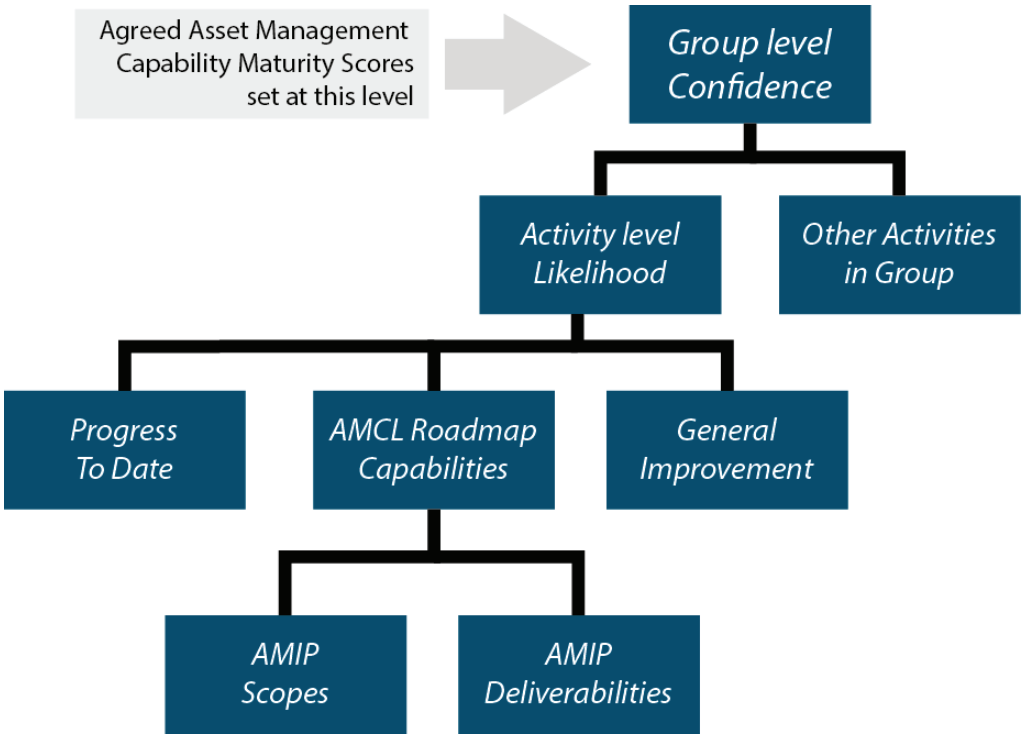


Figure 1: Confidence in meeting End of CP4 target Asset Management maturity scores

The agreed targets are at Group level; however, these are averaged from Activity level targets which in turn are influenced by the achievement of AMCL Roadmap Capabilities, the rate of Asset Management maturity capability development to date, and any other general improvements. For clarity in this report, the term 'likelihood' is used at the Activity level, and the term 'confidence' is used at the Group level.

This report assesses the achievement of End of CP4 AMCL Roadmap Capabilities first (Section 3) and then assesses the overall confidence for each of the six AMEM Groups by considering the individual Activity likelihoods and the other factors (Section 4).

3 Achievement of End of CP4 AMCL Roadmap Capabilities

3.1 Overview

The method for assessing Network Rail's likely position at the End of CP4 against the AMCL Roadmap capabilities was based on a revised version of the RAG (Red, Amber, Green) scales used in the AMIP to AMCL Roadmap Validation Report[7] as shown in Table 1 below. For each of the 59 Capabilities defined in the AMCL Roadmap two RAG scales have been applied giving an indication of both the scope and deliverability of Network Rail's plans against each of the capabilities based on the evidence presented during the SBP AMEM assessment (Phase 2 of MRN/BA027).

RAG Scale	Red	Amber	Green
Scope	No or very few requirements evident in AMIP based on SBP AMEM assessment evidence	A good proportion of requirements evident in AMIP based on SBP AMEM assessment evidence	All requirements evident in AMIP based on SBP AMEM assessment evidence
End of CP4 Deliverability	Very unlikely to achieve AMCL Roadmap requirements for End of CP4	Some risk to achieving AMCL Roadmap requirements for End of CP4	No specific risks identified to achieving AMCL Roadmap requirements for End of CP4

Table 1: Revised RAG Scales

An 'AMEM Activity RAG', which is the average of the two RAGs described above for all Capabilities within each Activity, was also produced, and compared with Network Rail's own 'Forecast vs. Trajectory' RAG, which represents its own view on its likely progress at the End of CP4. Appendix A contains the first level of detail of this assessment. It shows how the two Scope and Deliverability RAGs were applied to each of the 59 Roadmap Capabilities, the resultant End of CP4 'AMEM Activity RAG', and the comparison with Network Rail's 'Forecast versus Trajectory' RAG for SBP.

It should be noted that Unit Costs have been split (CAPEX/OPEX) to align with the 2012 Roadmap and that Network Rail's development of Unit Costs is subject to on-going review via Arup.

7 *AMIP to AMCL Roadmap Validation Report, Version 1.0, issued 24th August 2012, MRN/BA021*

A fuller description of AMCL's Scope and Deliverability RAGs is given in the following two sections, with a summary of Network Rail's performance against each also provided. This is supported by Appendix B through to Appendix H, which contain the detailed assessment split by the six AMEM Groups. These Appendices contain the 59 AMCL Roadmap Capability Statements, their Improvement Specifications and Success Criteria, and four additional columns which provide the following information for each Capability:

- The SBP AMEM Assessment (January 2013) findings from Phase 2 of Mandate MRN/BA027;
- An assessment of the risks to Network Rail achieving the End of CP4 capabilities and proposed mitigations if risks are identified;
- The Scope RAG; and
- The Deliverability RAG.

3.2 Scope

The following RAG scale was used to assess scope:

- Inadequate Coverage (Red RAG) – there is not sufficient evidence from the planned activities identified during the SBP AMEM Assessment to be confident that the requirements specified in the AMCL Improvement Specification for the End of CP4 will be addressed by Network Rail.
- Partial Coverage (Amber RAG) – based on the planned activities identified during the SBP AMEM Assessment it appears that there are some elements of the AMCL Improvement Specification for the End of CP4 not currently being addressed by Network Rail.
- Full Coverage (Green RAG) – based on the planned activities identified during the SBP AMEM Assessment it appears that all requirements specified in the AMCL Improvement Specification for the End of CP4 are being addressed by Network Rail.

Table 2 shows a summary of the Scope RAG for the 59 Roadmap capability statements which have an End of CP4 specific Success Criteria.

Group	Inadequate Coverage (Red RAG)	Partial Coverage (Amber RAG)	Full Coverage (Green RAG)	*Totals*
Strategy & Planning	0	3	9	***12***
WLC Justification (Maintenance)	3	4	2	***9***
WLC Justification (Renewal)	0	1	6	***7***
Lifecycle Delivery	0	6	3	***9***
Asset Information	0	5	2	***7***
Organisation & People	0	4	3	***7***
Risk & Review	0	4	4	***8***
Totals	3	27	29	***59***
Percentage	***5%***	***46%***	***49%***	***100%***

Table 2: Summary of AMIP Coverage of AMCL Roadmap Requirements (Scope RAG)

3.3 Deliverability

The premise of the AMCL Roadmap is that if Network Rail was to implement the 59 Improvement Specifications it contains, and achieve this within the timescales specified in the 'End of CP4' Success Criteria, the expected AMCL Roadmap targets are likely to be achieved.

To assess the deliverability risk the following RAG analysis was applied to each of the 59 AMCL Roadmap Capabilities for each of the End of CP4 Success Criteria timescales:

- Low Confidence (Red RAG) – On the evidence presented during the SBP AMEM Assessment it is considered unlikely that Network Rail will achieve the AMCL Roadmap requirements for the End of CP4 timescale.
- Medium Confidence (Amber RAG) – On the evidence presented during the SBP AMEM Assessment there is some risk to Network Rail achieving the AMCL Roadmap requirements for the End of CP4 timescale.

- High Confidence (Green RAG) – On the evidence presented during the SBP AMEM Assessment there were no specific material risks identified that Network Rail will not achieve the AMCL Roadmap requirements for the End of CP4 timescale.

Table 3 shows a summary of the Deliverability RAG for the 59 Roadmap capability statements which have an End of CP4 requirement.

Group	Red	Amber	Green	*Totals*
Strategy & Planning	0	3	9	*12*
WLC Justification (Maintenance)	4	2	2	*8*
WLC Justification (Renewal)	0	1	6	*7*
Lifecycle Delivery	2	4	4	*10*
Asset Information	0	1	6	*7*
Organisation & People	1	6	0	*7*
Risk & Review	0	3	5	*8*
Totals	***7***	***20***	***32***	***59***
Percentage	***12%***	***34%***	***54%***	***100%***

Table 3: Summary of Risks to Achievement of Roadmap Activities to End of CP4 (Deliverability RAG)

4 Achievement of End of CP4 Asset Management Maturity Targets

As described in Section 2 Network Rail's Asset Management capability maturity targets are agreed at the Group level, which are averaged from Activity level targets which in turn are influenced by the achievement of AMCL Roadmap Capabilities, the rate of Asset Management maturity capability development to date, and any other general improvements. This section describes the approach and findings for Activity likelihood and Group confidence.

4.1 Assessment of Activity Likelihood

The Activity target has either been assessed as Achieved, if the End of CP4 target score for the Activity has already been achieved at SBP, or has been assessed as a High, Medium or Low likelihood as follows:

- **High likelihood** is allocated when there is good confidence that the Activity target score will be achieved, based on the Scope and Deliverability RAG assessment of Network Rail's likely position against the AMCL Roadmap capability at the End of CP4 and an assessment of the overall materiality of any AMCL Roadmap issues identified relative to the size of the Activity score gap that must be closed.
- **Medium likelihood** is allocated when there is some risk that achieving the required scope or deliverability may not be feasible by March 2014, based on the Scope and Deliverability RAG assessment of Network Rail's likely position against the AMCL Roadmap capability at the End of CP4 and an assessment of the overall materiality of any AMCL Roadmap issues identified relative to the size of the Activity score gap that must be closed.
- **Low likelihood** is allocated when there is a clear risk that achieving the required scope or deliverability may not be feasible by March 2014, based on the Scope and Deliverability RAG assessment of Network Rail's likely position against the AMCL Roadmap capability at the End of CP4 and an assessment of the overall materiality of any AMCL Roadmap issues identified relative to the size of the Activity score gap that must be closed.

4.2 Assessment of Group Confidence

The Group level confidence was then assessed in a similar fashion to the assessment of Activity level likelihood, as follows:

- **High confidence** was allocated if the Group score has already been achieved, or if the majority of Activities within the Group scored 'high likelihood' to achieve target, and there are no material risks identified in any of the Activities which could feasibly prevent the Group score gap being closed.
- **Medium confidence** was allocated if there is a mix of likelihoods that Activities in the Group will achieve target, and there are some material risks identified in any of the Activities which could feasibly prevent the Group score gap being closed.
- **Low confidence** was allocated if the majority of Activities within the Group scored 'low likelihood' to achieve target, and there are significant material risks identified in any of the Activities which could feasibly prevent the Group score gap being closed.

4.3 Strategy & Planning

4.3.1 Overview

The assessment of Network Rail's likelihood of achieving each of the Activities within the Strategy & Planning Group at the End of CP4 is provided in Table 4.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence / Likelihood of achieving AMCL Roadmap Target for End of CP4
1 - Strategy & Planning	***64.7%***	***65.8%***	***67.3%***	***High Confidence***
1.01 - Policy & Strategy	61%	61%	63%	High Likelihood
1.02 - Demand Analysis	70%	73%	72%	Achieved
1.03 - Strategic Planning	62%	63%	64%	High Likelihood
1.04 - Asset Management Plans	66%	66%	70%	Medium Likelihood

Table 4: Confidence & Likelihood of Network Rail Achieving Agreed End of CP4 Targets (Strategy & Planning Group)

4.3.2 Materiality

One Activity in the Strategy & Planning Group has been assessed as achieved, and two at a high likelihood of achieving the End of CP4 target, with one assessed as medium. Demand Analysis has already achieved the End of CP4 target at SBP. Policy & Strategy and Strategic Planning have been assessed as high likelihood as the remaining activities required within the AMCL Roadmap for the End of CP4 are straightforward review and update related. Asset Management Plans has been assessed as medium likelihood because the gap is relatively large, and will require Network Rail to have completed and effectively integrated its CP5 Delivery Plan into the Asset Management Plan documentation.

4.3.3
Group Confidence Conclusion

Based on the assessment described above and Network Rail's performance against the AMCL trajectory as shown in Figure 2 below it is AMCL's opinion that Network Rail has a **high confidence** of achieving the End of CP4 target Asset Management maturity scores as agreed between the ORR and Network Rail Boards in January 2011 at Group level.

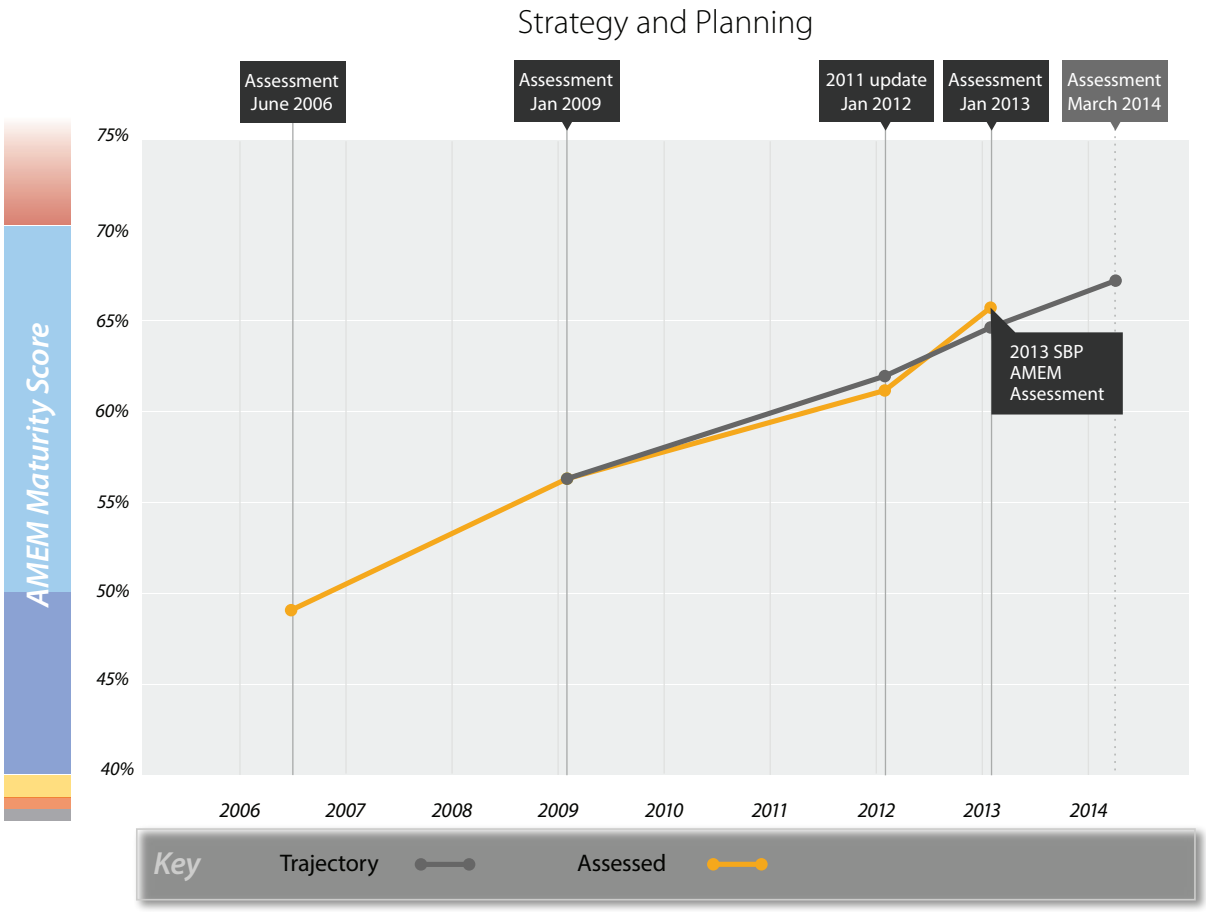


Figure 2 *Network Rail's Progress to January 2013 (Strategy & Planning Group)*

4.4 Whole-life Cost Justification

4.4.1 Overview

The assessment of Network Rail's likelihood of achieving each of the Activities within the Whole-life Cost Justification Group at the End of CP4 is provided in Table 5.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence / Likelihood of achieving AMCL Roadmap Target for End of CP4
2 - Whole-life Cost Justification	***59.7%***	***58.7%***	***63.5%***	***Medium Confidence***
2.01 - Opex Evaluation	56%	51%	62%	Low Likelihood
2.02 - Capex Evaluation	60%	65%	62%	Achieved
2.03 - Asset Costing & Accounting	63%	60%	67%	Medium Likelihood

Table 5: Confidence & Likelihood of Network Rail Achieving End of CP4 Targets (Whole-life Cost Justification Group)

4.4.2 Materiality

There is one Activity that has been achieved, and one each with a medium and low likelihood of achieving the End of CP4 target within the Whole-life Cost Justification Group. Capex Evaluation has already achieved the End of CP4 target at SBP. Asset Costing and Accounting has been assessed as medium likelihood. Within this it is renewal rather than maintenance unit costs which still require the most development, with on-going work to harmonise and improve the understanding of the various approaches evidenced during the SBP AMEM assessment required to achieve the agreed End of CP4 targets.

Opex evaluation has been assessed as low likelihood. The main concern with this Activity is that there remain some fundamental issues with the Maintenance Requirements Analysis (MRA) approach, as follows:

- The MRA approach is largely reliability-centred maintenance (RCM) based and does not envisage the adoption of the quantified cost-risk evaluation of maintenance intervals until CP6, which is significantly later than the AMCL Roadmap identified timescales.
- Because the quantified cost-risk evaluation of intervals is not part of the CP4/CP5 approach, there is a limited understanding of risk related to the chosen maintenance intervals, which has a knock-on effect on other AMCL Roadmap capabilities (for example 3.7 on maintenance tolerances).
- Network Rail's current MRA approach relies on local tailoring of national regimes to leverage benefits, using local RCM capability. This will mean wider national optimisation opportunities are not evaluated systematically.

These fundamental issues mean AMCL Roadmap capabilities 2.2 to 2.7 may only be partially addressed by the End of CP4 and it is unlikely that the End of CP4 target will be achieved.

4.4.3 Group Confidence Conclusion

Based on the assessment described above and Network Rail's performance against the AMCL trajectory as shown in Figure 3 below it is AMCL's opinion that Network Rail has a **medium confidence** of achieving the End of CP4 target Asset Management maturity scores as agreed between the ORR and Network Rail Boards in January 2011 at Group level.

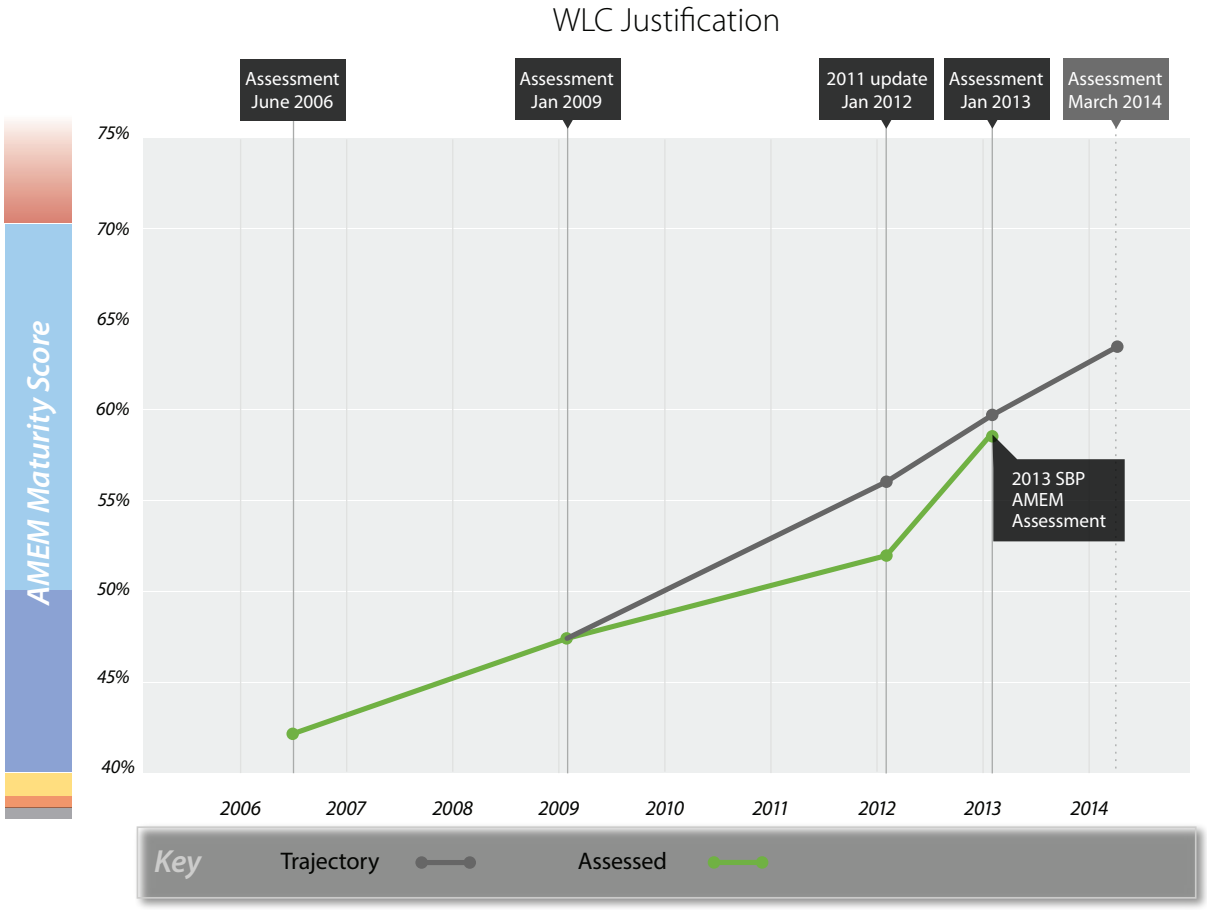


Figure 3 *Network Rail's Progress to January 2013 (Whole-life Cost Justification Group)*

4.5 Lifecycle Delivery

4.5.1 Overview

The assessment of Network Rail's likelihood of achieving each of the Activities within the Lifecycle Delivery Group at the End of CP4 is provided in Table 6.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence / Likelihood of achieving AMCL Roadmap Target for End of CP4
3 - Lifecycle Delivery	***70.5%***	***69.2%***	***72.3%***	***Medium Confidence***
3.01 - Asset Creation	88%	86%	89%	Medium Likelihood
3.02 - Systems Engineering	67%	67%	69%	Medium Likelihood
3.03 - Maintenance Delivery	77%	75%	77%	Low Likelihood
3.04 - Resource & Outage Management	61%	58%	64%	Medium Likelihood
3.05 - Incident Response	77%	75%	78%	High Likelihood
3.06 - Asset Rationalisation & Disposal	54%	54%	56%	High Likelihood

Table 6: Confidence & Likelihood of Network Rail achieving agreed End of CP4 Targets (Lifecycle Delivery Group)

4.5.2
Materiality

Both Incident Response and Asset Rationalisation & Disposal are assessed as having a high likelihood of achieving the End of CP4 target within the Lifecycle Delivery Group. These are both because Network Rail has demonstrated clear plans for achieving the AMCL Roadmap capabilities which will be sufficient to close the remaining score gap.

Three Activities have been assessed as medium likelihood. The revised programme and project management methodology required by AMCL Roadmap capability 3.1 has not yet been defined, although the requirement has been acknowledged. Within Systems Engineering a new AMIP has been defined, but it is a high-level and ambitious plan in AMCL's opinion which requires specific reference to BSEN 50126 and a clearer linkage to Asset Policy development to fully meet AMCL Roadmap capability requirements for 3.4 and 3.5. Within Resource & Outage Management further clarity on roles and responsibilities, expressed in a replacement for NR/L3/NDS/302, is required now the requirements have been split across the Centre and the Routes.

Maintenance Delivery is the only Activity that has been assessed as low. This is mainly because the setting and publishing of maintenance tolerances as required by the AMCL Roadmap capability is very unlikely to be achieved until Roadmap Capabilities 2.2 to 2.6 are completed (see Section 4.4), but also due to the uncertain timescales for roll-out of 'hand-held' devices to support the maintenance delivery process under Network Rail's Asset Information Strategy, ORBIS (Offering Rail Better Information Services).

4.5.3
Group Confidence Conclusion

Based on the assessment described above and Network Rail's performance against the AMCL trajectory as shown in Figure 4 below it is AMCL's opinion that Network Rail has a **medium confidence** of achieving the End of CP4 target Asset Management maturity scores as agreed between the ORR and Network Rail Boards in January 2011 at Group level.

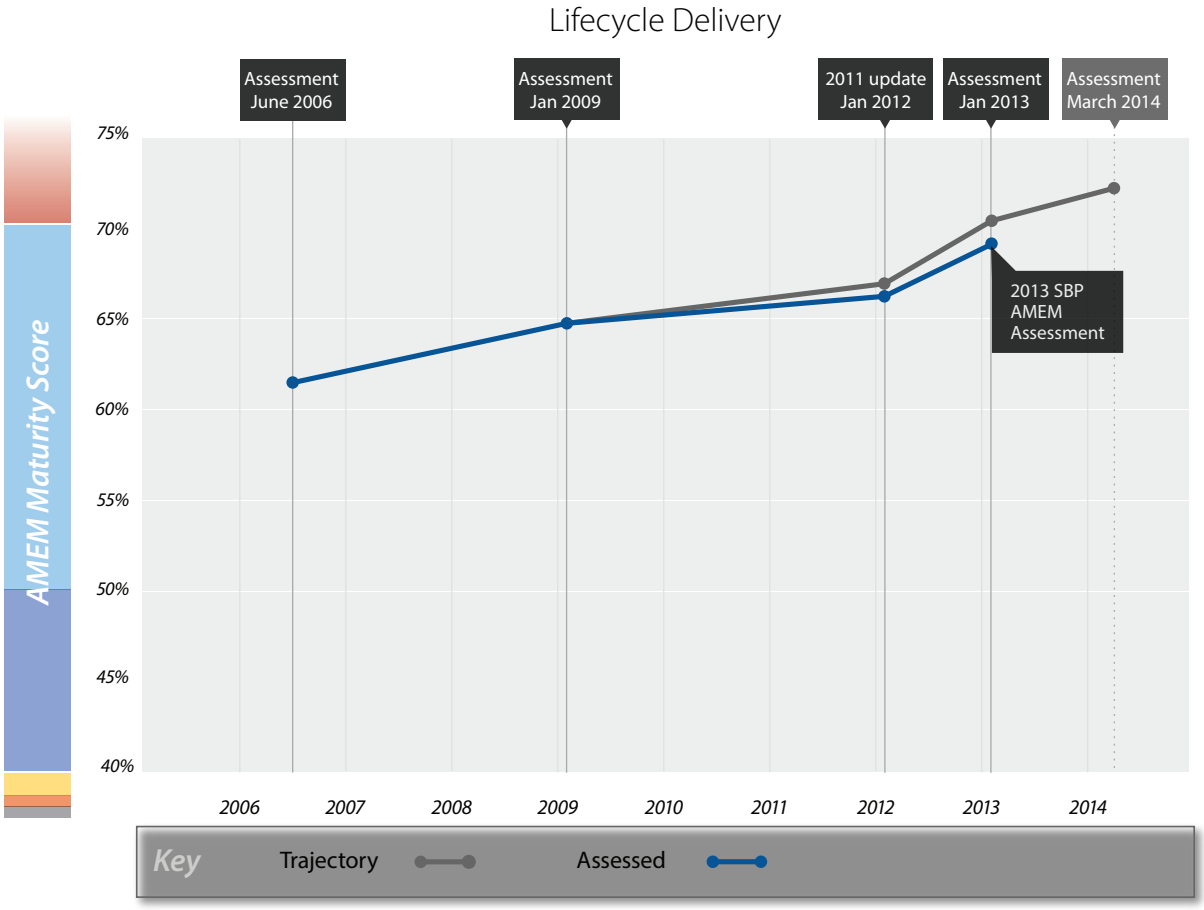


Figure 4: Network Rail's Progress to January 2013 (Lifecycle Delivery Group)

4.6 Asset Knowledge

4.6.1 Overview

The assessment of Network Rail's likelihood of achieving each of the Activities within the Asset Knowledge Group at the End of CP4 is provided in Table 7.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence / Likelihood of achieving AMCL Roadmap Target for End of CP4
4 - Asset Knowledge	***63.5%***	***60.7%***	***67.2%***	***Medium Confidence***
4.01 - Asset Information Strategy & Standards	74%	74%	78%	High Likelihood
4.02 - Asset Information Systems	60%	56%	63%	Medium Likelihood
4.03 - Asset Knowledge & Data	56%	52%	61%	Medium Likelihood

Table 7: Confidence & Likelihood of Network Rail achieving agreed End of CP4 Targets (Asset Knowledge Group)

4.6.2 Materiality

Within the Asset Knowledge Group, overall progress against the AMCL trajectories is defined by the ORBIS programme, which started later than the original AMCL Roadmap identified timescale but is now being implemented efficiently and according to plan. The net result is that the Asset Information Strategy & Standards Activity within the Group has been assessed as having a high likelihood of achieving the End of CP4 target. However both the Asset Information Systems and Asset Knowledge & Data Activities have been assessed as medium likelihood.

The main areas of potential risk to achieving the End of CP4 targets are:

- The Asset Information Specification process has been defined and implemented for track but requires full implementation across the asset base by the End of CP4.
- The requirements of the Asset Information Plan in the devolved organisation need to be defined and communicated.
- With respect to data confidence the results of an on-going Arup review[8] of data quality has helped clarify Network Rail's current position in terms of available asset data against its specified requirements and the likelihood of achieving the End of CP4 target in more detail. AMCL has identified seven specific areas of minor non-conformance to PAS 55 with the help of

8 *Part 'A' Reporter Mandate AO/028 – Audit of Asset Data Quality – Draft Final Report, 25 April 2013*

this report, and if these are rectified prior to the end of CP4 it is considered more likely that the End of CP4 target will be achieved.

- It is considered by AMCL that a data governance process will be in place and operating by the End of CP4 but it is unlikely to have full coverage of all asset types and systems and associated audit and assurance roles will require further clarification with the devolved Routes.

In summary, the ORBIS programme is providing a clear direction and momentum that is broadly aligned with the requirements of the AMCL Roadmap, and generally provides a clear direction for achieving the End of CP4 targets in terms of scope. However, the late initiation of the ORBIS programme against the AMCL Roadmap identified timescales means achievement of all of the End of CP4 targets for the Activities in this Group is achievable but challenging.

4.6.3 Group Confidence Conclusion

Based on the assessment described above and Network Rail's performance against the AMCL trajectory as shown in Figure 5 below it is AMCL's opinion that Network Rail has a **medium confidence** of achieving the End of CP4 target Asset Management maturity scores as agreed between the ORR and Network Rail Boards in January 2011 at Group level.

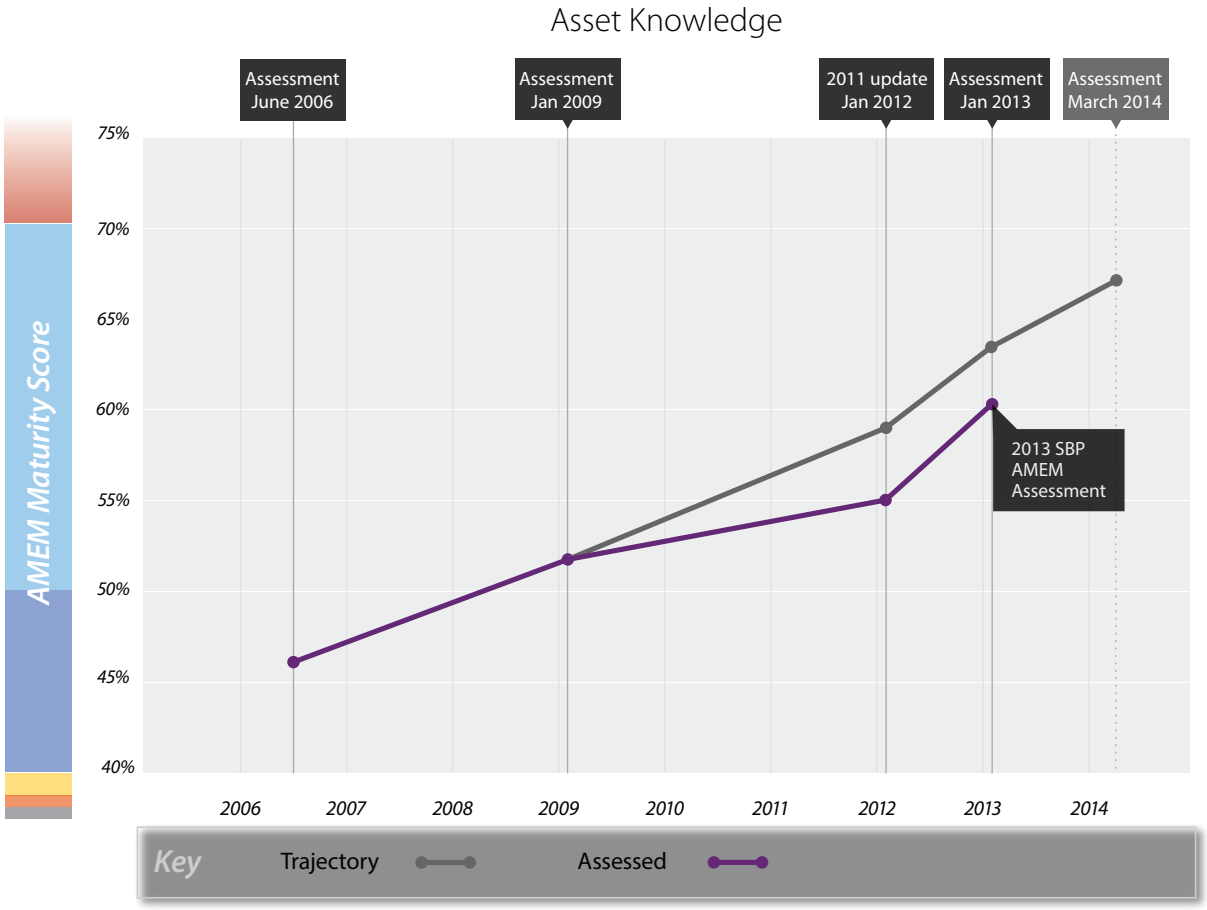


Figure 5: Network Rail's Progress to January 2013 (Asset Knowledge Group)

4.7
Organisation & People

4.7.1
Overview

The assessment of Network Rail's likelihood of achieving each of the Activities within the Organisation & People Group at the End of CP4 is provided in Table 8.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence / Likelihood of achieving AMCL Roadmap Target for End of CP4
5 - Organisation & People	***71.1%***	***67.3%***	***73.6%***	***Low Confidence***
5.01 - Contract & Supply Management	72%	72%	73%	High Likelihood
5.02 - Organisational Structure & Culture	68%	63%	70%	Low Likelihood
5.03 - Individual Competence & Behaviour	73%	67%	77%	Low Likelihood

Table 8: Confidence & Likelihood of Network Rail achieving agreed End of CP4 Targets (Organisation & People Group)

4.7.2
Materiality

The Contract & Supply Management Activity has been assessed as having a high likelihood of achieving the End of CP4 target within the Organisation & People Group. The gap between current performance and End of CP4 target is slim and evident progress is being made.

However, the Organisational Structure & Culture and Individual Competence & Behaviour Activities have both been assessed as having a low likelihood of achieving End of CP4 expectations.

The main concern within Organisational Structure & Culture is that the previous approach has been reviewed, found wanting, and a new and much improved approach has been developed. As a result efforts have been focussed on this important work, and delayed significant further progress. Development towards a culture change management programme and migration strategy has been undertaken but only at a high-level currently. A gap analysis of culture has been completed to date, but this requires validation across the organisation before the culture change management programme can be rolled out. The organisational culture validation is a substantial challenge and therefore it is unlikely that effective implementation of the culture change management programme will be achieved before the End of CP4.

Within Individual Competence & Behaviour, Asset Management role profiles have been developed, but are unlikely to be embedded within the AMCL Roadmap identified timescales. There is a specific technical competence framework issue which until it is resolved, is likely to cause longer term problems across this Activity. The main technical problem with the design of the 12 role descriptions is the way the IAM Competences Framework has been used. Rather than using it to scope and organise the description of roles and the relationships between them, the IAM competences framework has been used to provide another way of describing the content of existing jobs. As a result, performance expectations are described in two different languages – in terms of RACI activities and in terms of IAM elements of competence – which operate on two different levels. As a result the recommended in best practice hierarchy of competence requirements, role descriptions and RACI activities is missing. Critically, the lack of hierarchy prevents the IAM Competence Framework from providing a suitable context within which both individual and organisational development can be understood. The lack of context affects the understanding Network Rail staff can have of how their training and development and wider career development fit into the Network Rail Asset Management development effort. With the hierarchy described above, the risk that individual competences are misaligned with organisational requirements can be managed.

The identified technical issue has had the knock-on effect of delaying the full alignment of team to individual competences and of finalising and implementing individual training and development plans which are therefore now behind schedule. Finally, implementation of the tools for monitoring competences is also behind schedule, and the monitoring of 'in-stock' competence (that is competence possessed by staff but not utilised in their current role) in particular is likely not to be plausible if the technical competence framework issue remains unresolved.

4.7.3
Group Confidence Conclusion

Based on the assessment described above and Network Rail's performance against the AMCL trajectory as shown in Figure 6 below it is AMCL's opinion that Network Rail has a **low confidence** of achieving the End of CP4 target Asset Management maturity scores as agreed between the ORR and Network Rail Boards in January 2011 at Group level.

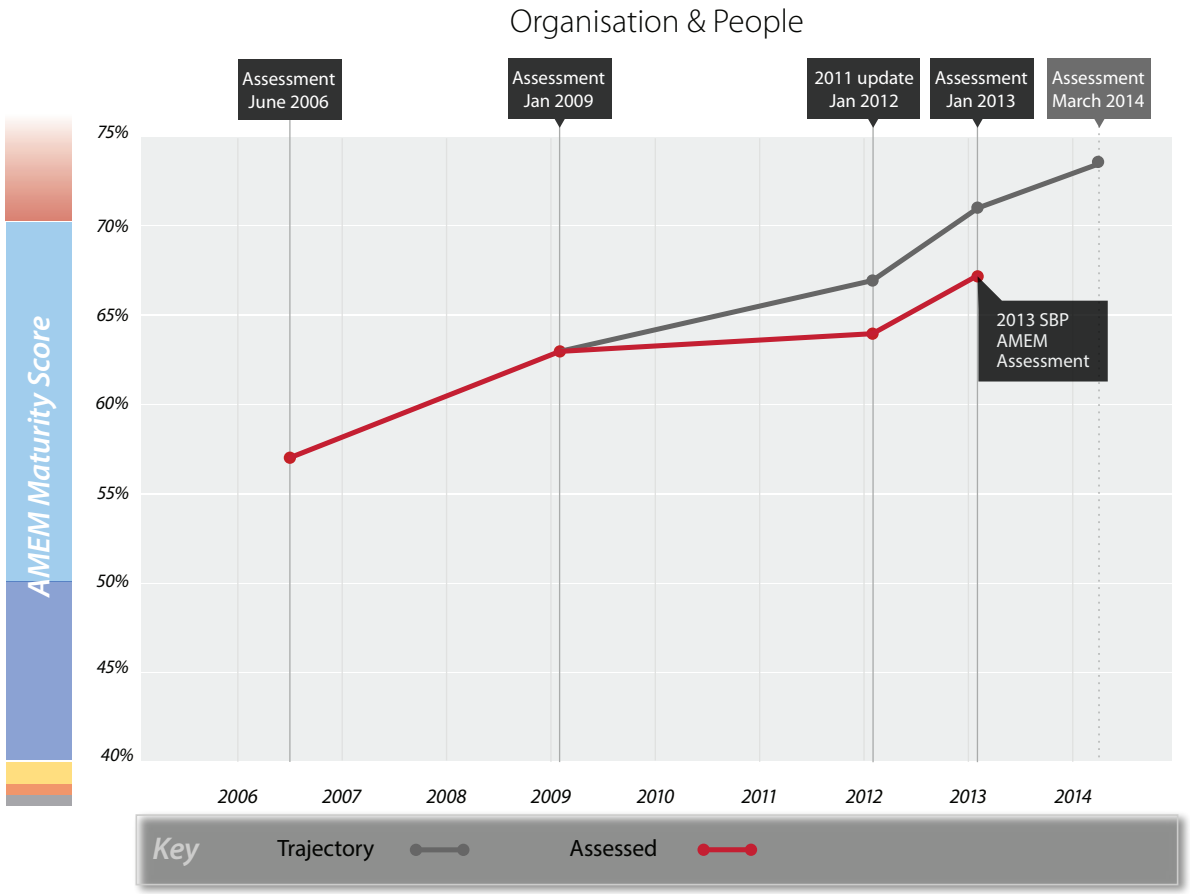


Figure 6 Network Rail's Progress to January 2013 (Organisation & People Group)

4.8 Risk & Review

4.8.1 Overview

The assessment of Network Rail's likelihood of achieving each of the Activities within the Risk & Review Group at the End of CP4 is provided in Table 9.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence / Likelihood of achieving AMCL Roadmap Target for End of CP4
6 - Risk & Review	***58.1%***	***60.8%***	***60.8%***	***High Confidence***
6.01 - Risk Assessment & Management	76%	75%	77%	High Likelihood
6.02 - Sustainable Development	45%	52%	49%	Achieved
6.03 - Weather & Climate Change	43%	52%	48%	Achieved
6.04 - Review & Audit	68%	64%	70%	Medium Likelihood

Table 9: Confidence & Likelihood of Network Rail achieving agreed End of CP4 Targets (Risk & Review Group)

4.8.2 Materiality

Overall the Risk & Review Group has already met the End of CP4 target, due to the performance of the Sustainable Development and Weather & Climate Change Activities which have been significantly ahead of target for the last two assessments. Assuming none of the Activity scores fall by the time of the End of CP4 assessment the Group score will be achieved. However, both the Risk Assessment & Management and Review & Audit Activities missed their SBP targets, both of which have been identified by Network Rail as of higher priority in the Group.

The Risk Assessment & Management Activity only just missed the SBP target at this assessment, which was primarily due to a change to Network Rail's plans for the development of its overall Integrated Risk Management (IRM) framework. Network Rail will need to ensure alignment of IRM and top-down Enterprise Risk Management (ERM) processes is accelerated and clarified by end of CP4 to fully achieve target.

Within the Review & Audit Activity the main concerns are related to Network Rail's development and implementation of a single corporate assurance framework, which may affect its ability to feed findings into the overall Asset Management System review required by AMCL Roadmap capability 6.4. Although this capability is assessed as green on its own, it is reliant on capabilities 6.5 to 6.8, three of which are assessed as amber. Specifically, Network Rail needs to focus its audit and assurance activities on its Asset Management System to ensure its Asset Management System review is effective and meets the requirements for on-going compliance with PAS 55.

4.8.3
Group Confidence Conclusion

Based on the assessment described above and Network Rail's performance against the AMCL trajectory as shown in Figure 7 below it is AMCL's opinion that Network Rail has a **high confidence** of achieving the End of CP4 target Asset Management maturity scores as agreed between the ORR and Network Rail Boards in January 2011 at Group level.

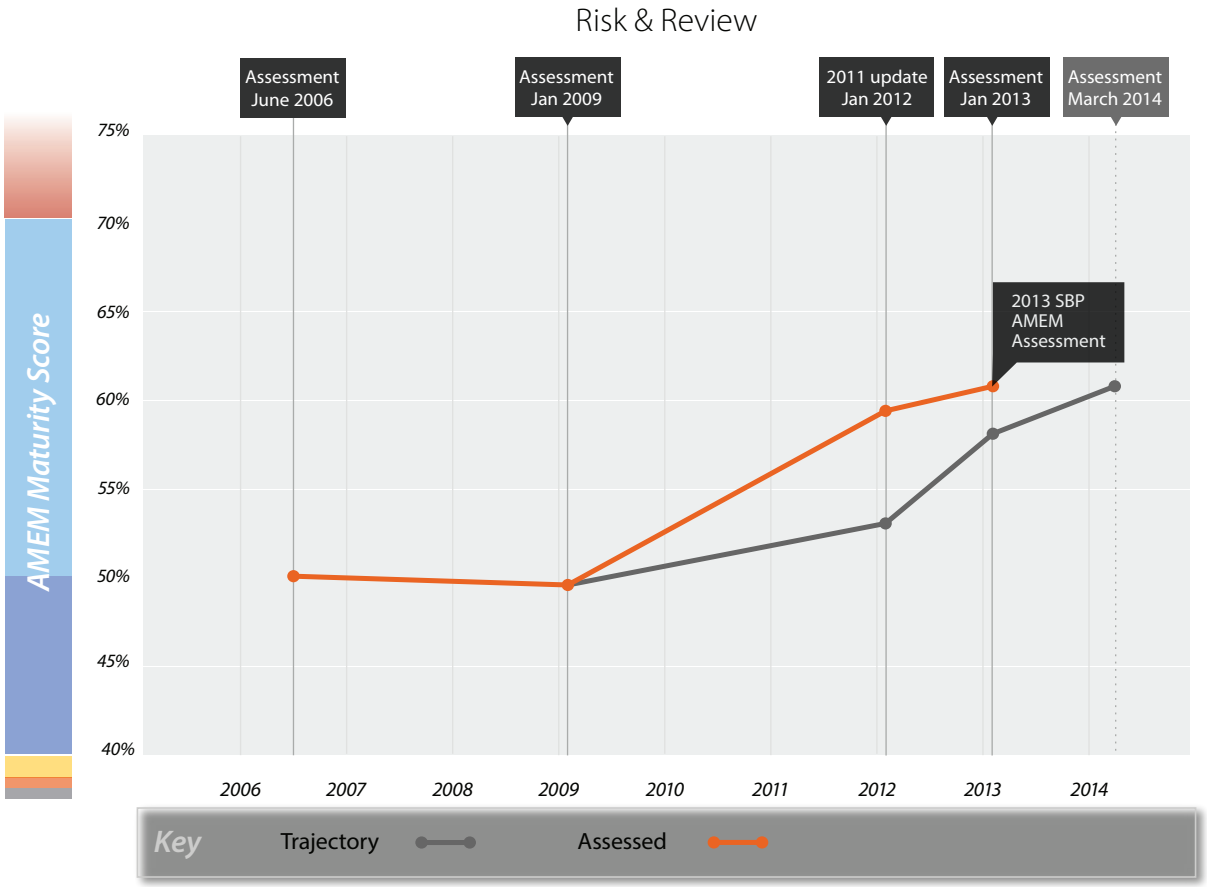


Figure 7: Network Rail's Progress to January 2013 (Risk & Review Group)

4.9 Summary

In summary, the Group level confidence assessments for Network Rail achieving agreed End of CP4 Asset Management maturity targets as agreed between the ORR and Network Rail Boards in January 2011 is shown at AMEM Group level in Table 10.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence of achieving AMCL Roadmap Target for End of CP4
1 - Strategy & Planning	64.7%	65.8%	67.3%	High Confidence
2 - Whole-life Cost Justification	59.7%	58.7%	63.5%	Medium Confidence
3 - Lifecycle Delivery	70.5%	69.2%	72.3%	Medium Confidence
4 - Asset Knowledge	63.5%	60.7%	67.2%	Medium Confidence
5 - Organisation & People	71.1%	67.3%	73.6%	Low Confidence
6 - Risk & Review	58.1%	60.8%	60.8%	High Confidence

Table 10: Confidence of Network Rail achieving agreed End of CP4 Asset Management maturity targets

Based on the assessment of each of the Activities and Groups described in Sections 4.3 to 4.8 above, and Network Rail's performance against the AMCL trajectory as shown in Figure 8 below it is AMCL's opinion that Network Rail has a **medium confidence** of achieving the End of CP4 target Asset Management capability maturity score as agreed between the ORR and Network Rail Boards in January 2011 at Group level.

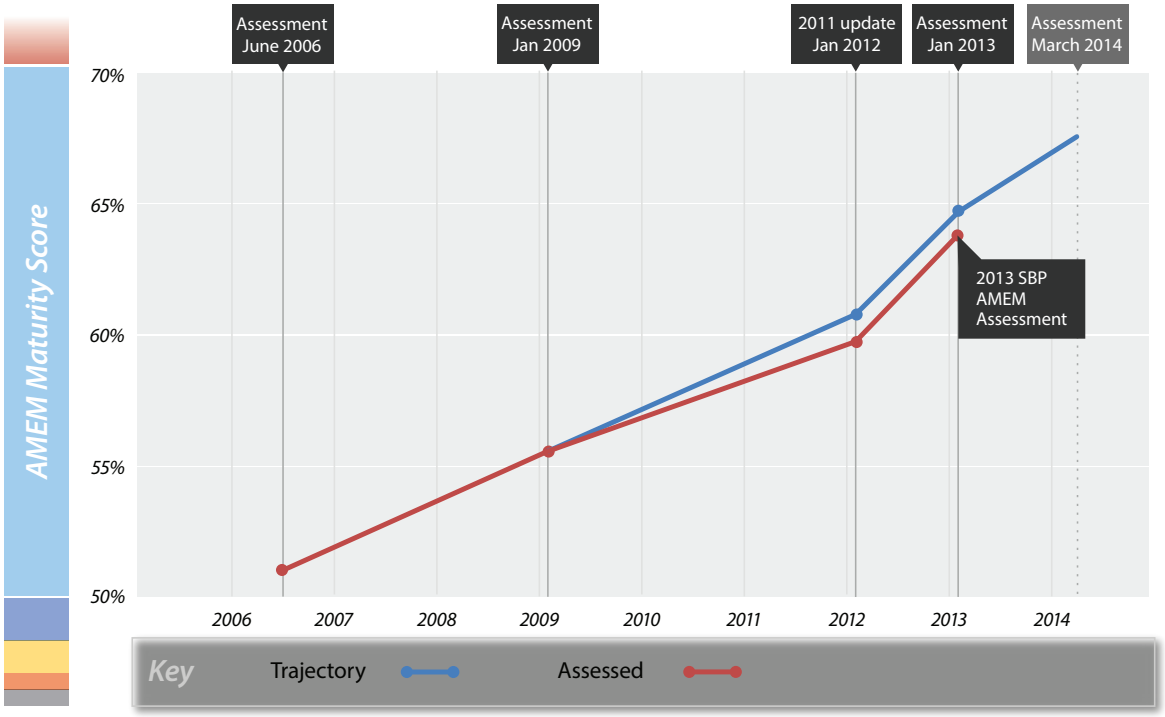


Figure 8: Network Rail's Progress against Overall Trajectory

5 Implications for SBP

5.1 Implications on SBP Robustness, Sustainability & WLC Optimisation

This section provides a qualitative assessment of the implications of the SBP AMEM assessment scores for the quality of Network Rail's SBP, including robustness, sustainability and whole-life cost optimality. The mandated scope of the assessment does not allow an assessment of the deliverability of the CP5 plans by Route, but distinction by asset category is made where possible.

5.1.1 Strategy & Planning

The Activities within the Strategy & Planning Group have significant potential to influence the robustness, sustainability and whole-life cost optimality of Network Rail's SBP. As concluded earlier in this report, Network Rail has performed strongly in this Group, providing clear strategy and direction to its strategic and Route plans, and underpinning these with reasonably well justified work volumes and costs.

The introduction of the Asset Management System, and particularly the Strategic Planning Framework which constitutes Stage 1 of the Asset Management Framework within it, has led to a significant improvement in the consistency of approach and most of the 'line of sight' from Network Rail's corporate goals and objectives, and the requirements of the HLOS, to its capital renewal work volumes and costs. However, as noted in the SBP AMEM assessment report, the maturities of these approaches varies across the asset disciplines, with signalling and track arguably the most mature, and there remains a break in the current 'line of sight' relating to the link between performance specifications and asset specific RAMS requirements at Route level. There are also still opportunities to improve the approach and its implementation, especially within structures, although to varying degrees across all the asset disciplines. Network Rail acknowledges that the implementation of the Asset Management Framework (and specifically the Strategic Planning Framework) is not yet fully complete and will continue to be implemented and improved as required.

The effect of the Asset Management System on evaluating and optimising other sources of expenditure (such as operations and enhancements) is less clearly defined. Improving the evaluation of operational expenditure was a focus of the AMCL Roadmap (see specifically Section 5.1.2), as was the optimisation of enhancement delivery (see Section 5.1.3). Both of these are also considered within the various disciplines' Asset Policies and the Asset Management Framework, however, the approach to optimally integrating these expenditures into Network Rail's plans is less systematic and not always rooted in known good practice. It is in these areas that Network Rail has more difficulty in demonstrating its plans are robust and sustainable.

The deliverability of Network Rail's CP5 plans is still unresolved. The SBP AMEM assessment[9] report concluded that Network Rail's 'Deliverability Review' had completed some good work in identifying the risks to delivery which required mitigation, but that these risks needed further analysis and mitigation prior to the start of CP5. This is an ambitious aim in the time available, and Network Rail will need to focus clearly on the issues, including the extensive change management requirements implicit in its desire to rapidly leverage efficiencies, to ensure the risks are managed to an acceptable level.

5.1.2
Whole-life Cost Justification

As with the Strategy & Planning Group, the Activities in the Whole-life Cost Justification Group have significant potential to influence the robustness, sustainability and whole-life cost optimality of Network Rail's SBP. These Activities provide the underpinning justification for the plans developed in the first Group.

As concluded earlier in this report, Network Rail has performed strongly in this Group with respect to capital expenditure evaluation, but less strongly for operational expenditure evaluation. As introduced in Section 5.1.1 this means that the robustness, sustainability and whole-life cost optimality of Network Rail's operational expenditure plans is not as clearly justified as it is with capital expenditure evaluation.

The systematic approach to Tier 1, 2 and 3 modelling which underpins the capital expenditure work volumes and costs, coupled with the development of the asset disciplines' Asset Policies aligned to this and the application of these through the Strategic Planning Framework, is in contrast to the approach for the evaluation of operational expenditure. The operational expenditure approach has

9 *SBP AMEM Assessment (Phase 2) report, version 1.0, issued 23rd May 2013*

evolved from the original RoSE (Reliability-centred maintenance of Signalling Equipment) initiative and although it adopts elements of a risk-based approach, it remains short of the full requirements of AMCL Roadmap capabilities 2.2 through to 2.7. The approach being adopted is RCM (Reliability Centred Maintenance) based, with local tailoring of national RCM regimes to produce local 'complex' regimes. Unlike the approach taken to evaluate capital expenditure through the application of the Tier 1, 2 and 3 models and national Asset Policies challenged at the Route level, the approach for the evaluation of operational expenditure does not allow a national evaluation of the trade-offs between the costs and risks of any particular maintenance or inspection regime, and does not envisage cost-risk optimisation techniques being deployed before CP6.

This shortfall has consequential knock-on effects, both within the Group with respect to achieving the target score for the Opex Evaluation Activity, but also outside the Group within the Lifecycle Delivery Group, specifically with respect to the integration of the RBM (Risk Based Maintenance) and II (Intelligent Infrastructure) initiatives into an overall strategic maintenance approach, through to the specific setting of maintenance tolerances within maintenance and inspection standards.

5.1.3 Lifecycle Delivery

The Activities within the Lifecycle Delivery Group influence the robustness, sustainability and whole-life cost optimality of Network Rail's SBP through the correct implementation of the plans – i.e. the accuracy with which the plans are executed. Good Asset Management practice is concerned with creating whole-life cost optimised plans which when delivered result in expected levels of expenditure and exposure to risk which was understood at the planning stage within known boundaries. There are several areas where Network Rail can have confidence that its plans, if executed accurately, will yield the desired results, and other areas where this is less certain.

One area that Network Rail can have confidence in is the evaluation of capital renewal requirements within the Tier 1, 2 and 3 models, which are then executed through the application of the Asset Policies according to the Asset Management Framework (and again specifically the Strategic Planning Framework within this). Assuming these plans are monitored Network Rail should be able to close the loop on these activities over time, continually improving and refining the planning assumptions used in the initial modelling. It is acknowledged that some disciplines are more mature in these areas than others (see Section 5.1.2), however all disciplines have now broken into this continual improvement cycle and it is essential that focus on implementing the Asset Management Framework is retained until it becomes business as usual.

The first area that is less certain is the delivery of maintenance and inspection activities. This is driven by a number of issues. Firstly, Network Rail has only just defined its Risk-Based Maintenance (RBM) approach, and as reported in the SBP AMEM Assessment and summarised in this report, there are some fundamental issues which remain about the approach which means it will not completely fulfil the AMCL Roadmap requirements in this area. Secondly, the Intelligent Infrastructure (II) initiative is now well into its deployment, but is not well linked to an overall maintenance strategy (including into RBM), or yet delivering the anticipated benefits. Thirdly, the collection, storage, evaluation and usage of failure and reliability data is not yet fully contributing to either of these initiatives, although the Failure Information Improvement Programme (FIIP) is now starting to address some of the key issues. In summary, Network Rail understands maintenance and inspection expenditures as a combination of top-down budget lines and initiative costs, but because an overall maintenance strategy is not integrating the various maintenance and inspection activities and initiatives together it is difficult for Network Rail to express the anticipated outputs reliably.

The second area that is less certain is the delivery of enhancement projects, or other more complex capital schemes. As discussed in the SBP AMEM Assessment report, Network Rail has some effective and good practice approaches to Systems Engineering, including the management of project requirements and reliability and availability modelling. The purpose of systems assurance approaches such as these is to increase confidence that planned benefits will be achieved in a reliable way. However, these tools and techniques are not systematically applied to all project work as widely or as appropriately as they could be, and if they were this would improve the level of confidence that the planned work will deliver the desired sustainability and whole-life cost optimality outcomes.

5.1.4
Asset Knowledge

The Activities in the Asset Knowledge Group are key enablers to ensuring the robustness, sustainability and whole-life cost optimality of Network Rail's SBP. Good Asset Management practice recognises that the quality of Asset Management decision-making can be improved independently of an improvement in asset information and knowledge, but that this improvement will be limited over time unless the asset information requirements and consequential asset information collected are refined and continually improved as part of decision-making process.

Network Rail's ORBIS programme is responding to this challenge. It appears to be integrated into many Asset Management initiatives already, with asset information requirements being driven by

the Asset Management decisions being made. This is evident for example within the Tier 1, 2 and 3 modelling work, and specific initiatives such as FIIP. It is understood that the ORBIS programme in its current form will continue until at least the end of CP6, and it is anticipated that it will continue to be integrated into Asset Management decision-making throughout that period. It is hoped that as the Asset Management decision-making approaches continue to develop and mature, there will be clear feedback defining the improvements in asset information and knowledge required. To achieve this, the ORBIS programme should be more closely aligned to Network Rail's Asset Management Strategy, which is currently under revision. It would be helpful if this alignment was achieved by the End of CP4.

5.1.5
Organisation & People

The Activities in the Organisation & People Group are key to ensuring the robustness, sustainability and whole-life cost optimality of Network Rail's SBP. However, outside of the core Asset Management leadership, the impact of the Organisation & People Activities are not well understood. When Asset Management improvements involve a significant proportion of a devolved organisation both competence management and organisational culture management are critical to ensuring the improvements have the intended results.

Network Rail's SBP was created within an organisation that has developed a level of Asset Management competence at the centre, bolstered by external competence as required (for example, to develop the Tier 2 models). The SBP documentation and Network Rail's approach to competence management have improved significantly compared to previous assessments. The greatest advances in capability were found by the SBP AMEM assessment to be in areas where Asset Management competence is recognised as important and is actively managed. While the SBP marks a move forward, further SBP improvements expected by the end of CP5 require underpinning with sustained organisational culture management and competence management. Development of this Organisation and People enabling work needs to start early to provide the necessary outcomes before the end of CP5. Some of the areas that would benefit include risk-based maintenance, systems engineering and asset-related risk management.

To make a substantial difference to the robustness, sustainability and whole-life cost optimality of Network Rail's SBP will require a significant enhancement in the management of Asset Management culture throughout the organisation, and increased staff engagement with Asset Management approaches and concepts at Network Rail. In summary, the big opportunities to

impact on future SBPs cannot be understood definitively until the overall Asset Management culture and the competence of the organisation are more effective and appropriate.

5.1.6
Risk & Review

The effect of the Risk & Review Group on Network Rail's SBP is primarily with respect to deliverability, Network Rail's abilities to anticipate, monitor and manage expected and unexpected risks, and to ensure the plan is being delivered as effectively and efficiently as possible, in line with the requirements of the Asset Management System. Network Rail is implementing a single corporate assurance framework which captures key interfaces with the Asset Management System to show who is accountable for which activities, but this is not yet fully effective. All activities in the Asset Management System should be covered in a longer-term audit and assurance plan with the identification of high-risk activities aligned to the risks around delivery of the SBP to ensure that Network Rail has full understanding and control of its Asset Management activities.

5.2 Potential for Efficiencies throughout CP5

Network Rail's Asset Management maturity has a complex relationship with the potential efficiencies the organisation can make, or be anticipated to make, at any point or during any period of time. The mandate requires a commentary on the potential efficiencies available in CP5 from reaching either of the following two scenarios:

- Network Rail achieves agreed End of CP4 Capability; or
- Network Rail achieves likely End of CP4 Capability.

Network Rail has already assumed an 18% improvement in efficiency[10] in CP5 which is related to a number of initiatives aimed at improving process or physical approaches, such as risk-based maintenance or Intelligent infrastructure respectively. The successful implementation of these initiatives relies in turn on an assumed level of Asset Management capability within the organisation, which develops at an assumed rate. The effect on these assumptions of Network Rail not achieving its End of CP4 Asset Management capability maturity targets depends significantly on how close to the target Network Rail gets, and how extensive and well embedded any improvements are. Overall, AMCL expects that three groups will have the greatest impact on future efficiencies directly, with the Organisation & People Group providing the effective foundation on which these gains can be made. The three Groups are:

- Whole-life Cost Justification – this conclusion is reached because the Opex Evaluation Activity remains behind target, and is most unlikely to achieve the end of CP4 target. Implementing risk based maintenance regimes effectively could have a significant effect on efficiencies but this implementation is still not being demonstrated as reported.
- Lifecycle Delivery – this conclusion is reached because the implementation of a fully integrated overall maintenance strategy that includes risk-based maintenance, intelligent infrastructure and other related (but integrated) approaches, should have a positive additional effect on efficiencies.
- Asset Knowledge – although the ORBIS programme is extensive and now well underway, it does not cover all of Network Rail's asset information and knowledge requirements, and it is believed there are still potential efficiencies that can be unlocked with respect to improved asset information and usage, related to the activities described in the Whole-life Cost Justification and Lifecycle Delivery Groups described above.

It is unlikely that significantly greater efficiencies can be gained through improvement in the Strategy & Planning and Risk & Review Groups.

10 SBPT101 Network Rail Strategic Business Plan - England and Wales, Page 3

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6 Network Rail's Benchmark Position

6.1 Overview and caveats

An analysis has been completed to help better understand Network Rail's relative position to other asset intensive organisations that have been subject to an AMEM assessment. Assessments are continually being added to the database, and for this exercise all comparable assessments finalised since 2009 have been included and categorised into seven sector groups. The total sample size is 44 and the sample includes Network Rail's SBP assessment.

It is important that this analysis is understood in the correct context, and the following caveats should be applied:

- The benchmark sample is self-selecting – i.e. it includes organisations which wish to be assessed using the AMEM. Objectives for this vary, but are quite often related to PAS 55 compliance.
- The benchmark sample is therefore indicative of each industry sector, and not necessarily representative. However, the comparison provides a useful source of evidence for further investigation of potential sources of good Asset Management industry practice.

6.2 Benchmark Analysis

An analysis has been completed of the companies' overall Asset Management maturity (i.e. the top level averaged scores). The 'best', 'worst' and 'average' scores have been calculated in each sector. This information, along with some general information on the comparators, is summarised in Table 11 on the following page.

The benchmark information is also shown on a 'box and whisker' plot in Figure 9 on the following page, which shows the interquartile ranges for each sector, and Network Rail's four assessment scores since 2006 for comparison. The 'box' for each sector indicates where 50% of the sector sample lies, with the median (or 2nd quartile, the point at which the sector sample is exactly halved) represented by the line running horizontally through the box. The 'whiskers' represent the highest and lowest values in the sector sample.

It is recommended that Network Rail incorporates this analysis into a broader assessment of good Asset Management industry practice to help identify organisations that could be approached to agree mutually beneficial sharing of approaches.

Category	Description	Best	Worst	Average	Sample Size
Electricity	Includes a range of electricity transmission and distribution companies from Europe, Indonesia and Australasia.	80%	36%	48%	13
Gas	Includes a range of gas transmission and distribution companies from Europe and Australasia.	57%	41%	47%	4
Highways	Includes one UK local authority.	39%	39%	39%	1
Metro / Tram	Includes a range of metro and tram companies from Europe and Australasia.	65%	35%	49%	7
Multi-utility	Includes two multi-utility companies from the UK.	50%	43%	46%	2
Rail	Includes a range of main line and metro companies from Europe, Asia and Australasia.	75%	39%	52%	9
Water	Includes a range of water and waste water companies from Europe and Australasia.	65%	39%	47%	8

Table 11: Comparator information

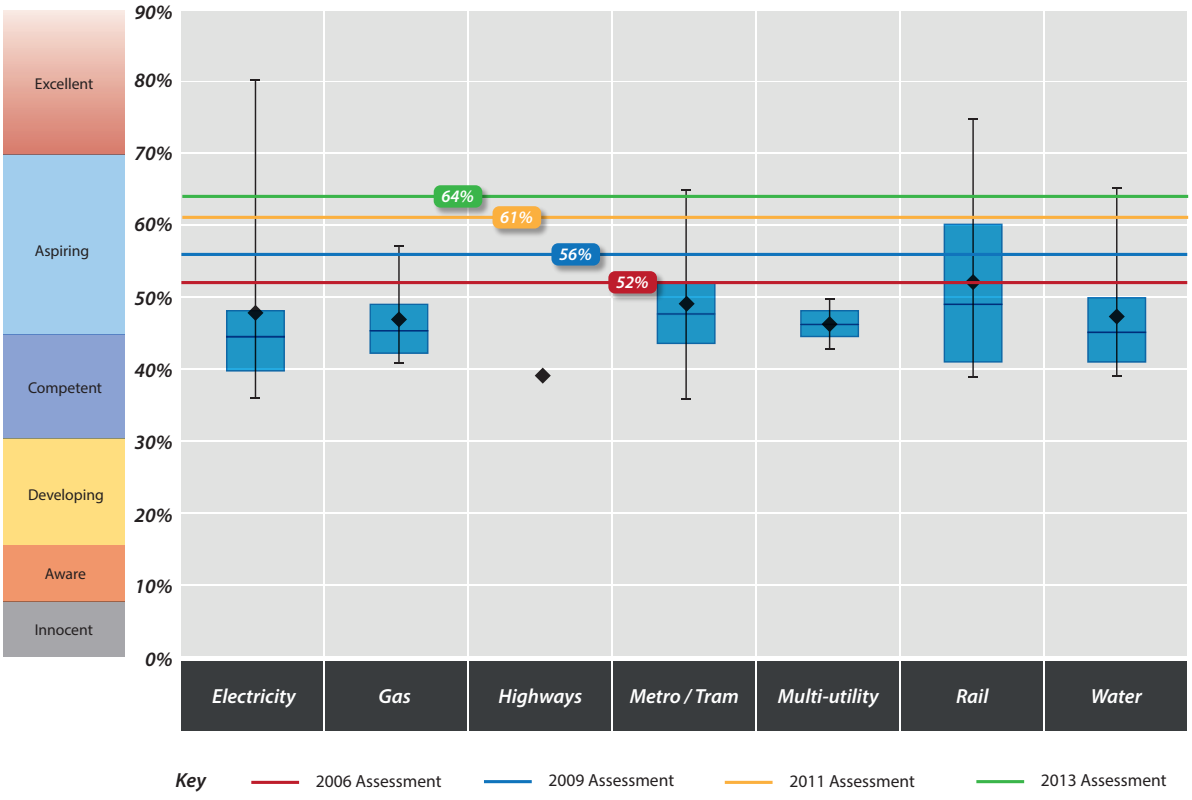

Figure 9 : Network Rail compared to 44 other organisations in seven industry sectors which have been assessed using the AMEM

7 Proposed CP5 Trajectories

7.1 Overview

The Phase 1 report[11] for this mandate detailed a revised methodology for determining a new set of trajectories for Network Rail for CP5. The methodology was built up from the original CP4 'top-down' methodology, modified to accommodate current Institute of Asset Management (IAM) thinking in this area and Network Rail's aspirations as it approaches the higher levels of Asset Management capability within the AMEM. The methodology was discussed with both Network Rail and ORR.

The key difference between the methodology proposed in the report and the previous methodology for creating trajectories for CP4 was that excellence is defined within a 'cap and collar' range for each AMEM Activity and that this range will form the maturity targets for the end of CP5. The collar (lower bound) is 70% for all Activities and the cap (upper bound) has been set as either the anticipated level Network Rail's existing plans will achieve, or if this does not exceed 70%, a target set through a revised 'top-down' rule-set through the use of appropriate comparators. It is AMCL's view that any specific trajectory that falls within the 'cap and collar' ranges identified will arguably meet Network Rail's and the ORR's objective for Excellence in Asset Management.

11 *SBP AMEM Assessment Phase 1 Report, Version 1.0, 4th March 2013*

The basis for the calculation of the CP5 trajectories is the current 2013 frontier scores which are shown below in comparison with Network Rail's 2013 SBP assessment scores.

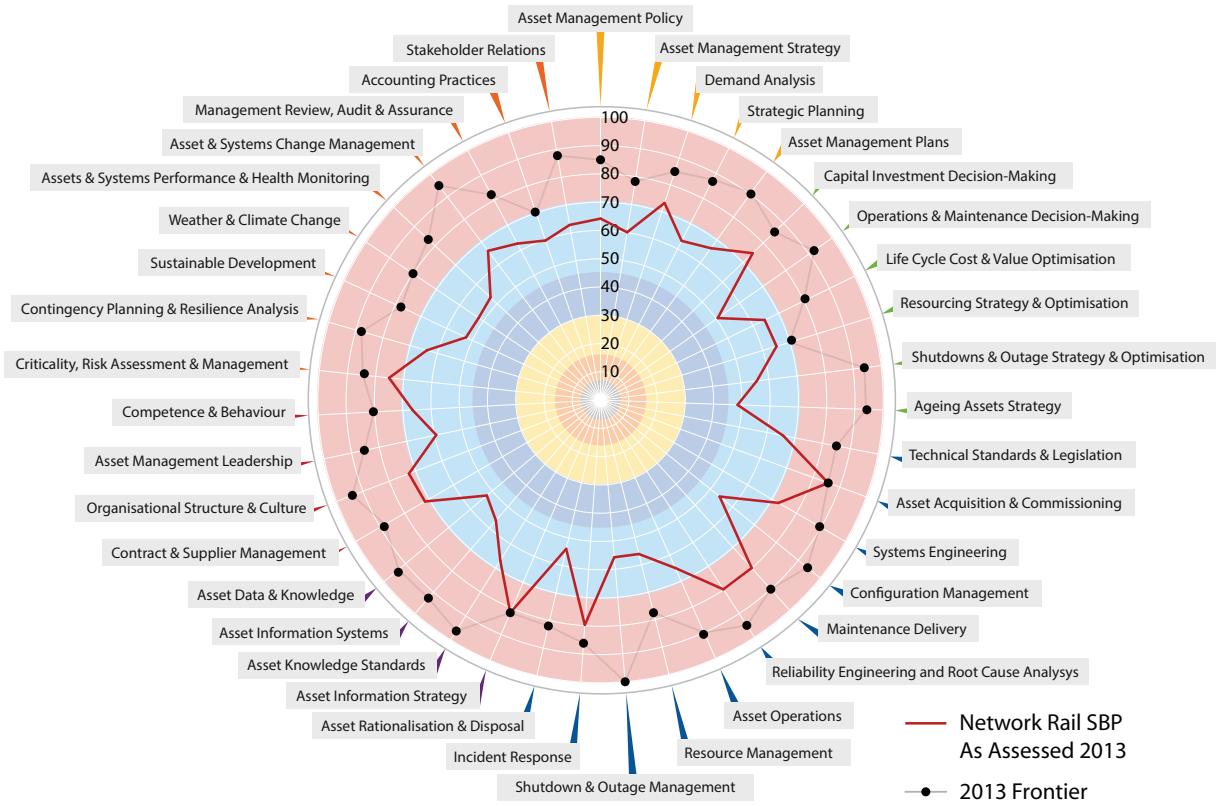

Figure 10 : Network Rail compared to 44 other organisations in seven industry sectors which have been assessed using the AMEM

7.2 Recommended CP5 assessment approach

AMCL recommends a CP5 assessment approach which will track trajectories and final targets according to the following principles:

1. Includes assessment across the '39 Subjects' rather than the now superseded 23 Activities – these subjects are aligned with the 'Asset Management Landscape' agreed by the Global Forum for Maintenance & Asset Management (GFMAM), which is internationally recognised good practice.
2. Includes a schedule of assessments at a national level to track the agreed trajectories and targets at the start of CP5, the equivalent of IIP and SBP during CP5, and at the end of CP5. This national level assessment should include a statistically significant sample of the Routes at each assessment point.

7.3 Assumed CP5 start position

Two key variables influence the trajectories calculated at this stage, beyond the current and anticipated frontier performance of comparators.

The first is the priority Network Rail has attached to each of the 39 Subjects as this influences both how close the 'top-down' methodology requires Network Rail to get to the anticipated End of CP5 frontier performance for the Subject, and also the shape of the trajectory to get there. The second is Network Rail's actual End of CP4 position which is not yet known.

The priority Network Rail has applied to the 39 Subjects is shown in Table 12 on the following page, alongside the assumed start position for each of the 39 Subjects. This was calculated as follows:

- Because the End of CP4 position is only defined for 23 Activities, these have been mapped to the 39 Subjects in the first instance.
- Where Network Rail has already exceeded the End of CP4 position, or where there is no obvious mapping between the 23 Activities and 39 Subjects, the 2013 SBP 'as assessed' score has been used.

The trajectories can be aligned to the actual CP4 exit / CP5 entry position at the beginning of CP5, once the End of CP4 assessment is complete.

Group	39 Subjects	Priority	23 Activities	AMCL Roadmap Target for End of CP4 (Mar 2014)	AMCL Roadmap Target for End of CP4 (Mar 2014) (Mapped)	NR as assessed 2013 SBP	End of CP4 Target Exceeded?	Assumed Target for Entry CP5 (Mar 2014)
Asset Management Strategy & Planning	1 - Asset Management Policy	H	1.01 - Policy & Strategy	63.2%	63.2%	64.2%	Y	64.2%
	2 - Asset Management Strategy	H	1.01 - Policy & Strategy	63.2%	63.2%	60.1%	N	63.2%
	3 - Demand Analysis	H	1.02 - Demand Analysis	71.6%	71.6%	73.3%	Y	73.3%
	4 - Strategic Planning	H	1.03 - Strategic Planning	64.3%	64.3%	63.2%	N	64.3%
	5 - Asset Management Plans	H	1.04 - Asset Management Plans	70.1%	70.1%	66.4%	N	70.1%
Asset Management Decision-Making	6 - Capital Investment Decision-Making	H	2.02 - Capex Evaluation	61.6%	61.6%	74.8%	Y	74.8%
	7 - Operations & Maintenance Decision-Making	H	2.01 - Opex Evaluation	62.1%	62.1%	50.6%	N	62.1%
	8 - Whole-life Cost & Value Optimisation	H	2.02 - Capex Evaluation	61.6%	61.6%	64.6%	Y	64.6%
	9 - Resourcing Strategy & Optimisation	H	3.04 - Resource & Outage Management	64.2%	64.2%	65.1%	Y	65.1%
	10 - Shutdown & Outage Optimisation	H	3.04 - Resource & Outage Management	64.2%	64.2%	55.7%	N	64.2%
	11 - Ageing Assets Strategy	L	No equivalent		48.5%	48.5%	N	48.5%
	12 - Technical Standards & Legislation	L	No equivalent		65.8%	65.8%	N	65.8%

Group	39 Subjects	Priority	23 Activities	AMCL Roadmap Target for End of CP4 (Mar 2014)	AMCL Roadmap Target for End of CP4 (Mar 2014) (Mapped)	NR as assessed 2013 SBP	End of CP4 Target Exceeded?	Assumed Target for Entry CP5 (Mar 2014)
Lifecycle Delivery Activities	13 - Asset Acquisition & Commissioning	L	3.01 - Asset Creation	88.9%	88.9%	85.7%	N	88.9%
	14 - Systems Engineering	L	3.02 - Systems Engineering	68.9%	68.9%	72.7%	Y	72.7%
	15 - Configuration Management	L	No equivalent		54.2%	54.2%	N	54.2%
	16 - Maintenance Delivery	H	3.03 - Maintenance Delivery	77.4%	77.4%	79.9%	Y	79.9%
	17 - Reliability Engineering	H	No equivalent		79.8%	79.8%	N	79.8%
	18 - Asset Operations	H	No equivalent		65.0%	65.0%	N	65.0%
	19 - Resource Management	H	3.04 - Resource & Outage Management	64.2%	64.2%	56.1%	N	64.2%
	20 - Shutdown & Outage Management	H	3.04 - Resource & Outage Management	64.2%	64.2%	55.8%	N	64.2%
	21 - Fault & Incident Response	H	3.05 - Incident Response	78.1%	78.1%	79.7%	Y	79.7%
	22 - Asset Rationalisation & Disposal	L	3.06 - Asset Rationalisation & Disposal	56.1%	56.1%	54.0%	N	56.1%
Asset Knowledge Enablers	23 - Asset Information Strategy	H	4.01 - Asset Information Strategy & Standards	78.3%	78.3%	81.7%	Y	81.7%
	24 - Asset Knowledge Standards	H	No equivalent		66.9%	66.9%	N	66.9%
	25 - Asset Information Systems	H	4.02 - Asset Information Systems	62.6%	62.6%	56.4%	N	62.6%
	26 - Asset Data & Knowledge	H	4.03 - Asset Knowledge & Data	60.7%	60.7%	52.5%	N	60.7%

Group	39 Subjects	Priority	23 Activities	AMCL Roadmap Target for End of CP4 (Mar 2014)	AMCL Roadmap Target for End of CP4 (Mar 2014) (Mapped)	NR as assessed 2013 SBP	End of CP4 Target Exceeded?	Assumed Target for Entry CP5 (Mar 2014)
Organisation & People Enablers	27 - Contract & Supplier Management	H	5.01 - Contract & Supply Management	73.5%	73.5%	71.7%	N	73.5%
	28 - Asset Management Leadership	H	No equivalent		72.6%	72.6%	N	72.6%
	29 - Organisational Structure & Culture	H	5.02 - Organisational Structure & Culture	70.1%	70.1%	59.4%	N	70.1%
	30 - Competence & Behaviour	H	5.03 - Individual Competence & Behaviour	77.1%	77.1%	66.6%	N	77.1%

Group	39 Subjects	Priority	23 Activities	AMCL Roadmap Target for End of CP4 (Mar 2014)	AMCL Roadmap Target for End of CP4 (Mar 2014) (Mapped)	NR as assessed 2013 SBP	End of CP4 Target Exceeded?	Assumed Target for Entry CP5 (Mar 2014)
Risk & Review	31 - Criticality, Risk Assessment & Management	H	6.01 - Risk Assessment & Management	76.9%	76.9%	75.2%	N	76.9%
	32 - Contingency Planning & Resilience Analysis	H	No equivalent		63.9%	63.9%	N	63.9%
	33 - Sustainable Development	H	6.02 - Sustainable Development	48.8%	48.8%	52.5%	Y	52.5%
	34 - Weather & Climate Change	H	6.03 - Weather & Climate Change	48.1%	48.1%	52.0%	Y	52.0%
	35 - Asset & Systems Change Management	L	No equivalent		53.2%	53.2%	N	53.2%
	36 - Assets & Systems Performance & Health Monitoring	L	No equivalent		66.1%	66.1%	N	66.1%
	37 - Management Review, Audit & Assurance	H	6.04 - Review & Audit	69.6%	69.6%	62.7%	N	69.6%
	38 - Accounting Practices	H	2.03 - Asset Costing & Accounting	66.8%	66.8%	59.7%	N	66.8%
	39 - Stakeholder Relations	L	No equivalent		62.9%	62.9%	N	62.9%

Table 12: Start of CP5 Start Positions

7.4 Proposed CP5 Trajectories

The full set of proposed CP5 trajectories by AMEM Group can be seen in Table 13 on the following page and graphically in Appendix I. A graphical representation of the overall proposed CP5 trajectory can be seen in Figure 11 on the following page. The following two points should be noted about the presentation of these proposed 'cap and collar' trajectory ranges and targets:

1. AMCL has provided trajectory information developed in line with the Phase 1 methodology. It is AMCL's view that any specific trajectory that falls within the 'cap and collar' ranges identified will arguably meet Network Rail's and the ORR's objective for excellence in Asset Management. The proposed ranges and the mid-point lines are therefore provided as a starting point for Network Rail and ORR to utilise how they wish in order to agree targets and measurement approaches.
2. The proposed trajectories are based on the '39 Subjects' version of Network Rail's SBP AMEM Assessment results, and as such the 'NR as assessed 2013 SBP' averaged Group scores shown in the second column of Table 13 differ from those calculated from the usual '23 Activities' version of the results, which are reported in the main assessment report. This does not mean that the underlying scores are different, only that the methodology chosen by the ORR to average at the Group level produces different results when applied to '23 Activities' or '39 Subjects'. This methodology averaged the rounded '23 Activities' assessment scores within each Group, rather than the question-level scores within each Group. For consistency, all Group level trajectories have been calculated using this approach.

	Assumed Target for Entry CP5 (Mar 2014)	Proposed Target for CP5 IIP (Jan 2016)	Proposed Target for CP5 SBP (Jan 2018)	Proposed Target for End of CP5 (Mar 2019)
1 - Asset Management Strategy & Planning	66.8%	71.2%	73.2%	75.2%
2 - Asset Management Decision-Making	63.6%	67.1%	70.6%	72.6%
3 - Lifecycle Delivery Activities	70.5%	72.2%	73.9%	74.8%
4 - Asset Knowledge Enablers	68.3%	72.4%	74.8%	76.9%
5 - Organisation & People Enablers	73.3%	74.8%	75.5%	76.0%
6 - Risk & Review	62.7%	66.6%	69.8%	72.2%
Overall AMCL Proposed Trajectory	67.5%	70.7%	73.0%	74.6%

Table 13: Proposed CP5 Trajectories by Group

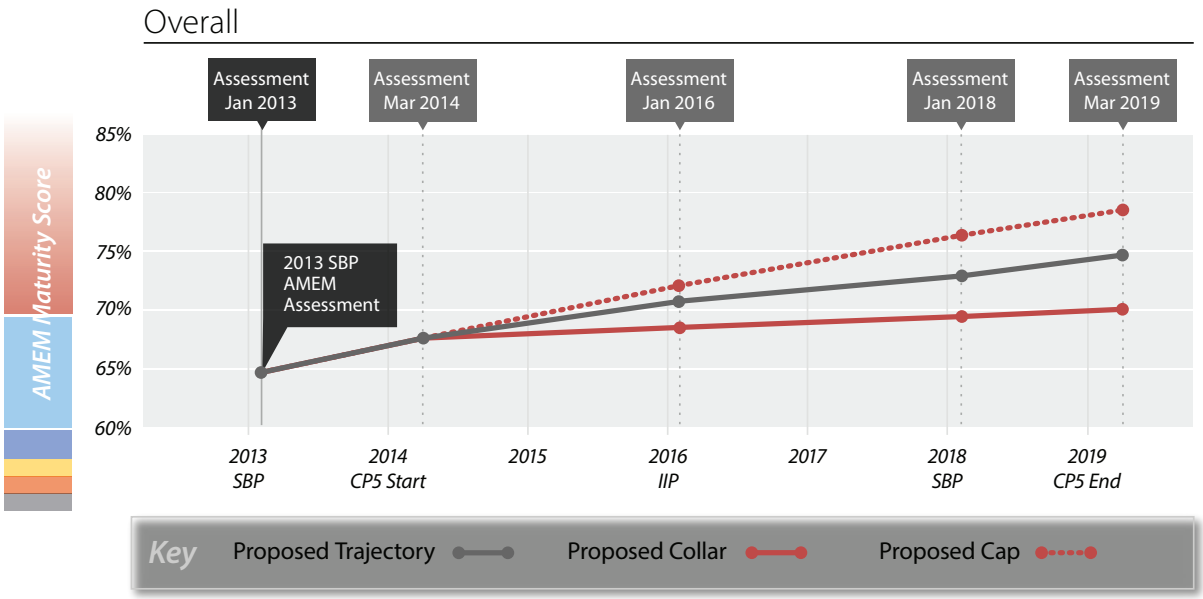

Figure 11: Overall Proposed CP5 Trajectory

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8 Conclusions and Recommendations

This report has presented the findings of a review to assess the likelihood of Network Rail achieving its end of CP4 Asset Management maturity targets, as agreed between the ORR and Network Rail Boards in January 2011. In addition to this, commentary has been included to relate the findings of the SBP AMEM assessment to the quality of Network Rail's SBP and the potential for identifying further efficiencies.

The conclusion is that Network Rail is highly likely to achieve target in two of the six AMEM Groups, with a medium confidence in a further three, and a low confidence in one, as shown in Table 14 below.

	AMCL Roadmap Target for SBP	NR as assessed at SBP	AMCL Roadmap Target for End of CP4	Confidence of achieving AMCL Roadmap Target for End of CP4
1 - Strategy & Planning	64.7%	65.8%	67.3%	High Confidence
2 - Whole-life Cost Justification	59.7%	58.7%	63.5%	Medium Confidence
3 - Lifecycle Delivery	70.5%	69.2%	72.3%	Medium Confidence
4 - Asset Knowledge	63.5%	60.7%	67.2%	Medium Confidence
5 - Organisation & People	71.1%	67.3%	73.6%	Low Confidence
6 - Risk & Review	58.1%	60.8%	60.8%	High Confidence

Table 14: Confidence of Network Rail achieving agreed End of CP4 Asset Management maturity targets

It is recommended that Network Rail review the findings of this report and for each AMEM Activity and its related AMCL Roadmap Capabilities and:

- Defines the importance of the Activity and its related AMCL Roadmap Capabilities to Network Rail's current plans to determine if further action is merited, or to accept that progress is going to be slower than originally anticipated in some areas.
- Based on the information in this report, and the assessment of priority defined above, defines appropriate actions to update its own AMIP to accelerate progress against or otherwise mitigate any shortfalls.
- Where mitigations have been identified review these with AMCL and incorporate them into Network Rail's AMIP as appropriate.

In addition to this, the report has presented some benchmarking information sourced from the AMEM database, and a proposed set of trajectories for Network Rail for CP5, which have been developed in accordance with the methodology agreed during Phase 1 of this work. From these activities, it is recommended that:

- Network Rail incorporates the benchmark analysis into a broader assessment of good Asset Management industry practice to help identify organisations that could be approached to agree mutually beneficial sharing of approaches.
- Network Rail and the ORR use the proposed CP5 'cap and collar' ranges and trajectories as the basis of a new agreement for CP5, and utilise the principles for assessment set out in Section 7.2 of this report to develop and agree the assessment approach.

Appendix A
RAG Analysis by Roadmap Capability

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Policy & Strategy	1.1	Asset Management System	G	G	None	G	G
Policy & Strategy	1.2	Asset Management Policy	G	G	None		
Policy & Strategy	1.3	Asset Management Strategy	A	G	Asset Management Strategy requires full alignment to Improvement Specification before authorisation.		
Policy & Strategy	1.4	Asset Stewardship Report	G	G	None		
Policy & Strategy	1.5	CP5 Asset Management Capabilities	G	G	None		
Demand Analysis	1.6	Long-term Demand Projections	G	A	Revision of the LTPP means the RUS documentation is now superseded.	A	G
Demand Analysis	1.7	Route Specifications	A	A	It is not clear that Route Specifications will be revised by the end of CP4.		

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Strategic Planning	1.8	Strategic Planning Framework and Process	G	G	None	G	G
Strategic Planning	1.9	Strategic Business Model	A	A	It is not currently clear that the Tier 1 model will be revised, as identified by the Roadmap, by the end of CP4.		
Strategic Planning	1.10	Network Strategic Asset Management Plan	G	G	None		
Strategic Planning	1.11	Quantified Risk Assessment	G	G	None		
AMPs	1.12	Route AMPs	G	G	None	G	Y

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Opex Evaluation	2.1	Maintenance Criticality Analysis	G	G	None	A	Y
Opex Evaluation	2.2	Maintenance Strategy	A	A	The Maintenance Strategy will not be revised within the timescale specified (February 2013) and is considered to require a more fundamental review with respect to the maintenance requirements analysis process.		
Opex Evaluation	2.3	Maintenance Requirements Analysis Process	A	R	A revised cost-risk optimised maintenance analysis process is required prior to the end of CP4 which aligns with the revised Maintenance Strategy.		
Opex Evaluation	2.4	Maintenance Analysis Plan	A	R	Network Rail plans for the current process will need to be aligned with the revised Maintenance Strategy and maintenance requirements analysis process.		
Opex Evaluation	2.5	Risk-based Maintenance Analysis	R	R	Network Rail's current process for optimising maintenance regimes does not include extensive application of quantified cost-risk optimisation until CP6.		
Opex Evaluation	2.6	Maintenance Standards	R	A	Relevant standards may have been updated by the End of CP4, but the content may not meet Improvement Specification requirements for Capabilities 2.3, 2.4 and 2.5.		
Opex Evaluation	2.7	Maintenance Implementation Plan	A	R	Network Rail plans for the current process will need to be aligned with the revised Maintenance Strategy and maintenance requirements analysis process.		

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Unit Costs	2.8	Maintenance Unit Costs	G	G	None	G	Y
Capex Evaluation	2.9	Capex Criticality Analysis	G	G	None	G	G
Capex Evaluation	2.1	Asset Policy and DST Deployment Strategy	G	G	None		
Capex Evaluation	2.11	Asset Policy Scenarios	N/A	N/A	None		
Capex Evaluation	2.12	Asset Policies - Renewal & Enhancement	G	G	None		
Capex Evaluation	2.13	Asset Policy Monitoring & Evaluation	G	G	None		
Capex Evaluation	2.14	Asset Policy Communication	G	G	None		
Capex Evaluation	2.15	Decision Support Tools	G	G	None		
Unit Costs	2.16	Renewal Unit costs	A	A	Network Rail needs to resolve the differences between definitions used for different purposes and to embed continual improvement and to test assumptions.	A	Y

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Asset Creation	3.1	Programme Management Methodology	A	R	The revised programme and project management methodology has not yet been defined.	A	G
Asset Creation	3.2	Project Handback	A	G	No specific risks identified, although a clear baseline and target still requires defining.		
Asset Creation	3.3	Alignment with Asset Management Plan	G	G	None		
Systems Engineering	3.4	RAMS Requirements	A	A	AMIP defined but requires specific reference to BSEN 50126.	A	Y
Systems Engineering	3.5	Reliability & Availability Modelling	A	A	AMIP defined but requires clear linkage to Asset Policy development.		
Maintenance Delivery	3.6	Handheld Devices	A	A	Handheld devices are being deployed but exact scope and timescales are not clear.	A	Y
Maintenance Delivery	3.7	Maintenance Tolerances	R	R	It is very unlikely this will be achieved until Roadmap Capabilities 2.2 to 2.6 are completed.		
Resource & Outage Management	3.8	Long-term Resource Forecasting	N/A	N/A	None	A	G
Resource & Outage Management	3.9	Continuous Improvement of Resource Planning	A	A	Clarity on roles and responsibilities, expressed in a replacement for NR/L3/ NDS/302, is required.		

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Incident Response	3.1	Root Cause Analysis	G	G	None	G	G
Asset Rationalisation & Disposal	3.11	Asset Rationalisation	G	G	None	G	G
Asset Information Strategy & Standards	4.1	Asset Information Strategy Alignment	G	G	None	G	G
Asset Information Strategy & Standards	4.2	Asset Information Specification Process	A	G	The Asset Information Specification process is defined and in use. It should be possible to produce RACI matrices for the devolved organisation in the time available.		
Asset Information Strategy & Standards	4.3	Data Dictionary	A	G	Although sign-off for the Track dataset was delayed it should be possible for all datasets to be produced by April 2014.		
Asset Data & Knowledge	4.4	Asset Information Plan	A	G	The requirements of the Asset Information Plan in the devolved organisation need to be defined and communicated.	A	Y
Asset Data & Knowledge	4.5	Data Confidence Assessment	A	G	The results of the Arup review will help clarify the current position and likely April 2014 outcome in more detail.		
Asset Data & Knowledge	4.6	Asset Data Management	A	G	A process will be in place and operating but not with full coverage of all asset types and systems, and audit and assurance roles need to be clarified with the Routes.		

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Asset Information Systems	4.7	Asset Information Systems	G	A	Strengthening of the Design Authority is being undertaken to help recover the timescales, but implementation milestones are still likely to move out beyond the CP4 target.	A	A
Individual Competence & Behaviour	5.1	Asset Management Competence Requirements	A	A	Role profiles and outcomes relating to role profiles cannot be embedded in the timescales originally envisaged.	A	G
Individual Competence & Behaviour	5.2	Asset Management Training	A	A	Training and development plans are linked to 5.1 and are therefore behind schedule.		
Organisational Structure & Culture	5.3	Alignment of Asset Management Teams	A	A	Alignment of team to individual competences is linked to 5.1 and are therefore behind schedule.	A	Y
Organisational Structure & Culture	5.4	Strategic Oversight of AM competences	G	A	Tools for the monitoring of competences are behind schedule, and the monitoring of "in-stock" competence in particular may be hampered by the technical competence framework issue.		
Organisational Structure & Culture	5.5	Asset Management Culture	A	R	Development work towards culture change management programme and migration strategy has been undertaken but only a high level gap analysis of culture has been completed to date.		

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Contract & Supply management	5.6	Contract Performance Assessment	G	A	Performance indicators are in place but may not be reviewed quickly enough to meet all Improvement Specification timescales.	A	G
Contract & Supply management	5.7	Contract initiation	G	A	Monitoring the percentage of contracts assessed against standards is achievable, but performance monitoring against the required standards for all contracts may be challenging.		
Risk Assessment & Management	6.1	Integrating Asset and Risk Management	A	A	Alignment of IRM and top-down ERM processes needs to be accelerated and clarified by end of CP4 to fully achieve target.	A	G
Sustainable Development	6.2	Sustainability Strategy	G	G	None	G	G
Weather & Climate Change	6.3	Climate Change Adaptation & Mitigation	G	G	None	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	Scope RAG	Deliver ability RAG (End CP4)	Comments	AMCL Consolidated RAG	NR 'Forecast vs. Trajectory RAG
Review & Audit	6.4	Asset Management System Review	A	G	None	A	Y
Review & Audit	6.5	Asset Management System Audit	A	A	The lack of a single corporate assurance framework may affect Network Rail's ability to feed findings into the overall Asset Management System review.		
Review & Audit	6.6	Engineering Verification	G	A	Completion of Engineering Verification Review may affect Network Rail's ability to feed findings into the overall Asset Management System review.		
Review & Audit	6.7	Capability, Stewardship & Performance KPIs	A	G	Definitions are agreed and in place, however improvements to KPI histories and projections to demonstrate impacts of Delivery Plan activities are required.		
Review & Audit	6.8	Benchmarking	G	G	None		

Appendix B
Strategy & Planning Group Validation

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Policy & Strategy	1.1	Asset Management System	The Systems, Process and Monitoring Document fully describes the Asset Management System	The Systems, Process and Monitoring document includes: 1. A description of Network Rail's Asset Management System, boundaries and interfaces 2. A high-level process definition of the Asset Management System 3. A high-level description of how Network Rail meets each of the requirements of BSI PAS 55 4. Key RACIs and mapping 5. An explanation of the interfaces between the Centre and the Routes	The Systems, Process and Monitoring document has been completed and an implementation plan is in place by April 2012	This capability has been achieved. The 'Asset Management System' document (Issue 1), supported by the Devolution Handbook and a detailed RACI (which also appears as an appendix in the 'Asset Management System' document) have been developed.	The Systems, Process and Monitoring document has been updated based on lessons learned from the SBP and from the issue of ISO 55000 by December 2013	No specific risks identified.	G	G
Policy & Strategy	1.2	Asset Management Policy	An Asset Management Policy is in place that incorporates the learning from the IIP development process and emerging good practice.	The Asset Management Policy is enhanced to include: 1. The additional statements of principle to cover the following: a. The capability to consider different scenarios to enable the whole-life costs and risks of different funding and output scenarios to be articulated b. Assessing the trade-off between efficiency of work delivery through longer possessions and access of the network to customers to deliver the timetable c. Work delivery activities will always be undertaken in accordance with the Asset policies including appropriate feedback where it is found that these Asset Policies are not practical or optimal 2. Explicit reference to other corporate policies and strategies; and 3. Clearly defined consistent terminology for all aspects of the Asset Management System. In addition criteria should be defined against which the Asset Management Policy will be evaluated to assure effectiveness and compatibility with business objectives.	1. The Asset Management Policy has been updated based on Independent Reporter recommendations and lessons learned from the IIP submission and a draft is in place by April 2012. 2. The updated Asset Management Policy has been signed-off by appropriate Director(s) and it can be demonstrated that it has been effectively implemented and integrated into the wider Asset Management system by January 2013	This capability has been partially achieved. The draft Asset Management Policy is currently with the Network Rail Executive Board for sign-off. The content has been reviewed by the assessment team, and meets the Improvement Specification with the exception of 1c, where a clear commitment does not appear to have been made. The new Asset Management Policy will therefore be late in meeting the second Roadmap Success Criterion.	The Asset Management Policy has been evaluated against the defined evaluation criteria, the lessons learned from the SBP submission and from the issue of ISO 55000. It has been updated and signed-off accordingly by March 2014	No specific risks identified assuming swift publication of Asset Management Policy.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Policy & Strategy	1.3	Asset Management Strategy	An Asset Management Strategy is in place that incorporates the learning from the IIP development process and emerging good practice.	The Asset Management Strategy is enhanced to include: 1. A better explanation of how the Asset Management Strategy has taken account of the principles in the Asset Management Policy and the linkage between these principles and the objectives in the Asset Management Strategy 2. A clear definition of the Asset Groups that described how the infrastructure is divided up for the purposes of Asset Policy and Route AMP development 3. The inclusion of measureable Asset Management objectives in the Asset Management Strategy and better referencing to show how these objectives link to the asset discipline specific objectives in the Asset Policies 4. Reference to and alignment with the strategic Asset Management framework and process (see capability 1.8) 5. An explanation of how the Asset Management Strategy is intended to work in terms of responsibilities in the Centre and the Routes 6. An overview of the updated workstreams for the AMIP that will deliver the end of CP4 AMCL Roadmap trajectory for the 23 AMEM activities	1. The Asset Management Strategy has been enhanced based on Independent Reporter recommendations and the wider lessons learned from the IIP submission and a draft is in place by April 2012. 2. The updated Asset Management Strategy had been signed-off by appropriate Director(s) and it can be demonstrated that it has been effectively implemented and integrated into the wider Asset Management system by January 2013	This capability has been partially achieved. As with the Asset Management Policy the Asset Management Strategy is in draft. The state of this draft is far more basic than for the Asset Management Policy, and the assessment team do not consider it to be a document that is ready for final review and sign-off. However, it is clear from the work completed so far that all the elements required from the Improvement Specification will be in place, and aligned to the current SBP documentation suite. The new Asset Management Strategy will therefore also be late in meeting the second Roadmap Success Criterion.	The Asset Management Strategy has been evaluated against the defined Asset Management objectives, the lessons learned from the SBP submission and from the issue of ISO 55000. It has been updated and signed-off accordingly by March 2014	No specific risks identified assuming swift alignment of content and publication of Asset Management Strategy.	A	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Policy & Strategy	1.4	Asset Stewardship Report	The 2012/13 CSR, or other similar publication, contains a section on Asset Stewardship that describes the 'state of the nation' of Network Rail's Infrastructure	Network Rail should further develop the section on Asset Stewardship in its Corporate Responsibility Report, or other similar publication, to include the following: 1. A summary of Network Rail's Asset Management principles to demonstrate that these are aligned with the long-term interests of customers and stakeholders; 2. A brief report on the 'state of the nation' of Network Rail's assets and how Network Rail's stewardship will ensure the infrastructure capability required by Network Rail's customers will be delivered in a sustainable manner; 3. An overview of Network Rail's Asset Management strategy and objectives to show how Network Rail is sustainably reducing the costs of ownership of its infrastructure assets whilst continuing to deliver the required level of service and risk; 4. An explanation of how Network Rail's sustainable development objectives and activities are supporting the overall Asset Management approach; 5. An overview of how Network Rail is developing the competence of its people to develop and deliver more effective asset stewardship of Network Rail's infrastructure.	The 2012/13 CSR, or other equivalent publication, includes an expanded section on Asset Stewardship as specified	This capability has been achieved. Network Rail has not issued a new CRR since 2011, but this capability has been covered by the SBPT232 Asset Output Measures Summary (or Asset Stewardship Summary). Many of the Improvement Specification requirements are also fulfilled in the detail of the SBP and supporting documentation.	The 2013/14 CSR, or other equivalent publication, has been updated to reflect changes in Network Rail's Asset Stewardship since the SBP submission	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Policy & Strategy	1.5	CP5 Asset Management Capabilities	A forecast is in place for the Asset Management capability maturity of Network Rail's Asset Management system at the end of CP5 and a corresponding Asset Management Improvement Plan has been identified	Asset Management capability maturity forecasts are identified for each of the activities within Network Rail's Asset Management System for the end of CP5 that will be necessary to deliver in order to '*provide the benchmark against which organisations throughout the world assess their own asset management capabilities' [extract from Network Rail 2011 Asset Policy].* These forecasts are expressed as a percentage maturity on an agreed maturity scale. The Asset Management capability maturity forecasts will be compared to peer organisations in both the rail sector and in other asset intensive industries to ensure the targets are comparable with its peers. Fully funded and costed improvement projects will be identified that will deliver the required improvements in Asset Management capability by the required dates. Customers and other stakeholders will be consulted on these plans to ensure they adequately reflect the priorities facing the UK rail industry. Appropriate arrangements are implemented to ensure Network Rail can demonstrate achievement of these Asset Management capability maturity targets throughout CP5 by using an Independent Reporter or equivalent independent assessor.	Asset Management capability maturity forecasts are identified for the 23 AMEM Activities for the end of CP5 and a draft Asset Management Improvement Plan to deliver these forecasts is in place by January 2013	This capability has been achieved, subject to Activity trajectories being agreed as part of Phase 1. Network Rail has set out in its 'Asset management Capability' document how it goes about measuring and improving its Asset Management capabilities. It has not yet defined capability maturity forecasts for CP5, although these are in the process of being developed in conjunction with AMCL.	Asset Management capability maturity forecasts are identified for all 23 AMEM activities for the end of CP5 and a fully funded Asset Management Improvement Plan to deliver these forecasts is in place by March 2014	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Demand Analysis	1.6	Long-term Demand Projections	Demand analysis is used to predict the range of expected capacity requirements for each route for 30 years and RUSs updated accordingly	The long-term planning process is clearly defined, with a good understanding of historical demand and the drivers of demand are documented with the relevant information stored and accessible. The Network RUS will clearly inform the Scenario Planning process. Bespoke demand forecasting tools are developed from the requirements identified during the Scenario Planning process. The RUS for each Route reflects the long-term demand and the requirements for infrastructure enhancement to deliver this demand.	Ranges in demand for the next 30 years are defined and options for the infrastructure required to meet this demand are documented in the RUS for each Route by December 2012	This capability has been achieved. Network Rail has firmly established itself at the centre of the LTPP, and is developing the process along with all stakeholders. All RUSs have been completed. As part of the LTPP revision, the RUS structure has effectively been clarified through the creation of 'Market', 'Geographic' and 'Cross Boundary' studies and bespoke tools have been and continue to be developed to support demand forecasting. The Network RUS is fully scenario-based, however this remains constrained to the long-distance / high-speed market.	The RUSs are updated where necessary by December 2013 to reflect any changes in demand or policy since the SBP	RUS publication is dependent on the agreed timetable and revisions to the LTPP process which will eliminate RUS documents as they are currently defined.	G	A
Demand Analysis	1.7	Route Specifications	Route Specifications are in place for all Routes that define the infrastructure requirements for CP5 in terms of capability, capability, availability and minutes delay	Route Specifications include the following elements which are derived from the requirements set out in the HLOS: 1. Target infrastructure minutes delay 2. Capacity requirements of the infrastructure including headway and timetable 3. Required capability of the infrastructure including gauge, line speed and bridge strength 4. Infrastructure availability including allowance for possessions	The Route Specifications are updated to reflect the requirements of the HLOS and are integrated into the Route AMP development process by September 2012	This capability has been achieved, with minor deficiencies. All Route Specifications have now been published, and include all the Improvement Specification requirements with the exception of target minutes delay and detail on possessions, although basic timetable information is provided.	The Route Specifications are updated by December 2013 to reflect any constraints on Network Rail's ability to deliver the HLOS as a result of the CP5 determination	There are no known plans to update the Route Specifications by December 2013.	A	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Strategic Planning	1.8	Strategic Planning Framework and Process	Network Rail's strategic Asset Management planning framework and process is implemented	The strategic Asset Management planning framework and process considers: 1. Clear alignment with the Systems, Process and Monitoring document showing 'line of sight' from SBP to Asset Policies, Route AMPs and Delivery Plans 2. How the difference processes, asset information, models and plans are linked 3. The appropriate method to develop work volumes, cost schedules and output measures for different types of asset, where necessary, taking into account asset criticality 4. How demand analysis and required outputs are considered and modelled in the development of the strategic Asset Management Plan 5. How work volumes and costs are developed for different funding scenarios to reflect potential changes in demand, output requirements and available funding. 6. How confidence levels in asset information, and asset policies and unit costs will be considered and how this will the impact on the confidence levels in work volumes and costs 7. The extent to which each component of the framework will be developed and integrated by the time the SBP is published.	1. The strategic Asset Management planning framework and process is fully defined and effectively implemented by April 2012 2. Funding scenarios are agreed by June 2012	This capability has been achieved. Network Rail has developed a strategic Asset Management planning framework, although the detailed process to deliver that framework is effectively being refined as it is implemented. A summary of this process can be found in the 'Renewals Expenditure Summary' document. The development and deployment of Asset Policies, underpinned by Tier 2 models are fundamental elements. This framework and associated processes have been applied in an iterative manner to create the work volumes and costs found in the SBP, and these were created through two-way engagement between the Centre and the Routes. This process was less well defined, but appears to have produced the agreed funding scenarios which underpin the SBP. See main text in this section for a fuller assessment.	The strategic Asset Management planning framework and process has been updated to reflect lessons learned from the SBP by December 2013	No specific risks identified.	G	G
Strategic Planning	1.9	Strategic Business Model	A strategic business model is in place for producing CP5 work volumes and costs	The strategic business model that is used for determining CP5 work volumes has the following capabilities: 1. Able to predict work volumes and costs for all enhancement, renewal and maintenance activities in CP5 for the agreed funding scenarios 2. Work volumes are derived from the application of the asset policies to the asset populations 3. Work volumes and costs for high criticality assets are based on whole-life cost modelling with interfaces to Tier 2 models 4. Work volumes and costs for medium criticality assets are based on service life relationships 5. Work volumes and costs for low criticality assets are based on historical spend 6. Predicts key outputs for CP5 and future control periods	The strategic business model is implemented with the specified capabilities by September 2012 in order to produce the SBP for the agreed funding scenarios	This capability has been achieved. The strategic business model is made up of the ICM/Tier 1 and Tier 2 models. These are at varying levels of maturity across the asset disciplines, but in general criticality is applied to the asset types within a discipline and this criticality guides the sophistication of the modelling approach. See main text in this section for a fuller assessment.	The strategic business model is updated based on lessons learned from the SBP by December 2013 in order to produce the CP5 Delivery Plan	There are no known plans to update the strategic business model by December 2013.	A	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Strategic Planning	1.10	Network Strategic Asset Management Plan	A Network-wide Strategic Asset Management Plan is in place that defines the long-term Asset Management activities and expected outputs across Network Rail's infrastructure	The network-wide Strategic Asset Management Plan includes: 1. Work volumes and costs for each key activity and each key asset type for each funding scenario; 2. A preferred scenario that delivers the required CP5 outputs for the lowest sustainable whole life costs; 3. Confidence levels in both work volumes and costs over the next 25 years reflecting the levels of confidence in the Asset Information, Asset Policies and Units Costs 4. An appropriate level of detail and level of confidence to reflect the criticality of the different activities and asset types; 5. A summary of the asset portfolio and its service condition and age profile, including historical changes over the last 10 years and the predicted changes to this condition and age profile over the next 25 years; 6. The expected outputs and performance that will be delivered by the work defined within each scenario over the next 25 years; 7. The metrics and performance inductors that will be used to monitor these outputs and performance measures; 8. The expected efficiencies that will be delivered over CP5 clearly differentiating between work scope efficiencies from unit costs efficiencies; 9. Different scenarios to reflect different assumptions relating to demand, output requirements and available funding.	The network-wide Strategic Asset Management Plan is issued as part of the SBP in January 2013	This capability has been achieved, with minor deficiencies.. The SBP documentation fulfils the requirements of this capability, with the main 'SBP for England & Wales' and 'SBP for Scotland' being the primary documents. Not all the requirements of the Improvement Specification are contained in the primary SBP documents, but see main text in this section for a fuller assessment.	The network-wide CP5 Delivery Plan is issued in March 2014 which includes: 1. Work volumes and costs for all enhancement, renewal and maintenance activities that reflect the CP5 Determination 2. An explanation of why the work volumes have changed since the CP4 Delivery Plan(s) and the CP5 SBP 3. Expected outputs for each year of CP5 and alignment with HLOS and Route Specifications	No specific risks identified.	G	G
Strategic Planning	1.11	Quantified Risk Assessment	A Quantified Risk Assessment is in place that provides confidence levels for both the work volumes and costs in the network-wide Strategic Asset Management Plan	The QRA analysis should be allow the following to be produced: 1. Target level of confidence to reflect the criticality of the different activities and asset types 2. The levels of confidence in the Asset Information, Asset Policies and Units Costs used to produce the Strategic Asset Management Plan 3. Confidence levels in work volumes and costs (including efficiency assumptions) over CP5 reflecting the levels of confidence in the Asset Information, Asset Policies and Units Costs 4. Sensitivity Analysis showing the greatest contributors to uncertainty in work volumes and costs over CP5 5. An estimate of the confidence levels in both work volumes and costs in CP5	QRA is submitted as part of the SBP in January 2013	This capability has been achieved. The QRA was published with the SBP in three main documents: 'SBPT3297 Uncertainty Analysis Overall Summary', 'SBPT3283 Uncertainty Analysis Stage 1', and 'SBPT3296 Uncertainty Analysis Stages 2 and 3'. These documents fulfil the requirements of the Improvement Specification.	QRA is updated to reflect the confidence levels in the CP5 Delivery Plan in March 2014	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
AMPs	1.12	Route AMPs	Route AMPs are in place for all Network Rail's Routes which include expected work volumes, costs and expected outputs for each year of CP5	Route Asset Management Plans are in place that contain: 1. All proposed enhancement, renewal, refurbishment and maintenance activities throughout the remainder of CP4 and CP5 2. Top down (from strategic business model - see capability 1.10) and bottom up work volumes and costs (from delivery units) for each year of CP4 / CP5 for high and medium criticality activity 3. Explanation on how the top down work volumes and costs were derived 4. Costs for low criticality activities for each year of CP4 / CP5 5. Commentary on any discrepancy between top down and bottom up volumes and costs (high and medium criticality) - including discrepancy between proposed activity types 6. Justification for any deviation from Asset Policy 7. Analysis of CP5 proposed work volumes with CP4 work volumes and commentary on key differences 8. Review of historical condition and performance against CP4 targets 9. Predicted condition, performance and other outputs for each year of CP5 and how these align to the requirements defined in the Route Specification In addition, review processes are in place to monitor progress against the Route AMPs during the remainder of CP4 and CP5 and to ensure the plan continues to be aligned with the SBP and CP4 and CP5 Delivery Plan (when published). These review processes require the monitoring of performance and condition compared to the expected outcomes described in the SBP and the Delivery Plans.	Route AMPs are published for each of Network Rail's 10 Routes that contain the specific content by December 2012 that align with the SBP submission	This capability has been achieved. All Route Plans have now been published, and include all the Improvement Specification requirements at a Route level of detail. The level of resolution of work volumes and costs in the Summary Route Plans does not strictly meet the Improvement Specification requirements in this area fully, but there is full supporting documentation. See main text in this section for a fuller assessment.	Route AMPs have been reviewed in accordance with the defined review process and are updated for each of Network Rail's 10 Routes to reflect the CP4 actual delivery against the Delivery Plan and the CP5 determination by March 2014	No specific risks identified.	G	G

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Appendix C
WLC Justification Group (Maintenance) Validation

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Opex Evaluation	2.1	Maintenance Criticality Analysis	A maintenance criticality analysis has been undertaken that prioritises asset types based on maintenance costs and risks	1. The criticality analysis includes consideration of the following annualised costs and risks: • Planned maintenance costs; • Reactive maintenance costs; • Performance costs; • Risk costs; • Operating costs; • Environmental, societal and reputational risks 2. Asset types are categorised into different risk categories, e.g. high, medium or low criticality asset types from a maintenance perspective	The maintenance criticality analysis has been undertaken and documented by March 2012 and is consistent with Network Rail's Risk Management Framework and Asset Policies. A sample of asset types has been identified in each risk category for inclusion in the pilot of the risk-based maintenance analyses programme by March 2012	This capability has been achieved. SBP Capability Statement considered closed against both the asset criticality analysis undertaken in each of the relevant Asset Policies and the detailed prioritisation analysis completed in the 'Optimising Maintenance Regimes' document published as part of the SBP. It should be noted that the work was completed post the date identified in the Roadmap and that there remains a continuing opportunity for better alignment with Network Rail's Risk Management Framework.	The priority asset types for the development of risk-based maintenance regimes up to the end of CP4 have been identified by February 2013	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Opex Evaluation	2.2	Maintenance Strategy	A maintenance strategy is in place detailing the approach to determining risk-based planned maintenance, minimum action and inspection interventions.	A maintenance strategy is in place that includes the following: 1. Definition of the key principles that define Network Rail's approach to maintenance 2. The approach to determining maintenance requirements (including inspection and minimum actions) depending on the criticality and characteristics of deterioration of the different asset types 3. The approach to addressing risk mitigation including appropriate consideration of probability and consequence of failures 4. How technology can support the maintenance strategy including the contribution of Intelligent Infrastructure and remote condition monitoring 5. High-level assessment of the resources, information requirements and competences required to undertake the proposed maintenance requirements analysis 6. The strategy for resourcing both the analysis and implementation of the new maintenance regimes 7. High level business case based on the analysis costs and expected benefits of optimising maintenance regimes 8. The parameters that define what decisions the Routes can make with respect to changing maintenance regimes	The maintenance strategy is complete and effectively directing the development of new maintenance regimes by March 2012	This capability has been partially achieved. This Capability Statement is largely covered by a combination of the SBP Infrastructure Maintenance Strategy, Optimising Maintenance Regimes and the high-level business cases for the Maintenance Efficiencies, such as risk based maintenance. However, there is no overarching Maintenance Strategy which considers the best blend of approaches for relevant asset types, regions, criticalities, etc. There is also a limited, in AMCL's opinion, approach to the consideration of probability and consequences.	The maintenance strategy has been updated based on the lessons learned from the development of risk-based maintenance regimes for the sample asset types within the pilot by February 2013	Revised Maintenance Strategy should combine the two existing documents, include consideration of the most appropriate application of the various maintenance initiatives identified in the SBP, and ensure a cost-risk optimised approach to maintenance regime definition is achieved as efficiently and effectively as possible.	A	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Opex Evaluation	2.3	Maintenance Requirements Analysis Process	A maintenance requirements analysis process is in place that defines the approaches) for developing maintenance regimes for all asset types	The maintenance requirements analysis process for determining the appropriate maintenance and inspection regimes for high, medium and low-criticality asset types considers the following: 1. The steps in the analysis process and how this aligns to the 10 step asset policy process 2. How asset hazards will be identified including appropriate use of FMECA 3. How maintenance and inspection tasks will be identified including the appropriate use of RCM techniques 4. How risks will be identified and evaluated for different maintenance interventions, including appropriate consideration of uncertainty 5. How maintenance and inspection intervals will be set, taking into account the cost- risk trade-off 6. How reliability and safety justification will be undertaken 7. How activities will be packaged into practical work schedules 8. The requirements for implementation of the new inspection and maintenance regimes 9. RACI for the definition of the maintenance regimes and the extent to which the Routes will be able to determine maintenance requirements 10. The asset information requirements to support the maintenance requirements analysis process	The maintenance requirements analysis process is complete by April 2012.	This capability has been partially achieved. Whilst a number of the Capability Statement specification requirements are covered by the Optimising Maintenance Regimes document, it is considered by AMCL that the approach to items 4-8 inclusive are currently too immature to warrant closure.	The maintenance requirements analysis process has been updated based on the lessons learned from the risk-based maintenance analyses of the sample asset types in the pilot by March 2013.	To fully meet the Improvement Specification a revised cost-risk optimised maintenance analysis process is required prior to the end of CP4 which aligns with the revised Maintenance Strategy above.	A	R
Opex Evaluation	2.4	Maintenance Analysis Plan	A resourced plan is in place for the proposed risk-based maintenance analysis activities	A plan is in place that defines the activities and resources necessary for analysing risk-based maintenance regimes that includes: 1. Inclusion of all priority asset types to analyse up to the end of CP4 including those selected for the pilot analysis 2. The justification for the priority asset types 3. The timescales for the analysis to be completed and for the appropriate changes made to standards 4. The resources necessary to undertake the analysis work 5. The competences required to undertake the analysis work 6. Any requirements for training and / or outsourcing to overcome resource or competence shortfalls 7. Any constraints and assumptions	A fully resourced plan for the analysis of the risk-based maintenance regimes for the sample asset types within the pilot is in place by April 2012	This capability has been achieved. This Capability Statement is largely covered by a combination of the SBP Infrastructure Maintenance Strategy and the Optimising Maintenance Regimes and associated programme, although it is still at an early stage of development and implementation.	A fully resourced plan for the analysis of risk-based maintenance regimes for the priority asset types in up to the end of CP4 is in place by March 2013	Network Rail already has well established plans for the current process, however this will need to be aligned with the revised Maintenance Strategy and maintenance requirements analysis process.	A	R

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Opex Evaluation	2.5	Risk-based Maintenance Analysis	Risk-based maintenance regimes have been developed for all appropriate asset types	Risk-based maintenance regimes have been developed in accordance with the maintenance requirements analysis process for all appropriate asset types and the following undertaken: 1. Revised maintenance, inspection and minimum action activities and periodicities are defined 2. Requirements for fitment of Intelligent Infrastructure or other remote monitoring equipment are identified 3. Tolerances and mitigations for missed maintenance are identified 4. Competence requirements for the maintenance activities are identified 5. Spares and tools requirements for the maintenance activities are identified 6. Safety and reliability justification for new regimes are peer reviewed and approved by the appropriate stakeholders. 7. Expected outputs and business benefits from implementation are identified 8. Requirements for implementation are identified	Risk-based maintenance regimes have been developed for the sample of asset types in the pilot by January 2013	This capability has not been achieved. The Barnstaple track pilot documentation shows robust revision of existing standards in line with specific trial requirements, but there is no evidence of quantified cost-risk optimisation.	Risk-based maintenance regimes have been developed for the priority asset types identified in the maintenance analysis plan by January 2014	Network Rail's current process for optimising maintenance regimes does not include extensive application of quantified cost-risk optimisation until CP6.	R	R
Opex Evaluation	2.6	Maintenance Standards	Maintenance standards have been updated and implemented to reflect the new risk-based maintenance regimes	An agreed corporate approach to changing maintenance standards to reflect changes in the revised risk-based maintenance regimes is in place. Relevant maintenance specifications and standards have been updated in accordance with this process and the following undertaken: 1. Peer review to ensure resulting tasks and intervals are consistent with the maintenance requirements analysis process and the safety and reliability justification 2. Changes to standards briefed to internal maintenance personnel 3. Changes to standards briefed to external contractors where appropriate	An agreed corporate approach to the update of standards for new maintenance regimes is in place by January 2013	This capability has been partially achieved. Updated documentation evidenced for Barnstable and other pilots, including peer review and Professional Head review. However, overall updates to standards are at an early stage only and the corporate approach is currently being reviewed (100 Executive Rules) which may impact timescales.	The relevant standards have been updated for the priority asset types identified in the maintenance analysis plan by March 2014	It is possible that relevant standards will have been updated by the End of CP4, however the substance of these changes will not meet Improvement Specification requirements for Capabilities 2.3, 2.4 and 2.5.	R	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Opex Evaluation	2.7	Maintenance Implementation Plan	A resourced plan is in place for the implementation of the new risk-based maintenance regimes	A plan is in place for the implementation of the revised risk-based maintenance regimes which includes the following: 1. Prioritised implementation plan for each Route reflecting local priorities 2. Impact on resources for each Route including changes to competence requirements 3. Changes required to work management systems and schedules 4. Changes to spares and tools requirements 5. Updates to procedures for missed maintenance 6. Plans for implementation of Intelligent Infrastructure or other remote monitoring equipment 7. Arrangements for monitoring the reliability and other outputs and comparing these to assumed outputs	A fully resourced plan for the implementation of the risk-based maintenance regimes for the sample asset types in the pilot is in place by January 2013	This capability has been partially achieved. A fully resourced is in place for the Barnstaple track and other pilots and the wider development programme, but does not yet consider the quantified cost-risk optimisation to achieve risk-based maintenance regimes.	A fully resourced plan for the implementation of the risk-based maintenance regimes for the priority asset types identified in the maintenance analysis plan is in place by March 2014	Network Rail already has well established plans for the current process, however this will need to be aligned with the revised Maintenance Strategy and maintenance requirements analysis process.	A	R
Unit Costs	2.8	Maintenance Unit Costs	Maintenance units costs are specified and captured in a consistent manner	Activity-based maintenance unit costs are specified and captured to a sufficient level of detail to support the analysis of risk-based maintenance requirements. This includes the consideration of which portion of the unit cost is treated as variable and fixed for the purpose of the cost-risk trade-off undertaken as part of the maintenance requirements analysis process.	Maintenance unit costs are available for the sample asset types in the pilot by April 2012	This capability has been achieved. Considered to be closed against the specific SBP Success Criterion in terms of availability of MUCs for the Barnstable and other pilots and as part of the overall opportunity criticality analysis in the Optimising Maintenance Regimes document and further considered at a high-level in the overall RBM Business Case. However, Network Rail will have to continue to review and assure appropriate unit costs are utilised as the programme moves forward. The Routes will also have to continually assure themselves they have sufficient headcount to deliver the revised regimes given the resource based (as opposed to bottom-up) analysis of maintenance costs for SBP. This is further impacted by the identified efficiencies planned and those stretch efficiencies which are not yet defined.	Maintenance unit costs are available for the priority assets types identified in the maintenance analysis plan by April 2013	No specific risks identified.	G	G

Appendix D
WLC Justification Group (Renewal) Validation

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Capex Evaluation	2.9	Capex Criticality Analysis	An asset criticality analysis is in place that categorises Network Rail's asset types into high, medium and low criticality based on whole life costs and risks and categorises asset types into appropriate risk categories across the network	1. The criticality analysis includes consideration of the following annualised costs and risks: • One-off Capex costs; • Renewal costs; • Maintenance costs; • Performance costs; • Operating costs; • Environmental, societal and reputational risk costs 2. Asset types are categorised into different risk categories, e.g. high, medium or low criticality asset types 3. Within an asset type, assets are grouped into risk categories that reflect the criticality of the route or the specific asset criticality 4. 'System' criticality is considered where appropriate to reflect the interdependencies between asset types	1. The Capex criticality analysis has been undertaken and documented by July 2012 and is consistent with Network Rail's Risk Management Framework. 2. The method of grouping assets within an asset type into risk categories has been documented by July 2012	This capability has been achieved. Considered to be closed against the relevant sections of the Asset Policies. However, Network Rail is considered by AMCL to have currently limited consideration/analysis of environmental, societal and reputational costs and the accuracy and demonstrability of maintenance costs are constrained by the resource based costs analyses for SBP. There is also considered to be limited 'system' consideration between asset types in terms of criticality as defined in the Asset Policies. Although it is noted that drainage and S&C are considered in a more system based approach in general.	All assets are allocated to risk categories by March 2014	No specific risks identified.	G	G
Capex Evaluation	2.10	Asset Policy and DST Deployment Strategy	A strategy is in place that defines how the Asset Policies and Decision Support Tools will be deployed across Network Rail's Routes	A strategy has been developed that shows how the Asset Policies and DSTs are to be deployed in the devolved Routes. This will include: 1. The overall vision for how Asset Policies and DSTs will develop to support devolution 2. The use of 'Policy on a Page' for communicating the Asset Policies (see capability 2.14) 3. The extent to which the Routes can identify interventions that vary from those defined in the Asset Policies 4. The extent to which the Routes are engaged in evaluating the outcomes of the Asset Policies (see capability 2.13) 5. The extent to which the Routes will use the DSTs to evaluate asset interventions 6. The way in which lessons learned from the application of Asset Policies and DSTs can be fed back into the Asset Policy development process	A draft strategy is in place by June 2012 that defines how the Asset Policies and Decision Support Tools will be deployed across Network Rail's Routes	This capability has been partially achieved. Network Rail has evidenced a number of development strands and high-level plans but there is no coherent and integrated approach currently documented for further DST deployment.	The Asset Policy and DST deployment strategy has been agreed and is implemented in the Routes by January 2013	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Capex Evaluation	2.11	Asset Policy Scenarios	Funding and technical scenarios that will be evaluated during Asset Policy development are agreed	The funding and technical scenarios are defined for each Asset Policy that consider: 1. Common funding scenarios across the asset groups that align with the requirements in the HLOS 2. Technical scenarios that describe different technology choices, for example the introduction of ERTMS, which may differ by asset group	1. Asset Policy funding and technical scenarios are agreed by June 2011. 2. Revised funding and technical scenarios are agreed after the HLOS publication in August 2012.	This capability has been partially achieved. Technical scenarios are generally considered in the relevant Asset Policies. However, there is a lack of clarity regarding overall funding scenarios considered, with the SBP focusing purely on alignment to HLOS.	None	N/A	N/A	N/A
Capex Evaluation	2.12	Asset Policies - Renewal & Enhancement	Asset Policies for renewal and enhancement interventions contain renewal criteria and preferred choice of asset type (where appropriate) for different risk categories that represent the lowest asset system and whole-life cost and risk.	Asset Policies for renewal and enhancement are developed in a consistent manner across the asset groups in accordance with the 10-step Asset Policy development process and include the following: 1. Consideration of all agreed funding and technical scenarios to reflect different assumptions relating to demand, output requirements and available funding; 2. Different policy options for delivering the scenarios showing the assumptions and constraints applied within the different scenarios; 3. Deterioration and whole-life cost analysis to justify the choice of asset type and renewal criteria to a level appropriate to the criticality of each asset type based on the DSTs (see capability 2.15); 4. Consideration of the whole asset system costs and the interdependencies between asset types; 5. An assessment of the impact of unit cost efficiencies on the preferred policy; 6. The level of confidence for each of the scenarios based on sensitivity analysis and uncertainties in asset information; 7. The specification of asset information requirements that are needed to support Asset Policy development and the justification for this information 8. Evidence that shows the extent to which the interventions contained within the Asset Policies are sustainable; 9. Consideration of the cost implications and other impacts on policy options for the wider industry; 10. Analysis to show the impact on safety, performance, environmental, social and reputational risks; 11. The expected asset condition, age profile and other outputs and the proposed metrics to monitor and evaluate the Asset Policy (see capability 2.13);	1. Asset Policies for renewal and enhancement are segmented by risk category to include the specified improvements by January 2013 for all high and medium criticality asset types. 2. System or route-wide opportunities for further policy enhancement are identified by January 2013.	This capability has been achieved. Considered to be closed against the relevant Asset Policies and associated DSTs.	Asset Policies for renewal and enhancement are segmented by system or route for all high and medium criticality assets and published as part of the CP5 Delivery Plan in March 2014.	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Capex Evaluation	2.13	Asset Policy Monitoring & Evaluation	A monitoring and evaluation process is in place to review the outcomes from the application of Asset Policies and to compare these with the expected outcomes	The monitoring and evaluation process considers the following aspects of the Asset Policies to assess the extent to which the expected outcomes defined in the Asset Policies are being achieved in practice: 1. The expected asset lives; 2. The expected condition of the assets; 3. The expected unit costs of renewal activity; 4. The expected asset reliability and availability; Findings from the evaluation are documented and fed into the Asset Policy development process as required by stage 2 of the 10-stage process	An evaluation of the CP4 Asset Policy expected outcomes has been undertaken for all high criticality asset types by June 2012 and lessons learned incorporated into the CP5 Asset Policy development process	This capability has been achieved. Anticipated outputs for CP5 identified in SBP and longer term via the models. Asset output measures and targets have recently been developed and provided although it is noted that these are at an early stage of development and maturity. The overall process is captured in the new Asset Management System, although again this is also at an early stage of implementation.	An updated regime is in place for monitoring and evaluating the CP5 Asset Policy outcomes by April 2013	No specific risks identified.	G	G
Capex Evaluation	2.14	Asset Policy Communication	An appropriate means of communicating the Asset Policies is in place which has resulted in effective implementation of the Asset Policies	Communication methods have been developed to ensure the Asset Policies can be effectively implemented in accordance with the Asset Policy and DST deployment strategy (see capability 2.10) including:: 1. Appropriate briefing on the purpose and objectives of the Asset Policies 2. Development of 'Policy on a Page' to ensure the Asset Policies can be effectively communicated 3. Guidance on where the Routes can deviate from defined policy options including permitable tolerances 4. Appropriate training and support for the above	Implementation and communication of CP4 Asset Policies is complete and effective from March 2012	This capability has been achieved. Considered complete against the Network Rail identified evidence and through discussions with the Route RAM teams. Clear evidence was provided of extensive communication with HAMs, although no specific dates were identified for the CP4 policy implementation.	Implementation and communication of CP5 Asset Policies is complete and effective from March 2014	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Capex Evaluation	2.15	Decision Support Tools	Decision Support Tools are in place to develop policy options that represent the optimum trade-off for whole life cost and risk for different risk categories and for different funding scenarios.	Appropriate Decision Support Tools have been developed to include the following: 1. Undertake modelling for each asset type in a manner consistent with the Asset Management Framework and Strategic Planning Processes (see capability 1.8) taking into account the criticality of different asset types. 2. Model the costs and risks over the life of each asset type to determine the optimum renewal interventions. 3. Model the trade-off between maintenance and renewal interventions to identify the optimum combination of interventions. 4. Assess the impact of efficiencies and changes in unit cost on the optimum interventions. 5. Assess the impact of different scenarios and policy options on the optimum interventions. 6. Utilise the outputs form the decision support tools as part of the justification for the preferred choice of asset type and interventions define within the Asset Policies for each scenario or policy option. 7. Apply the interventions defined within Asset Policies to Network Rail's asset portfolio to determine work volumes, costs and expected outputs over a minimum of 25 years. 8. Determine confidence levels in these outputs based on the confidence in the asset information and in the interventions defined within the Asset Policies.	Appropriate Decision Support Tools are complete and are being used to inform the CP5 Asset Policy development by June 2012	This capability has been achieved. Considered complete and evidenced by the relevant Asset Policies and Tier 1 and Tier 2 models reviewed as part of Progressive Assurance and during the AMEM Assessment. However, it is noted that the tool development occurred largely simultaneously with the Asset Policy development so the benefits of potentially driving, rather than validating, the Asset Policies from the completed tools may have been constrained.	1. The Decision Support Tools have been deployed within the appropriate teams at the Centre and in the Routes by March 2013 2. An evaluation of the Decision Support Tools with the Routes has been undertaken and documented by September 2013	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Unit Costs	2.16	Renewal Unit costs	Renewal and unit costs are developed to an appropriate level of detail to support the development of Asset Policies and the CP5 SBP.	Activity-based renewal unit costs are specified and captured to a sufficient level of detail to support the whole-life costs analysis within the DSTs and Asset Policies which includes consideration of the following: 1. A specification for renewal unit costs is in place that clearly describes the method of determining the unit costs 2. The cost breakdown structure for capturing renewal unit costs is aligned with the asset definitions and standard work types that are defined in the asset information strategy. 3. The parameters that affect renewal unit costs are analysed and understood. 4. A process for capturing renewal unit costs in accordance with the unit cost specifications has been defined. 5. Confidence levels are estimated for each unit cost which reflect the relative criticality of the activity Activity-based renewal unit costs are used to develop the costs within the Strategic Asset Management Plan and Route AMPs	Renewal unit costs are available for all high criticality asset types by April 2012 at an appropriate level of confidence	This capability has been partially achieved. Clear evidence has been seen of extensive Unit Cost development in order to support SBP, the achievement of efficiencies and the establishment of Framework Contracts, where applicable. However, there is still significant development required to optimise the Unit Costs, with the use of LDRs still frequent and often significant/material in the development of Route Plans for some asset groups. Also, the application of confidence ratings currently appears variable.	Renewal unit costs are available for all high and medium criticality asset types by April 2013 at an appropriate level of confidence	Network Rail needs to resolve the differences between definitions used for different purposes and to continue to improve understanding of levers. It should establish tracking and monitoring process for using CAF data to test assumptions, and the results used to inform uncertainty assumptions.	A	A

Appendix E
Lifecycle Delivery Group Validation

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Asset Creation	3.1	Programme Management Methodology	An overall, scaleable methodology to govern Network Rail's overall programme and project management requirements is in place which applies in whole or in part to any of the engineering disciplines.	An overall, scaleable methodology to govern Network Rail's overall programme and project management requirements is in place which: 1. Builds on the existing GRIP and E2E processes 2. Incorporates appropriate external best practice 3. Defines an appropriate level of control commensurate with the criticality of the programme or project 4. Incorporates an appropriate level of systems engineering commensurate with the complexity of the programme or project 5. Is applicable to all engineering disciplines in whole or in part 6. Is mandated but applied as appropriate according to the required LoC for the project	The revised programme and project management methodology is defined by January 2013.	This capability has not been achieved. Halcrow made similar recommendations at IIP (Report Reference 'Project & Programme Management Capability'). This called for a higher level industry-wide programme management approach which linked final benefits more closely with front-end decision-making.	The revised methodology is implemented and effective by March 2014.	The revised programme and project management methodology has not yet been defined.	A	R
Asset Creation	3.2	Project Handback	Network Rail's projects at LoC 1 and 2 are effectively handed back into maintenance.	1. Handback criteria are clearly defined at the 'Outline Design' stage of the project (GRIP stage 4 or equivalent). 2. These criteria are based on the revised processes introduced in 2011, and are implemented in a consistent and complete fashion for all projects ranked LoC 1 or 2. 3. Handback performance against the criteria are monitored quarterly.	The number of projects handed back in accordance with the handback criteria is established as a baseline measure by December 2012.	This capability has been partially achieved. IP provides a 'live' report of all works at GRIP 3 and GRIP 6 to Asset Management through Delivering Work Within Possessions (DWWP) system. Asset Management have access to the system and can obtain the report at their required timescales.	Network Rail hands back a targeted percentage of projects above its baseline in accordance with the handback criteria by December 2013.	No specific risks identified, although a clear baseline and target still requires defining.	A	G
Asset Creation	3.3	Alignment with Asset Management Plan	The scope and timing of all renewal and enhancement work undertaken is aligned with the Route AMP and Delivery Plan	All renewal and enhancement work is undertaken in accordance with the Route AMP and Delivery Plan, and deviations from these plans are effectively change controlled and justified.	Network Rail can demonstrate that all new start work for SBP is aligned with the Route AMP and Delivery Plan by January 2013 across all Routes.	This capability has been achieved. The alignment to the Route Plans has been demonstrated. The CP5 Delivery Plan has not yet been created, but Network Rail monitors against the CP4 Delivery Plan on a period basis.	Network Rail can demonstrate that work is delivered in accordance with the Route AMP and Delivery Plan, with appropriate change control, by January 2013 across all Routes.	No specific risks identified.	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Systems Engineering	3.4	RAMS Requirements	RAMS requirements management processes proportionate to the complexity of a project are defined and implemented.	A RAMS requirements management process that is aligned with BSEN50126 is in place which is proportionate to the LoC assigned to the project.	A coherent plan which links RAMS analysis, reliability & availability modelling, and the setting of strategic planning targets, is in place by December 2012.	This capability has been achieved. The individual elements are in place, and gaps have been identified. The overall improvement of the management of RAMS requirements within Network Rail is now subject to the AMIP 'Systems Engineering Capability Development' plan.	RAMS requirements management process is defined and implemented in accordance with BSEN 50126 by December 2013.	AMIP defined but requires specific reference to BSEN 50126.	A	A
Systems Engineering	3.5	Reliability & Availability Modelling	Reliability & Availability Modelling is routinely undertaken on significant enhancement projects	The availability and reliability models are, to a level of granularity related to the criticality of an investment decision, able to: 1. Identify and prioritise changes in infrastructure capability necessary to deliver changes in output specification, for example PPM; 2. Analyse enhancement projects, including different design options, to determine their impact on different outputs measures; 3. Quantify the financial benefits of different enhancement projects and to develop more robust business cases; 4. Identify the critical drivers of performance and to prioritise improvement initiatives accordingly; 5. Provide an input to the development of different scenarios within asset policies by identifying preferred designs and choice of technology for given output or funding scenarios.	The reliability and availability models have been used to justify enhancements and learning is fed back into asset policies for high criticality assets by December 2012	This capability has been partially achieved. Evidence was provided of the application of modelling within WCML, CrossRail and Thameslink programmes. However, there is no evidence that learning is being fed back into Asset Policies at the moment. This area is also subject to AMIP 'Systems Engineering Capability Development' plan.	The reliability and availability models have been used to refine the enhancements in the CP5 Delivery Plan as a result of the determination by April 2014	AMIP defined but requires clear linkage to Asset Policy development.	A	A
Maintenance Delivery	3.6	Handheld Devices	Handheld devices are utilised to manage maintenance and inspection activities where the cost is justified.	1. The experience of the Signalling discipline in the use of handheld devices for maintenance and inspection work control management is assessed for the other disciplines. 2. If a business case is evident the use of hand-held devices is extended accordingly.	Business cases for the extension of maintenance and inspection work control management are identified and developed by March 2013.	This capability has partially been achieved. ORBIS has completed a Handheld Device Deployment Analysis which focuses on iPhone and iPad deployment rather than CMMS handhelds, but elements of the benefit are related to maintenance management.	Use of handheld devices for maintenance and inspection work control management is extended according to a fully justified business cases by March 2014.	Handheld devices are being deployed but exact scope and timescales are not clear.	A	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Maintenance Delivery	3.7	Maintenance Tolerances	All engineering disciplines have clear guidance on the tolerance of maintenance and inspection activities and processes in place to manage any exceedences.	1. Each engineering discipline enhances its core maintenance and inspection instructions to include tolerances for critical maintenance and inspection activities, and clear guidance on what to do if these tolerances are exceeded. 2. These revised maintenance and inspection specifications are underpinned by Opex Evaluation analyses.	First tranche of new standards on maintenance and inspection tolerances are developed by December 2012.	This capability has not been achieved, however maintenance backlog is monitored.	Each engineering discipline has issued and effectively implemented the priority new standards on maintenance and inspection tolerances by April 2014.	It is very unlikely this will be achieved until Roadmap Capabilities 2.2 to 2.6 are completed.	R	R
Resource & Outage Management	3.8	Long-term Resource Forecasting	Resource forecasting beyond two years is formalised into a long-term risk-assessed plan.	A long-term resource forecast is developed that informs a range of identified stakeholders and includes: 1. A risk-assessed evaluation of the impact of future resource requirements on the current resource pool 2. An agreed set of actions for ensuring the availability and continuity of resource in the future 3. Agreed and co-ordinated programmes for investment in resources for the future	A 'long-term' resource forecast is in place that informs a range of identified stakeholders by December 2012.	This capability has been achieved. Network Rail is completing a Deliverability Assessment for CP5. There is specific evidence from IP (Head of Programme Integration) and NDS to support this. The approach is WIP but at SBP all key factors and stakeholders have been identified.	None	N/A	N/A	N/A
Resource & Outage Management	3.9	Continuous Improvement of Resource Planning	Resource planning accuracy against work plan is formally reviewed and continuously improved.	NR/L3/NDS/302 is updated to include a formal requirement for the review and update of the possession & resource planning process at a national level, to include: - evaluation of the forecasting accuracy of both access and resources against actual delivery - the effectiveness of the national process in engaging with the Routes to produce, deliver and monitor plans - the development and tracking of recommendations to improve NR/L3/NDS/302 and associated documentation	NR/L3/NDS/302 has been updated to include formal review and update of the possession & resource planning process at a national level by September 2012.	This capability has not been achieved – although it has been superseded. After devolution the responsibilities for NDS were split between NDS and the Routes. NR/L3/NDS/302 has been withdrawn. NDS retains a work instruction (NDS/PLN/LP/070) to govern resource planning. The Director Asset Operations, where the Access Planning Teams now report, covers possession planning.	NR/L3/NDS/302 has been through one formal review cycle by December 2013.	Clarity on roles and responsibilities, expressed in a replacement for NR/L3/NDS/302, is required.	A	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Incident Response	3.10	Root Cause Analysis	Information sufficient for the immediate or subsequent unambiguous identification of root cause of failure is collected and captured in a consistent fashion and utilised to demonstrably improve asset performance.	Infrastructure Control Centres (ICCs), supported by Route staff, capture sufficient information to establish the failure mode for all reported infrastructure incidents to allow root cause analysis. The process should include: 1. Definitions of failure modes that are consistently applied and aligned with the processes underpinning Opex Evaluation (e.g. Failure Modes & Effects Analysis (FMEA) studies) 2. Consistent process for collecting and capturing failure modes and asset ID if applicable for both Route staff (e.g. checklists or handheld menus) and ICCs (e.g. fields in FMS aligned to FMEA studies) 3. Defined guidance for what to do if failure mode information does not align with the processes prescribed above (e.g. alternative, free-form, inputs) 4. Defined process for the evaluation of root cause from the information gathered. 5. Demonstrable feedback and use of root cause information in the development of risk-mitigation strategies and plans (e.g. systematic analysis and identification of opportunities for asset enhancement or maintenance / inspection improvement) 6. Analysis by manufacturers where root cause cannot be established by Network Rail Route personnel 7. Integration of failure date and performance data (e.g. FMS and TRUST)	The root cause process is designed and implemented, and information sufficient to support this process is being routinely captured in FMS or other appropriate systems, by January 2013.	This capability has been partially achieved. The Failure Information Improvement Project (FIIP) has developed an iPhone application which provides technicians with standard failure codes structured from the RoSE and RBM FMEA analyses. This application is part of a wider set of applications which will cover mobile tasking, diagnostics, and component tracking. Covers Improvement Specifications 1 to 3. The Route Reliability Plans as facilitated, defined and monitored through Route Reliability Meetings and the NIRG structure. Covers Improvement Specifications 4 to 7. Although all Improvement Specifications are being addressed, FIIP is still at the pilot / implementation stage and the two aspects described above are not yet integrated.	Analysis of root cause of failure is being used to improve Asset Management processes, policies and standards by March 2014.	No specific risks identified.	G	G
Asset Rationalisation & Disposal	3.11	Asset Rationalisation	Periodic asset rationalisation analysis is undertaken and equipment identified for removal and disposal	Network Rail's Routes periodically undertake analysis for the potential rationalisation of assets on the Route based on: 1. 'bottom up' engineering and 'top down' strategic (demand led) requirements for Route utilisation 2. Optimisation of the trade-offs related to the rationalisation opportunities (operational flexibility, performance risk, and whole-life cost of ownership) Opportunities to rationalise assets are included in the Route AMP and Delivery Plan and the appropriate assets are removed and disposed of within a reasonable timescale.	An asset rationalisation analysis has been undertaken on each Route and any proposals for removal of assets are included in the Route AMPs and Delivery Plans by January 2013	This capability has been partially achieved. The Network Optimisation RDG project has been initiated and a pilot completed for Wessex Alliance only. The Summary Route Plans contain inconsistent information on asset rationalisation requirements.	Any assets identified for rationalisation during CP4 have been removed and disposed of and the expected outcomes assessed against the original justification by March 2014	No specific risks identified for pilot only.	G	G

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Appendix F
Asset Information Group Validation

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Asset Information Strategy & Standards	4.1	Asset Information Strategy Alignment	The Asset Information Strategy is fully aligned with the Asset Management System and the requirements of key stakeholders	The Asset Information Strategy is reviewed in the light of the publication of the Asset Management System (see capability 1.1) to ensure: 1. The scope is consistent with the Asset Management System 2. The Asset Information Strategy reflects the high-level Asset Management processes defined within the Asset Management System 3. The key decisions within the Asset Management processes and the information necessary to support these are captured in the Asset Information Strategy 4. The capability, stewardship and performance KPIs used to monitor the effectiveness of the Asset Management System are captured within the Asset Information Strategy (see capability 6.6) 5. It reflects the findings from the periodic review of the Asset Management System (see capability 6.4)	The Asset Information Strategy has been tested and reviewed, using a defined process, against the Asset Management System requirements and the SBP Asset Information Plan has been updated, where appropriate, by May 2012.	This capability has been achieved. A workshop was held in December to review AIS delivery (ORBIS) against the requirements of the Asset Management System. Further reviews are planned in 2013 to maintain alignment. The ORBIS delivery plan has been updated and aligned with Asset Management benefits realisation for CP5. Key Asset Management stakeholders are represented on the ORBIS Programme Board (Head of Asset Management Strategy) and ORBIS Programme Review Meeting (Group Asset Management Director). Asset Information is represented on key steering groups (RBM) to ensure alignment of ORBIS and AI with Asset Management policy delivery.	The Asset Information Strategy has been tested and reviewed, using a defined process, against the revised Asset Management System requirements and the Asset Information Strategy, Information Specification, Data Dictionary and Asset Information Plan have been updated, where appropriate, by March 2014.	No specific risks identified.	G	G
Asset Information Strategy & Standards	4.2	Asset Information Specification Process	An Asset Information Specification process is in place that defines the current and foreseeable future information requirements necessary to deliver the Asset Information Strategy and external stakeholder needs, and is aligned with appropriate systems architecture(s).	An Asset Information Specification process is developed and implemented to provide: 1. An Asset Information Specification that defines internal and external stakeholder information requirements for key milestones, eg. SBP and start of CP5 2. A clear 'line-of-sight' from the Asset Information Specification to the Asset Information Strategy. 3. A Cost/benefit justification and prioritised information requirements to take account of stakeholder requirements, operational contexts and asset data criticality. 4. A RACI for the end-to-end Asset Information arrangements as a result of devolution.	1. The Asset Information Specification process for SBP is developed by April 2012. 2. The Asset Information Specification for SBP has been produced by April 2012.	This capability has been partially achieved. A suite of documents has been developed as part of the MDM ORBIS project that form part of the Asset Knowledge Standards and describe the processes, quality controls and governance by which data is specified. The Track dataset has been produced using this process. There is currently no RACI matrix that covers the whole process in the devolved structure.	1. The Asset Information Specification process for CP5 has been developed and implemented by September 2012. 2. The Asset Information Specification for CP5 has been produced by September 2013	The Asset Information Specification process is defined and in use. It has been applied to track and plans are in place to apply to all asset groups. It should be possible to produce RACI matrices for the devolved organisation in the time available, and also to complete all planned Asset Information Specifications, but this is an ambitious undertaking.	A	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Asset Information Strategy & Standards	4.3	Data Dictionary	A Data Dictionary is in place that defines the required attributes and data quality requirements for the initial capture and maintenance of information in accordance with the Asset Information Specification.	The Data Dictionary is developed to provide: 1. A centralised data dictionary detailing the required asset information as defined in the Asset Information Specification, including asset attributes and hierarchy. 2. An appropriate means of assuring control and quality of asset data and estimating the impact of data changes, consistency in data use, easier data analysis, reduced data redundancy and the enforcement of standards. 3. Defined confidence levels for data quality and accuracy based on the criticality of the asset information and the requirements defined in the Asset Information Specification. 4. The necessary definitions for the capture, management and analysis of: - Maintenance information; - Condition information; - Defect and failure information; - Performance and failure consequence information; and - Asset utilisation information. 5. Clarity of the Asset Knowledge Standards arrangements as a result of devolution.	1. The Data Dictionary for SBP is updated by December 2012 by reflect the SBP Information Specification 2. The CP5 Data Dictionary for Track assets has been implemented and it can be demonstrated that it aligns with the CP5 Asset Information Specification for Track assets by December 2013.	This capability has been achieved. CP4 data requirements are captured by ADIP in the 'As-Is' Data Dictionary. CP5 detail design and asset data hierarchy for Track asset complete and being built. Definitions for Condition, Failure and Utilisation are being developed by joint working groups. MDM roadmap developed providing visibility of expansion of MDM to cover Network Rail and GB rail infrastructure.	The CP5 Data Dictionary for all assets has been implemented and it can be demonstrated that it aligns with the CP5 Asset Information Specification for all assets by September 2013.	Although sign-off for the Track dataset was delayed it should be possible for all datasets to be produced by April 2014.	A	G
Asset Data & Knowledge	4.4	Asset Information Plan	An Asset Information Plan is in place that defines the key activities and timescales necessary to deliver all Asset Information requirements defined in the Data Dictionary and is being implemented.	An Asset Information Plan is in place that includes: 1. A gap analysis of current data availability against the requirements of the Asset Information Specification and Data Dictionary. 2. A methodology and programme for data collection, data entry and validation for all requirements defined in the Data Dictionary. 3. Clarity of the Asset Information Plan arrangements as a result of devolution. Asset data is being collected and validated in accordance with the Asset Information Plan.	1. The Asset Information Plan for SBP is complete by May 2012. 2. The data collection process for SBP is completed by December 2012.	This capability has been partially achieved. The AI Plan for CP4 and SBP development has been developed and is being implemented by the Asset Data Improvement Programme. Changes to the Asset Information Plan resulting from devolution are not apparent.	1. The CP5 Asset Information Plan for Track assets has been developed for all routes and is fully aligned with the Track elements of the CP5 Data Dictionary by June 2013. 2. The CP5 Asset Information Plan for all assets has been developed and is fully aligned with the CP5 Data Dictionary by March 2014. 3. The data collection process for CP5 is progressing in accordance with the CP5 Asset Information Plan by March 2014.	The requirements of the Asset Information Plan in the devolved organisation need to be defined and communicated, although this does not appear to be within the scope of current activities.	A	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Asset Data & Knowledge	4.5	Data Confidence Assessment	An effective Data Confidence Assessment methodology is in place to provide necessary assurance to Network Rail and its stakeholders of data confidence levels.	The data confidence assessment approach has been enhanced to provide: 1. An effective and consistent methodology, process and timescales for assessing the level of confidence in asset data against the requirements of the Asset Knowledge Standards 2. Assurance of data collection in accordance with Asset Information Plan. 3. Assurance of data confidence to both Network Rail and its stakeholders. 4. Prioritisation of further data capture.	1. The data confidence assessment approach and application plan have been developed by June 2012. 2. The outputs of the SBP assessment are consistent with the requirements of the Data Dictionary, or corrective actions established, and have been shared with relevant stakeholders by January 2013.	This capability has been partially achieved. A high level methodology has been designed. This has been reviewed by Arup but the results of this review were not available at the time of the AMEM interviews. Stakeholders within Routes were found not to be aware of the data confidence assessment process and the devolved requirements yet. Trajectories for confidence levels are understood to be being developed and should be available at the end of March.	The outputs of the data confidence assessment continue to be consistent with the requirements of the Data Dictionary for CP5, or corrective actions established, and have been shared with relevant stakeholders by March 2014 as part of the Delivery Plan.	The results of the Arup review will help clarify the current position and likely April 2014 outcome in more detail. There is currently no project in place to implement data quality assessment in the route organisations.	A	G
Asset Data & Knowledge	4.6	Asset Data Management	Data management and assurance procedures are in place to ensure the ongoing governance of Asset Information is undertaken in accordance with the Data Dictionary.	The Asset Data Management procedures have been enhanced to provide: 1. Assurance that asset information is formally managed throughout Network Rail, including 'on the ground', in accordance with the Data Dictionary. 2. Ongoing assurance of data confidence levels. 3. Consolidation of existing tactical Asset Knowledge & Data AMEM recommendations identified.	The programme of identified ADM priorities for SBP has been completed by January 2013.	This capability has been partially achieved. The Devolution Handbook mandates the use of current standards, including ADM, on Routes. However, no detail regarding 'on the ground' monitoring is currently in place or developed for monitoring of new standards. Quality reports are issued periodically for GEOGIS and Ellipse by the AI Data Management team. A confidence assessment methodology is in place and programme and escalation pathways are being developed for key CP5 milestones. An assessment of data confidence levels is being provided by Arup, but was not available at the time of the AMEM assessment.	The Asset Data Management procedures have been updated and it can be demonstrated that they fully align with the CP5 Data Dictionary and have been fully briefed and implemented throughout the organisation by March 2014.	Current evidence would indicate that a process will be in place and operating but not with full coverage of all asset types and systems. Audit and Assurance roles need to be clarified with the Routes.	A	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Asset Information Systems	4.7	Asset Information Systems	Appropriate Asset Information Systems are in place that provide the Asset Information to Network Rail and external stakeholders in accordance with the Asset Information Plan	The Asset Information Systems and Architectures have been enhanced to provide: 1. Full alignment of the architecture with the organisation's and its external stakeholders' requirements as defined in the Asset Management Strategy, Asset Information Strategy, Asset Information Specification, Asset Knowledge Standards and Asset Data Management procedures. 2. Full alignment of all proposed systems with the organisation's and its external stakeholders' requirements as defined in the Asset Management Strategy, Asset Information Strategy, Asset Information Specification, Asset Knowledge Standards, Asset Information Plan and Asset Data Management procedures. 3. Clarification of 'master data' sources and interfaces of all proposed systems. 4. Clarity of which, how and when systems will be used during CP5. 5. Consolidation of existing tactical Asset Information System AMEM recommendations identified.	Tactical system improvements identified in ORBIS have been implemented by January 2013.	This capability has been partially achieved. The overall programme has slipped in this area and only high-level architecture models have been produced to date. The ORBIS Design Authority is being strengthened to cover commercial, business, enterprise, service and programme architectures to provide the required levels of overview and integration. The Gartner TIME review of Asset Management systems currently remains the identified approach to individual systems. A 90 day programme to model business and systems architecture in ProVision will shortly commence.	1. The Asset Information Systems and Architectures for CP5 and beyond have been shared with relevant stakeholders and it can be demonstrated that they fully align with the Asset Information Strategy and Data Dictionary by March 2014. 2. Asset Information Systems have been implemented in accordance with the ORBIS strategy by March 2014.	Strengthening of the Design Authority is being undertaken to help recover the timescales, but implementation milestones are still likely to move out beyond the CP4 target.	G	A

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Appendix G
Organisation & People Validation

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Individual Competence & Behaviour	5.1	Asset Management Competence Requirements	Asset Management competence requirements and performance standards have been defined and are used for personal development	1. An overall Asset Management competence framework is in place and all competence frameworks with an Asset Management component have been reviewed and revised as appropriate to make them consistent across the organisation. 2. A systematic approach to developing Asset Management competence is in place which incorporates personal development plans. 3. Assessment against Network Rail competence requirements is undertaken to identify training needs for staff who have a role in the delivery of the Asset Management Strategy. 4. Asset Management competence descriptions are reviewed and modified to ensure consistency across all roles with respect to level of detail and what counts as core competence. 5. Staff with an Asset Management role have their Asset Management responsibilities written into their role profiles 6. Assessment of Asset Management related competence places a greater emphasis on practical skills.	1. The IAM competence framework has been configured to produce Network Rail's Asset Management competence framework by April 2012 2. All key asset manager roles are defined and the criteria for selecting these explicitly defined by April 2012 3. Role profiles are defined for all key asset manager roles that include the performance standards required against the Asset Management competence framework by May 2012 4. Initial assessments have been carried out for all key asset manager roles against the role profiles and any gaps identified by July 2012	This capability has been partially achieved. 1. 12 role descriptions based on analysis of Network Rail "RACI items" are the core of the competence framework. Each item identifies "activities" which describe a mix of knowledge, understanding, personal characteristics and tasks used to define levels of performance. Role descriptions include selected IAM competence elements regarded as relevant. A set of Network Rail qualifications contextualise each element. 2. Job titles within scope are assigned one or more of the 12 role descriptions. A matrix provides an overview of these relationships and shows how they are distributed across the routes and centre. 3. 78 job titles now have role profiles, from asset engineer to technology manager[8]. These profiles are combinations of the 12 role descriptions as they relate to each specific job title. 4. Self-assessments have been carried out by all 125 members of staff defined as holding key asset management roles.	1. Role profiles are defined for all asset manager roles that include the performance standards required against the Asset Management competence framework by April 2013 2. Annual Assessments are carried out for all asset manager roles against the role profiles and any gaps identified by June 2013 3. All staff in Asset Management roles have personal development plans relating to their Asset Management competence in place by June 2013 4. Processes for assessing competence have been reviewed, revised and their effectiveness validated by March 2014	1. Role descriptions have been defined for the key asset manager roles (top 125 Asset Management roles) using the NR Asset Management competence framework. It is not clear how much further these Asset Management role descriptions will be rolled out but there are plans to take it out to the next level of 1200 staff during 2013. At the current pace, it is unlikely role profiles be in place for all asset management roles by April 2013 but this is achievable by end of CP4. 2. Annual assessments for key asset manager roles are already made against the NR Asset Management competence framework. Gaps identified during Annual Assessments should allow achievement of the objective before the end of CP4. However, the prediction for CP4 Success Criterion 5.1.1 suggests it is unlikely that this will be achieved by June 2013. 3. Achievement of this objective is dependent on achieving CP4 Success Criterion 5.1.2. The identified technical issue with the NR Asset Management competence framework (see SBP AMEM Assessment) is likely to hamper progress. While the prediction for CP4 Success Criterion 5.1.1 makes it unlikely that this objective will be achieved by June 2013, it should be achievable before the end of CP4. 4. This is only achievable if the review process takes into account the outcomes of the Annual Assessments and personal development plans. Given the probability of the 5.1.3 CP4 Success Criterion prediction being met, it will be a significant challenge to achieve this objective by the end of CP4.	A	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Individual Competence & Behaviour	5.2	Asset Management Training	Asset Management training courses, tailored to key Asset Management roles, have been identified and / or developed and are available to relevant staff.	1. Staff in roles related to Asset Management are given a consistent understanding of Asset Management principles and how to apply them. 2. Training plans are put in place for developing staff in the application of Asset Management principles. 3. Locally oriented training and structured feedback focused on developing understanding of and decision making skills for Asset Management is provided. 4. Re-training and refresher training are available in key skill areas particularly related to Asset Management related initiatives.	1. Staff in key Asset Management roles have training and development plans in place to address their Asset Management training and any refresher training needs by January 2013 2. Training courses for key Asset Management staff have been reviewed for their relevance to the Asset Management competence framework and the balance of skills covered by January 2013	This capability has been partially achieved. 1. Only some of the staff defined as holding key asset management roles have training plans that address asset management training needs identified through their self-assessments. 2. Some training courses with some relevance to asset management are in place and others are under development.	1. The training and development plan has been delivered for staff in key Asset Management roles by January 2014 2. Staff in all Asset Management roles have training and development plans in place to address their Asset Management training and any refresher training needs by March 2014	1. In principle this objective could be achieved, the concern is the quality and the value of the training and development if its delivery is rushed in order to meet the suggested deadline. It is reasonable to expect that all the key Asset Management roles will each have a training and development plan in place and be engaged on it by January 2014. 2. Development and identification of training material appropriate for Asset Management and the definition of the link between training and the NR Asset Management competence framework is behind schedule and Training and Development Plans may suffer from the technical issue identified with the NR Asset Management competence framework. As a result achievement of the objective by the end of CP4 is likely to be challenging.	A	A
Organisational Structure & Culture	5.3	Alignment of Asset Management Teams	The goals and group competences for Asset Management teams are defined and aligned with the Asset Management Strategy	1. Network Rail has a process for selecting teams which is explicitly mapped to the company's Asset Management competence framework. 2. Network Rail defines what competences (skills, knowledge, etc.) asset managers need to have as a group so that Asset Management strategic objectives can be met. 3. Team coverage of these group competences is determined and translated into team goals and objectives and teams created as appropriate. 4. Teams contributing to the delivery of the Network Rail Asset Management strategy are briefed on what is expected of them and how their performance will be measured.	1. Identify key Asset Management teams and the criteria for selecting these are explicitly defined by April 2012 2. Key Asset Management teams have Asset Management goals and group competence requirements built into their terms of reference by January 2013	This capability has been partially achieved. 1. The key asset management teams have been identified, taking into account the devolved structure and the role of the central asset management team. 2. The objectives and responsibilities of the key asset management teams have been defined. Group competence requirements for the teams are still outstanding.	1. All Asset Management teams have performance requirements which can be used to demonstrate their contribution to the delivery of the overall Asset Management Strategy by April 2013 2. Staff in all Asset Management teams have personal competence requirements in their job descriptions which are aligned with team competence requirements by March 2014	1. Definition of competence requirements for teams has not been achieved by April 2013. Achieving this objective involves the aggregation of individual performance requirements of key asset management staff within the relevant teams. As this aggregation is relatively simple, achievement of this objective should be possible before the end of CP4 2. Achievement of this objective depends on the achievement of the objective under CP4 Success Criterion 5.1.1, which may be difficult to achieve before the end of CP4. Therefore it is unlikely that this objective will be met by then.	A	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Organisational Structure & Culture	5.4	Strategic Oversight of AM competences	A system is in place which provides up-to-date information and strategic oversight of the competences of Asset Management staff	1. A database is created which contains a consolidated record of key information about the experience, skills, abilities, licences, permits, training record, training and development needs, etc. of Asset Management staff. 2. A process is put in place for collecting competence information and adding it to the database. 3. The database contains information about both competence currently in use and competence "in stock", i.e. competence possessed by individuals beneficial to the organisation but not currently in use.	1. Staff in all key Asset Management roles have the full range of their current competence captured in the database by January 2013 2. The database is accessible by all those with a legitimate reason for doing so by January 2013 3. The database is in a form that can readily be interrogated and can provide information necessary for such activities as team creation, training planning and manpower planning by January 2013	This capability has been achieved. 1. Self-assessment results and details of relevant qualifications have been captured together with summary outcomes of discussions between assesses and their line managers[iii]. 2 & 3. The database can be interrogated and used for producing management information but is not yet used widely and has not been integrated into the standard IT systems.	1. Staff in all Asset Management roles have their competence records on the database by March 2014 2. The records cover both competence currently in use and competence "in stock" by March 2014	1. Tools have been created which will enable this objective to be achieved, but the plan is to embed these tools in Oracle. Work on embedding the tools has not yet begun. However, it should be possible to achieve this by the end of CP4. 2. The current NR Asset Management competence framework makes it difficult to assess the competence "in-stock" (that is competence possessed by staff but not utilised in their current role) due to the identified technical issue. Achievement of this objective requires reworking of the NR Asset Management competence framework and then implementation of the recording of "in-stock" competence. This is currently not listed in any other objective and therefore not supported and unlikely to be achieved by March 2014.	G	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Organisational Structure & Culture	5.5	Asset Management Culture	An Asset Management culture(s) is evident and consistent with the Asset Management Strategy and fully supported by all senior managers	1. Network Rail has developed a definition of the organisational culture(s) it desires which is consistent with any mission or value statements in place and with its Asset Management Strategy. 2. Analyses are undertaken on a sufficiently regular basis of the gap between the desired culture(s) and the current culture(s) - this should make use of such evidence as is already collected but may also require additional survey work. 3. The key influencing factors for, and barriers to, culture change are understood and actions are in place to address these which are under regular review.	1. Agreement is reached both at senior manager level and amongst key asset managers on the desired Asset Management culture by January 2013 2. Gap analysis has been carried out and areas where cultural change is necessary have been identified by January 2013	This capability has been partially achieved. 1. Senior management has determined how it intends to define the desired asset management culture and started to engage on this with people in key asset management roles. 2. A high level gap analysis has been carried out involving senior managers which identifies current and desired positions on culture dimensions. A high level assessment of culture maturity in different parts of the organisation has also been conducted along with an analysis of the extent to which existing initiatives support the transition from current to desired culture. This analysis has not yet been validated across the organisation.	1. A culture change management programme and migration strategy have been produced by March 2014 2. The desired culture and the change management programme has been communicated to the organisation as a whole by March 2014 3. Survey evidence demonstrates that there has been meaningful change towards the desired culture by March 2014. 4. Outstanding barriers or pockets of resistance to change have been identified and options for actions to close the gaps identified and initiated by March 2014.	1. Development work towards this objective has laid the foundations for achievement of this objective. While significant further work is required it should be possible to achieve this objective by end of CP4. 2. Only high level gap analysis of culture has been undertaken and gap analysis needs validation across the organisation, indicating that this objective may be a challenge to achieve by the end of CP4. 3. Achieving this objective is dependent on achieving the objective in CP4 Success Criterion 5.5.2. The first survey to provide the culture baseline has not yet taken place indicating that this objective is likely to be delayed beyond the end of CP4. 4. This is achievable by the end of CP4 based on the suitable implementation of the first survey that includes clear definitive actions to improve cultural alignment and fit.	A	R
Contract & Supply management	5.6	Contract Performance Assessment	A performance assessment system is developed which explicitly relates supplier and contract performance to the company's Asset Management Strategy	1. Existing contract performance indicators are kept under review to determine their value with regard to the Asset Management Strategy. 2. Contractors are evaluated in terms of their contribution to meeting the Asset Management Strategy. 3. A fit for purpose performance improvement process exists the elements of which are proportionate to the importance of any problems that arise.	n/a	No objectives set.	1. Performance indicators have been reviewed and revised as necessary by March 2014 2. New performance indicators have been communicated to suppliers and contractors and are included in all new contracts by March 2014 3.New performance improvement process has been developed, communicated and is written into all new contracts by March 2014	1. Current performance indicators are in place and operational, so review of indicator effectiveness should be achievable by the end of CP4. 2. The objective requires a review to be completed in good time to allow development and communication of the new indicators, and inclusion in contracts. Therefore achieving this objective is dependent on CP4 Success Criterion 5.6.1 being achieved and is likely to be delayed beyond the end of CP4. 3. Development work on the performance improvement process is underway and the structure of the project to date indicates this is achievable by the end of CP4.	G	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliverability RAG (End of CP4)
Contract & Supply management	5.7	Contract initiation	The company explicitly sets out and meets its commitment to suppliers and contractors on contract start dates.	1. Performance standards are in place for Network Rail procurement. 2. The performance standards are captured as performance indicators for Network Rail in the tendering, contract negotiation and contract start-up processes. 3. Performance against these standards is regularly reviewed.	1. Performance standards have been defined and are included in tender information by January 2013 2. Standards are achieved for at least 80% of contracts awarded by January 2013	This capability has been achieved. 1 & 2. Periodic reporting is now available on contractor and supplier performance.	Standards are achieved for at least 95% of contracts awarded by March 2014	1. Monitoring of what percentage of contracts are assessed against standards is definitely within reach by the end of CP4. Performance monitoring against the required standards for all contracts will be a challenge to achieve before the end of CP4.	G	A

Appendix H
Risk & Review Group Validation

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Risk Assessment & Management	6.1	Integrating Asset and Risk Management	The Risk Management Framework is effectively integrated into the Asset Management System	The Risk Management Framework is effectively integrated into the Asset Management System: 1. Risk management is clearly linked to the achievement of Network Rail's Asset Management objectives. 2. Asset Policies and DSTs are used to manage to an acceptable level the risks identified through the implementation of the Risk Management Framework. 3. The identification, assessment and migration of all Asset Management delivery risks is completed in accordance with the Risk Management Framework. 4. The risks identified and managed through the above are fed into the Asset Management System review.	Integrated Risk and Asset Management processes (1 to 3) are defined and implemented by January 2013.	This capability has been partially achieved. 1. A clear link between Asset Management objectives and IRM has been established at a tactical level, although the strategic Risk approach is currently under review. 2. Risks within asset groups are understood and managed consistently, however comparisons between risk types and asset groups are less well understood. 3. The current framework for handling Asset Management Delivery Risks is the IRM (as referenced in the IIP). These will be migrated to the ERM approach	Integrated Risk and Asset Management process (4) is implemented by March 2014.	Alignment of IRM and top-down ERM processes needs to be accelerated and clarified by end of CP4 to fully achieve target.	A	A

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Sustainable Development	6.2	Sustainability Strategy	A Sustainability Strategy in place and is integrated into the Asset Management system	Network Rail develops a Sustainability Strategy that is designed to deliver: 1. the content of the Sustainability Policy 2. the various projects and initiatives on-going or planned within Network Rail (including all of those reported in the CRR) 3. the defined plan for CP5. One senior person within Network Rail is then given accountability for the delivery of this strategy.	A single Sustainability Strategy has been developed by January 2013 to deliver all Network Rail's initiatives in this area.	This capability has been achieved. Central S&SD Sustainable Development Strategy has been delivered. This has yet to be signed off by the Board and fully implemented across the functions and the Routes . High-level initiatives and statements are captured in the strategy and these will be developed and reflected in the Delivery Plan Indicative initiatives and plans are available from Functions and Routes, although the level of maturity of these approaches varies. Overall accountability has been given to the S&SD Director, although there are areas of the organisation who are still aligning to this Strategy.	By December 2013 one senior person is accountable for the delivery of the Sustainability Strategy which is being effectively delivered.	No specific risks identified, assuming: • Sustainability Strategy is signed off and rolled-out across other functions. • Initiatives are aligned and translated into objectives owned by Routes, NDS, IP, Maintenance, etc. • Route and Functional plans include S&SD plans to deliver the above initiatives. • S&SD team are established and recognised as centre of excellence in NR.	G	G
Weather & Climate Change	6.3	Climate Change Adaptation & Mitigation	Asset Policies include a link to the requirements of climate change adaptation and mitigation	Network Rail's climate change adaptation requirements are fully considered in the CP5 Asset Policies (as set out in various internal and external studies and plans) such as: 1. the Network Rail Climate change Adaptation report 2. the Climate Change Adaptation Study 3. the on-going CP5 delivery plans	Each asset group has drafted changes to their Asset Policies which reflect Network Rail's climate change adaptation requirements by December 2012.	This capability has been achieved Weather & Climate Change forms part of the Sustainable Development Strategy The TRaCCA programme is underway and evidence of some Climate Change and weather resilience work in the Asset Policies There is an improved understanding of weather-related risks and impacts of Climate Change, although this has yet to manifest itself in clear implementation plans for the Routes.	The CP5 Delivery Plan includes a clear linkage to Network Rail's climate change adaptation requirements by March 2014.	No specific risks identified, assuming: • Weather & Climate Change initiatives are developed as part of above implementation of SD Strategy • Update from TRaCCA is reviewed and initiatives have been incorporated into CP5 Delivery Plan • Climate Change strategies for CP5 set out in CP5 Delivery Plan	G	G

AMEM Activity	2012 Capability Ref	2012 Capability Name	2012 Capability Statement	2012 Improvement Specification	SBP Success Criteria	Summary of SBP Assessment Findings	End of CP4 Success Criteria	Risks to achieving planned End of CP4 position	Scope RAG	Deliver-ability RAG (End of CP4)
Review & Audit	6.4	Asset Management System Review	An effective Asset Management System management review cycle is in place.	Network Rail has implemented its Asset Management System (see capability 1.1) and has designed a management review process for this system that meets the requirements of PAS 55 Clause 4.7.	The Asset Management System review cycle is defined by December 2012.	This capability has been achieved. The AMS documentation and Devolution Handbook set out these procedures and these now need to be embedded	At least one management review cycle of the Asset Management System has been undertaken by December 2013.	No specific risks identified assuming Roadmap Capabilities 6.5 to 6.8 are effectively delivered and review cycle is undertaken.	A	G
Review & Audit	6.5	Asset Management System Audit	An audit plan is in place that is focused on the Asset Management System.	The NCAP (or equivalent) is enhanced with the following requirements: 1. Audit plans which are defined by the requirements of the Asset Management System (as defined by Network Rail's Asset Management Framework). 2. The audit plan should be risk-based and delivered by people independent from the audited activities. 3. The plan should include sufficient cross-functional audits to ensure integration of the Asset Management System.	The strategy for an overall audit and assurance regime relevant to Asset Management is complete by September 2012.	This capability has been partially achieved. The Overall assurance regime for Asset Management is managed by Strategic Services and integrated into the corporate assurance framework. It is still split into several assurance schemes (including NCAP) although these are understood to be aligned. Audit plans are in place for main Asset Management activities, Internal audit plan and Maintenance audit plans are said to be risk-based, although it is not clear how these risks are assessed given the corporate framework is under review. Some audits are deemed as cross-functional although it is not clear how fully integrated these activities are.	The outputs from Asset Management Framework audits are being used to support the Asset Management System review by December 2013.	A single corporate assurance framework is required which captures key interfaces with the Asset Management System to show who is accountable for which activities. All activities in the Asset Management System should be covered in longer-term plan and the identification of high-risk activities should be aligned to risks around delivery of the SBP.	A	A
Review & Audit	6.6	Engineering Verification	An engineering verification system is in place to provide assurance that the expected outputs from the Asset Management System are delivered.	1. The current revision to the Engineering Verification standard is completed and takes into account the impact of devolution. 2. The Engineering Verification standard is implemented with sufficient resources to ensure it will be provide assurance that the expected outputs from the Asset Management System are delivered, including: - safety related issues - asset condition and reliability - quality of work undertaken - level of defects - non-compliance with standards or other requirements	The new Engineering Verification standard has been effectively implemented within the devolved organisation by March 2012.	This capability has been partially achieved. The Engineering Verification standard and process is in place and has been implemented, although the number of inspections undertaken is currently well behind target	The outputs from the Engineering Verification audits are being used to support the Asset Management System review by December 2013.	Completion of Engineering Verification Review may affect ability to complete this. Outcomes might be: • Process and targets are appropriate and backlog needs to be addressed; or • Process needs refining to improve its efficacy and targets need to be revised.	G	A

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Review & Audit	6.7	Capability, Stewardship & Performance KPIs	A suite of Asset Management KPIs is in place to monitor the capability, stewardship and performance of Network Rail's Asset Management	Capability, stewardship & performance KPIs are in place which include a balanced set of appropriate measures including: 1. Lagging performance measures (such as failures or minutes delay) 2. Leading stewardship measures (such as asset condition, renewal rates or average remaining lives) 3. Leading capability measures (such as competence)	Capability, stewardship & performance measures are defined and baselined by January 2013.	This capability has been partially achieved. Several performance measures are already established and regularly monitored. Others are being developed for CP5 and therefore in some areas the baseline is not yet understood. 1. Lagging measures are In place and regularly reported. 2. Leading stewardship measures on remaining life appear to be in place and forecasts are given in the SBP documentation 3. Leading capability measures such as competence are understood to be under development.	Capability, stewardship & performance measures are being used to support the Asset Management System review by December 2013.	Definitions are agreed and in place, however improvements to KPI histories and projections to demonstrate impacts of Delivery Plan activities are required.	A	G
Review & Audit	6.8	Benchmarking	Benchmarking is actively used to improve the Asset Management System	Benchmarking is actively used to improve the Asset Management System through: 1. Becoming an embedded 'business as usual' process. 2. Identifying appropriate internal and external benchmarking opportunities and targets. 3. Focusing on value for money outcomes. 4. Feeding into the Asset Management System management review process.	An evidenced set of reasoning based on benchmarking data is used to support the SBP submission by January 2013.	This capability has been achieved. There is evidence of benchmarking having being undertaken for the Asset Management system as a whole and for asset-specific activities, which has been summarised in the SBP and appears to be driving improvement initiatives.	Benchmarking data is being used to support the Asset Management System review by December 2013.	No specific risks identified, assuming benchmarking approach is embedded as BAU.	G	G

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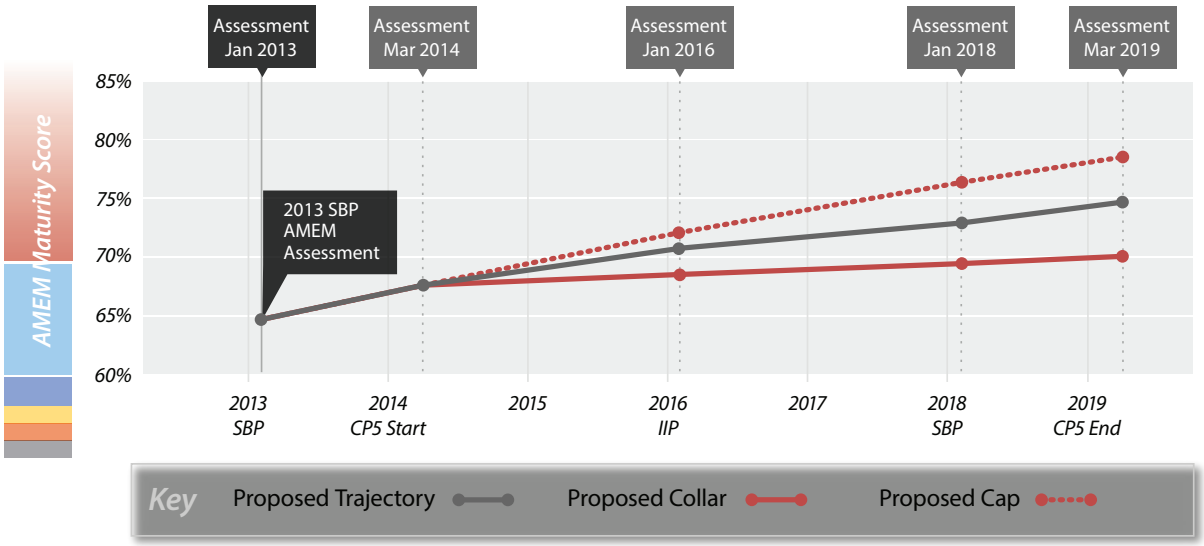
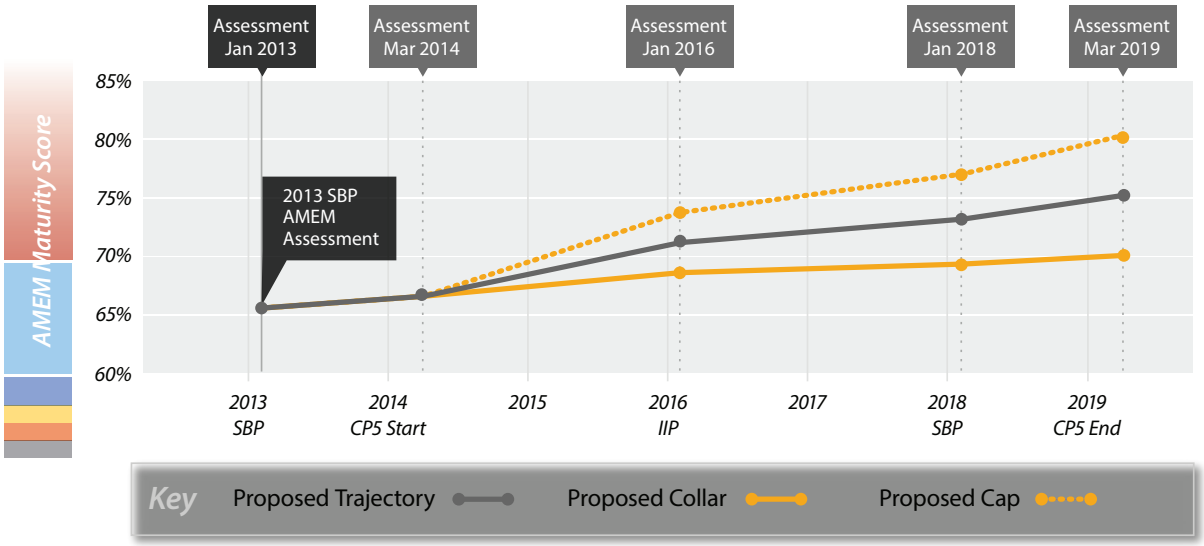
Appendix I
Proposed CP5 Trajectories

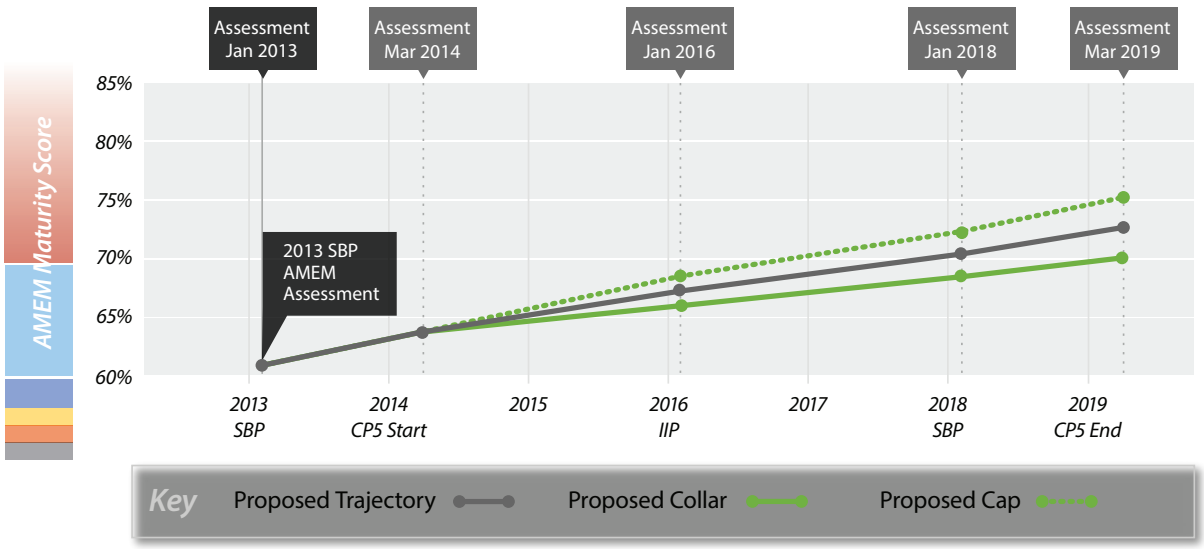
Overall



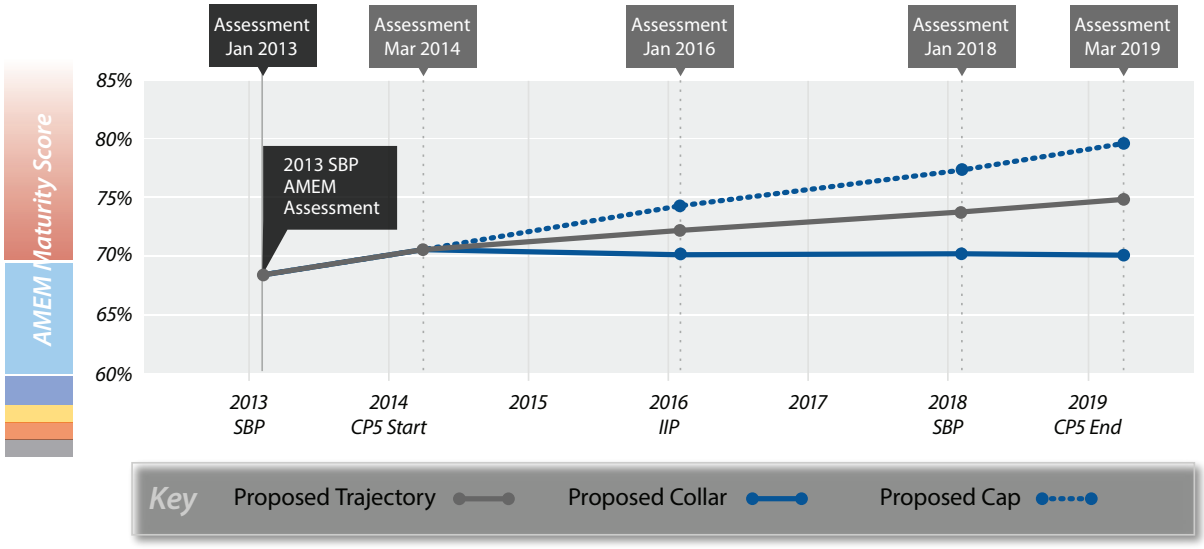
Strategy & Planning



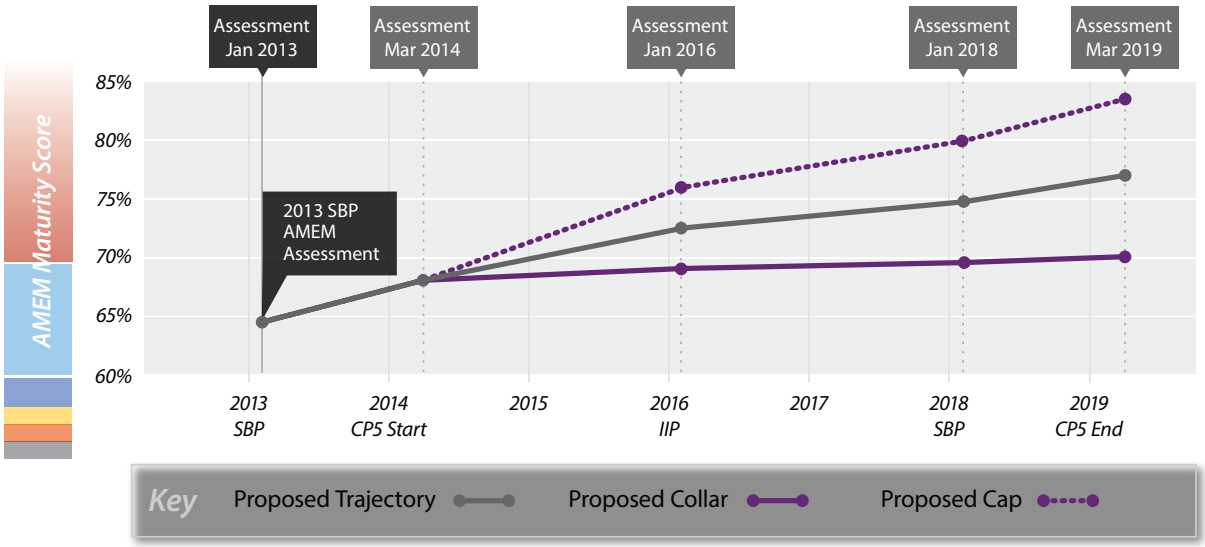
Asset Management Decision Making



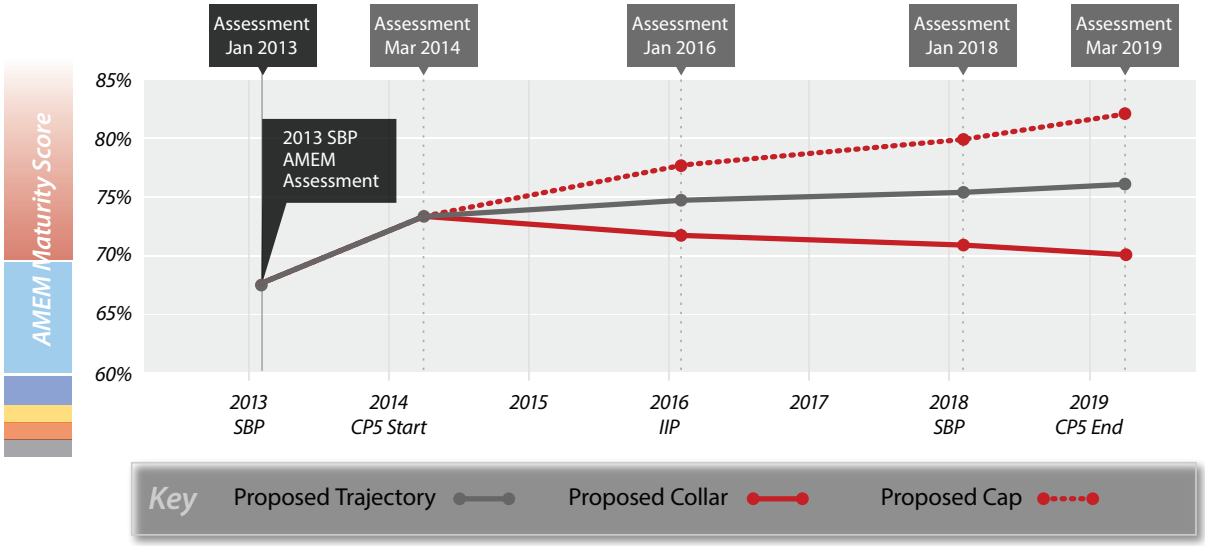
Lifecycle Delivery Activities

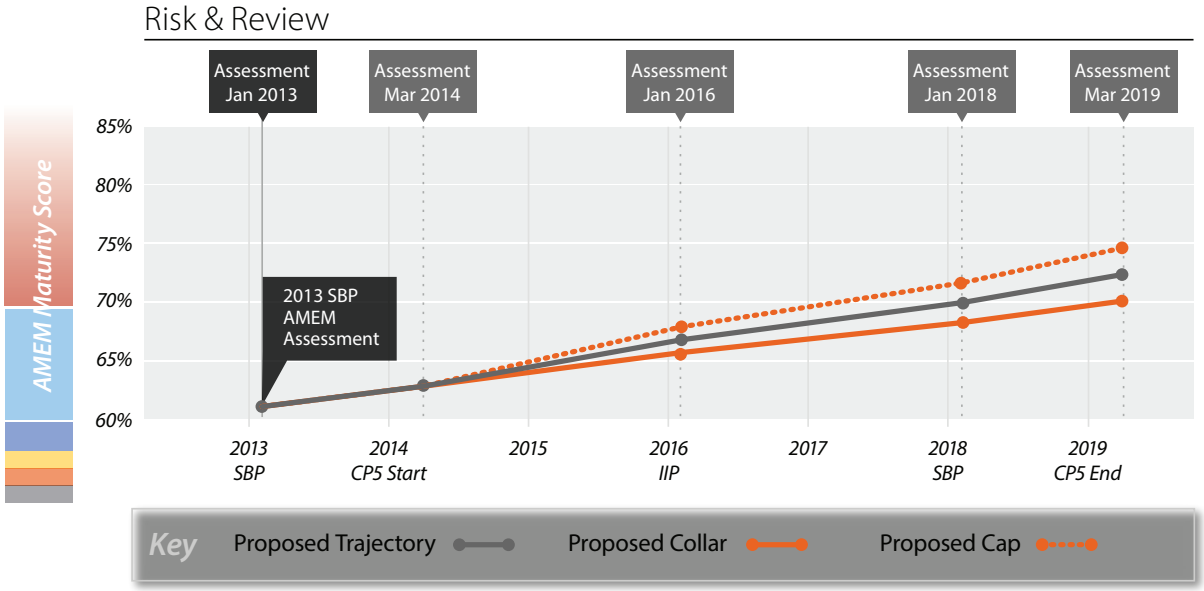


Asset Knowledge Enablers



Organisation & People Enablers




Risk & Review
Assessment Jan 2013
Assessment Mar 2014
Assessment Jan 2016
Assessment Jan 2018
Assessment Mar 2019
AMEM Maturity Score
85%
80%
75%
70%
65%
60%
2013 SBP AMEM Assessment
2013 SBP
2014 CP5 Start
2015
2016 IIP
2017
2018 SBP
2019 CP5 End
Key
Proposed Trajectory
Proposed Collar
Proposed Cap

amcl

221 St. John Street,
Clerkenwell,
London
EC1V 4LY
UK

T +44 (0)20 7688 2828
F +44 (0)20 7688 2829
www.amcl.com