Office of Rail Regulation and Network Rail

# Part A Reporter Mandate AO/019: Independent Review and Assurance of Network Rail Buildings & Civil's Transformation Programme

## Summary Report

209830-19

Revision 1 May 2013

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# Contents



## Appendices

## Appendix C

ORR Letters with Baseline Programme Recommendations Trackers

### C1 ORR Letter dated 23 November 2011

### C2 ORR Letter dated 21 May 2012

## Appendix D

Programme Recommendations Tracker

### D1 Progress Assessment – 31st March 2012

### D2 Progress Assessment – 31st December 2012

## Appendix E

Handover Report

# Glossary

| | |
|---|---|
| AMIP | Asset Management Improvement Programme |
| B&C | Buildings and Civils |
| BCAM | Buildings and Civils Asset Management Transformation Programme |
| CP4 | Control Period 4 |
| CP5 | Control Period 5 April 2014 – March 2019 |
| DfT | Department for Transport |
| IIP | Initial Industry Plan 2011 |
| NR | Network Rail |
| ORR | Office of Rail Regulation |
| SBP | Strategic Business Plan for CP5 |

# 1 Executive Summary

## Introduction

**1.1.1** In June 2010, Arup as Independent Reporter was commissioned by NR and ORR to work in tripartite collaboration to develop an agreed and benchmarked view of Network Rail's current position with respect to Civil Structures' Asset Policy, Stewardship and Management of Structures together with proposed opportunities for improvement (Mandate AO/007).

**1.1.2** The Civil Structure categories included in the Mandate comprised:

a) bridges and culverts (including footbridges)
b) retaining walls
c) tunnels
d) earthworks
e) coastal, estuarine, and river defences.

**1.1.3** Our Final Report from the Mandate AO/007 Structures Review was issued in March 2011 and made 77 key recommendations based on the findings and observations.

**1.1.4** NR initiated a Building & Civils Asset Management (BCAM) Transformation Programme to both address the 77 key recommendations and to undertake additional activities to improve the way that Buildings and Civils Asset Management is undertaken.

**1.1.5** In June 2011, Arup were appointed[1] (Mandate AO/019) to undertake constructive review and assurance of the NR BCAM Transformation Programme.

**1.1.6** This Report has been produced under Mandate AO/019 to summarise the progress made by Network Rail's with their BCAM Transformation Programme in the period from its inception up until 31st December 2012 when all 77 recommendations were planned to have been 'closed-out'[2].

**1.1.7** The focus of this report is on overall progress against the plan set out by NR rather than the detailed asset management improvements themselves. A detailed technical review of the Structures and Earthworks asset policies and their application in deriving NR's Strategic Business Plan submission is set out in our review for Mandate AO/030[3].

**1.1.8** This is our final report produced for upload to the ORR website. It follows review and discussion of our draft report with ORR and NR.

[1] Mandate AO/019 *'Asset Policy, Stewardship and Management of Structures – Independent Review and Assurance of Network Rail Buildings & Civil's Transformation Programme'*
[2] It was agreed that 'close-out' would be taken as a point where there is evidence that change (arising from a recommendation) has started to be 'implemented' and introduced into NR operations. It was also agreed that the 'embedment' of changes into the NR 'business as usual' operation would be subsequently audited by ORR as part of general ongoing assurance activity (i.e. outside this Mandate).
[3] Mandate AO/030 "PR13 M&R review of asset policies and their application in planning: progressive assurance and SBP submission."

## General Findings

**1.1.9** In summary, our view is that the BCAM Transformation Programme has delivered very significant change to the way that NR are seeking to manage their Civil Structures. Key aspects are

- Development of explicit Asset Management Targets;
- Adoption of a Risk based approach to Asset Policy;
- Development of an unconstrained workbank approach;
- Policy on a Page and associated lifecycle modelling;
- Consideration of Planned Preventative Maintenance;
- Introduction of an explicit overall Asset Management Process;

and the overall co-ordinated linkage between closure of the 77 B&C Tripartite Recommendations, Policy Development, Whole Life Cycle modelling , Route Asset Management Plans and development of the Strategic Business Plan for Buildings and Civils. This is very positive and is clearly evidenced by aspects such as the improvement in the Structures and Earthworks Asset Policies during the last 18 months.

**1.1.10** It is of particular note that NR have been very open and transparent with their progress under the BCAM Transformation Programme, have fully supported the progressive assurance approach and worked in an open collaborative manner with ourselves and ORR.

**1.1.11** It is very positive that in addressing the 77 recommendations, NR have focussed on the *'intent'* of the recommendation not just the *'letter'*. This is evidenced by their creation and support of the BCAM Transformation Programme itself. We believe that this collaborative working approach has enabled NR to make more significant progress than might otherwise have been possible.

**1.1.12** We see it as very positive that the B&C CP5 development has been incorporated in the BCAM Transformation Programme and we have seen a significant improvement in the co-ordination of the various workstreams following that transfer – for example whole life cycle costing / lifecycle planning.

## Progress Assessment

**1.1.13** As recognised from the outset, the BCAM Transformation is a long term programme with work to date focussing on starting to implement change arising from recommendations and introducing this into NR day to day operation. Embedment of change into the NR 'business as usual' operation will still take some time.

**1.1.14** Our assessment of progress as at the 31st December 2012 is that of the 77 recommendations :

- Overall Progress 97% complete (75 Recommendations have been closed, out of the full set of 77 which were due at end December 2012);
- Work on two Recommendations (R8.14 and R8.15) relating to Asset Data is ongoing and we consider that these remain to be closed.

**1.1.15** In respect of the two recommendations (R8.14 and R8.15) we consider that NR has made significant progress in the last four months of the 18 month programme (moving from 32% complete at 3rd Oct 2012) but that these are still work in progress. Specifically we consider that:

- the listing of asset data (R8.14) is still in development (e.g. does not include the information NR requires to quantify the volume and nature of work to underbridges) and has not as far as we are aware been reviewed and agreed with ORR (R8.14);
- evidence of the start of implementation of gap filling has not been supplied at the assessment date of 31st December 2012 (R8.15).

**1.1.16** We note that NR indicate that they have initiated a data gap filling project[4] which runs from January 2013 to end of December 2013. On this basis we anticipate that NR should be in a position imminently to provide an updated and more detailed listing of data / information (to close out R8.14) and evidence of the start of implementation (to close out R8.15).

## Next Steps

**1.1.17** The Civil Structure categories included in the original review (Mandate AO/007) comprised:

a) bridges and culverts (including footbridges)
b) retaining walls
c) tunnels
d) earthworks
e) coastal, estuarine, and river defences.

Key focus to date by the BCAM Transformation Programme has been on bridges and earthworks with some activity in relation to retaining walls and tunnels. The asset management principles will need to continue to be developed and implemented for all the other categories and sub-groups (such as Major Structures). This is potentially a significant amount of work and a risk still facing the BCAM Programme.

**1.1.18** The key next step will be 'embedment' of all the 77 recommendations into 'business as usual' at a Central and Route level. To facilitate this it will be important to continue the engagement between the BCAM Programme Team and the Routes. It will also be important to continue to provide central guidance and technical support to the Routes to ensure consistent application of the principles developed under BCAM Transformation.

**1.1.19** In terms of programme risk, we see the areas of most significant risk being in terms of this 'embedment' together with the development of appropriate asset data / knowledge and information to support effective asset management decisions by the Routes. It will also be important to have clear ongoing 'sponsorship' of the programme from within NR.

**1.1.20** NR have produced an outline plan for further BCAM development and 'embedment'. We would suggest that this is developed in more detail such that it could form a clear 'baseline' for progress reviews.

[4] BCAM-TP-0292 Issue 1.0 dated 8 Jan 2013 'Closure of Critical Recommendation 8.15: Civils Structures Asset Information Gap Filling Project'

# 2 Introduction

## 2.1 Introduction

**2.1.1** Arup have been appointed by the Office of Rail Regulation (ORR) and Network Rail (NR) as Independent Reporter to provide assurance as to the quality, accuracy and reliability of NR's data that is used to report performance to ORR, the Department for Transport (DfT) and the wider industry.

**2.1.2** Our Final Report under Mandate AO/007 Structures Review was issued in March 2011 and made 77 key recommendations based on the findings and observations.

**2.1.3** In April 2011, NR initiated a Building & Civils Asset Management (BCAM) Transformation Programme to both address the 77 key recommendations and to undertake additional activities to improve the way that Buildings and Civils Asset Management is undertaken.

**2.1.4** In June 2011, Arup were appointed under Mandate AO/019 *'Asset Policy, Stewardship and Management of Structures – Independent Review and Assurance of Network Rail Buildings & Civil's Transformation Programme'* to undertake constructive review and assurance of the NR BCAM Transformation Programme. The full scope of the role is set out in Mandate – see copy in Appendix A.

**2.1.5** This Report has been produced under Mandate AO/019 to summarise the progress made by Network Rail's with their BCAM Transformation Programme in the period from its inception up until 31st December 2012.

**2.1.6** The date of 31st December 2012 was selected by NR and ORR as a point where the 77 recommendations were planned to all have been 'closed-out'[5].

**2.1.7** Progress has been assessed against agreed baseline plans which have been published by ORR. Copies of these plans are included in Appendix C.

**2.1.8** The focus of this report is on overall progress against the plan set out by NR rather than the detailed asset management improvements themselves. A detailed technical review of the Structures and Earthworks asset policies and their application in deriving NR's Strategic Business Plan submission is set out in our review for Mandate AO/030[6].

**2.1.9** In Appendix D, against each recommendation we have made reference to the key objective evidence that we have seen and on which we have based our opinion.

**2.1.10** As required by the Mandate, in Appendix E we have provided suggestions as to the next steps in terms of assurance and audit of the BCAM Transformation Programme.

[5] It was agreed that 'close-out' would be taken as a point where there is evidence that change (arising from a recommendation) has started to be 'implemented' and introduced into NR operations. It was also agreed that the 'embedment' of changes into the NR 'business as usual' operation would be subsequently audited by ORR as part of general ongoing assurance activity (i.e. outside this Mandate).

[6] Mandate AO/030 "PR13 M&R review of asset policies and their application in planning: progressive assurance and SBP submission."

**2.1.11** This is our final report produced for upload to the ORR website. It follows review and discussion of our draft report with ORR and NR.

## 2.2 Previous Progress Assessment

**2.2.1** We last produced a progress report for external publication in May 2012. The report summarised progress with the BCAM Transformation Programme up to 31st March 2012 (Ref 7). A copy was uploaded to the ORR website[7].

**2.2.2** At that time our assessment of progress was that of the 77 recommendations

- Overall Progress was 88% complete (based on recommendations due at end of March 2012)
- 59 Recommendations had been closed (out of 76 due at end March 2012)

**2.2.3** There were 18 recommendations still to be addressed and significant work still associated with this. At that time our assessment was that NR's forward plans appeared to indicate that the BCAM Programme would be capable of closing these key remaining recommendations by the 31st December 2012 providing key risks were appropriately managed.

## 2.3 Further Audit / Assurance

**2.3.1** As required by our Mandate we have also produced a short handover report (see Appendix E). This sets out our suggestions (as Independent Reporter) as to the possible scope of future assurance / audit activity and has been prepared to facilitate planning by ORR and NR.

**2.3.2** The exact scope and detailed requirements of such further assurance / audit activity (if any) is for ORR to decide, specify and discuss with NR in accordance with defined Reporter protocols.

## 2.4 Acknowledgement

**2.4.1** The Independent Reporter Team would like to thank both NR and ORR staff for their assistance with this assurance activity, for openly explaining progress and their thinking as well as providing documents / plans.

[7] http://www.rail-reg.gov.uk/upload/pdf/management-structures-trans-plan-0512.pdf

# 3 Context

## 3.1 Mandate AO/007 Structures Review

**3.1.1** In June 2010, Arup as Independent Reporter was commissioned by NR and ORR to work in tripartite collaboration to develop an agreed and benchmarked view of Network Rail's current position with respect to Civil Structures' Asset Policy, Stewardship and Management of Structures together with proposed opportunities for improvement (Mandate AO/007).

**3.1.2** The Civil Structure categories included in the Mandate comprised:

a) bridges and culverts (including footbridges)
b) retaining walls
c) tunnels
d) earthworks
e) coastal, estuarine, and river defences.

**3.1.3** The two primary purposes of the Mandate AO/007 Structures Review were to:

- understand NR's current management of Civil Structures; and
- develop a plan for achieving best practice management of Civil Structures.

**3.1.4** In developing the agreed and benchmarked view, we adopted a simplified asset management framework model which considers asset management in three broad stages namely: Policy and Strategy, Planning and Programming, and Definition and Delivery. These processes are central to the way an asset owning organisation decides:

*a) what demands it has to serve and what outcomes are required;*

*b) how, where and in what to invest to meet those outcomes;*

*c) what assets are most critical, what risks need to be managed;*

*d) how investments and improvements will be delivered; and*

*e) how actual output performance will be demonstrated.*

We also considered the Enablers that support these core asset management processes and the Continual Improvement processes that were in place.

**3.1.5** We posed ourselves several key questions as a basis for our review:

### Asset Processes
*What is the evidence that an asset management approach is being adopted by NR?*

### Asset Condition
*What is the evidence that the volume of renewal and maintenance work is maintaining the value of the asset and preventing an inconspicuous decline?*

### Asset Performance
*What is the evidence that specific outcomes are being delivered effectively?*

### Asset Risk

*What is the evidence that risks (current and trajectory) associated with Civil Structures are understood, communicated and controlled?*

**3.1.6** We issued our draft report on the Review to NR and ORR in December 2010.

**3.1.7** Following discussion of our draft report and clarification, our recommendations were accepted by NR and ORR, and we issued our Final Report on 3rd March 2011 (Ref 1).

**3.1.8** Our findings and observations were distilled into 77 key recommendations each of which we assigned an indicative priority based on our view of its importance to asset management of Civil Structures.

**3.1.9** A copy of the Executive Summary from the Final Report is reproduced in Appendix B.

## 3.2 BCAM Transformation Programme

**3.2.1** As noted above, the Mandate AO/007 Structures Review made 77 key recommendations based on the findings and observations. Based around these, in April 2011 NR initiated a Building & Civils Asset Management (BCAM) Transformation Programme to both address the 77 key recommendations and to undertake additional activities to improve the way that Buildings and Civils Asset Management is undertaken (Ref 5).

**3.2.2** The NR Terms of Reference (Ref 4) for the BCAM Transformation Programme states:

> *"The primary objective of the Buildings & Civils Asset Management (BCAM) Transformation Programme is to deliver all of the changes required to improve substantively the effectiveness, sustainability and robustness of this function.*
>
> *This includes responding to the Tripartite Review recommendations. Successful delivery would enable BCAM to operate a robust end-to-end asset management process that evidentially, safely and sustainably maintains B&C assets at the lowest possible whole-life cost.*
>
> *This will be done within the wider Network Rail objective to deliver a safe, reliable and efficient railway for Britain, and our Asset Management objective to demonstrate recognised best practice for AM in the UK by 2014 and the world by 2019[8]."*

**3.2.3** To provide overall governance, NR established a BCAM Transformation Programme Board to be responsible for assurance and confirmation that the programme as a whole or any of its aspects are on track, applying relevant practices and procedures, and that the projects, activities and business rationale remain aligned to the programme's objectives.

[8] Source: Asset Management Improvement Plan (AMIP), Network Rail

**3.2.4** The BCAM Programme Board has typically met on a monthly basis, and Arup have frequently attended as an 'observer' on behalf of ORR. NR has provided copies of the Programme Board material to both Arup and ORR.

# 4 Scope and Approach

## 4.1 Scope

**4.1.1** In June 2011, Arup were appointed under Mandate AO/019. The overall intent of the Mandate was for the Independent Reporter to provide robust constructive review and assurance[9] of the NR BCAM Transformation Programme activity. The objective is to provide ORR and NR with increased confidence that the issues identified in Mandate AO/007 will be suitably addressed by the Programme and its workstreams in a suitably prioritised and timely manner.

**4.1.2** We have adopted a progressive assurance approach, meeting regularly with the NR BCAM Programme team and ORR during the period to review and advise on progress.

**4.1.3** A key emphasis has been on the constructive review aspect. We have met with NR's BCAM Team regularly to discuss and explain our thinking behind each of the 77 recommendations. We adopted this collaborative approach in recognition that the individual recommendations are interconnected and cannot be considered in isolation. The aim of this approach was to ensure that NR understood our opinions and could develop a way forward that most suited their business.

**4.1.4** Our role under this Mandate has thus been to focus on the delivery of the 77 recommendations from the Tripartite Review and specifically not to include assurance / review of wider programme assurance activity such as :

- adherence to the Business Case
- expenditure
- programme viability
- focus on business need
- value-for-money of the solution
- realisation of benefits

The mandate is restricted to Civil Structures (and does not include the Buildings / Operational Property aspect of the BCAM Transformation Programme).

It is also noted that our role under this mandate was not to provide assurance to the wider Building & Civils CP5 / Strategic Business Plan activity which has subsequently been added into the BCAM Transformation Programme – that work has been undertaken through a separate Mandate.

**4.1.5** The Mandates were developed before Devolution in November 2011 and it was subsequently agreed that we would rely on material provided by the central BCAM Transformation team and not undertake independent audit / assurance of the Routes. This approach was deemed to be appropriate in light of the central development work by NR and the plan to centrally 'roll out' improvement and business change to the Routes in a planned manner.

[9] Assurance: All the systematic actions necessary to provide confidence that the target (system, process, organisation, programme, project, outcome, benefit, capability, product output, deliverable) is appropriate. Appropriateness might be defined subjectively or objectively in different circumstances. The implication is that assurance will have a level of independence from that which is being assured.

**4.1.6** Our assurance activities and detailed views have been set out in a series of regular (typically monthly) Progress Notes and assessments provided to both NR and ORR. This report provides a summary overview of progress during the BCAM Transformation Programme from its inception up until 31st December 2012.

**4.1.7** The final documents that we have considered reflect the planned closure date of 31st December 2012 and were provided in early January 2013.

## 4.2 Assessment Methodology

**4.2.1** It was agreed that 'close-out' of a recommendation would be taken as a point where there is evidence that change (arising from the recommendation) has started to be 'implemented' and introduced into NR day to day operation.

**4.2.2** It was also agreed that full 'embedment' of changes into the NR 'business as usual' operation would occur after 'close-out' and that this 'embedment' would be subsequently audited by ORR as part of general ongoing progressive assurance activity (i.e. outside this Mandate). We have provided some suggestions as to a potential scope of future assurance / audit activity in Appendix E.

**4.2.3** As noted above throughout the BCAM Transformation Programme we have regularly met with NR and ORR to discuss and assess progress. We have progressively reviewed the various documents and material provided by NR and allocated a semi-quantitative progress percentage against each of the 77 Recommendations where a progress percentage of

- 0% indicates activity towards closure of recommendation not started
- 100% indicates recommendation closed

In our more detailed regular progress assessments, we have also provided a short commentary to accompany our assessment of the progress percentage and to assist NR in addressing the recommendations.

**4.2.4** In assessing progress it must be recognised that the individual recommendations are interconnected and cannot be considered in isolation. This means that it may in certain instances be possible to *'address the letter of a recommendation'* but not the '*intent*'.

**4.2.5** We have assessed against the '*intent'* of the recommendation – that is the recommendation in the context of the overall Mandate AO/007 Structures Review Report - the Executive Summary is included in Appendix B to assist with understanding the '*intent'*.

# 5 Progress

## 5.1 Baseline Plan – Nov 2011

**5.1.1** In October 2011 NR set out an overall outline programme for addressing the 77 recommendations. This was further developed in November 2011 by NR and ourselves into a detailed list of specific dates to serve as a 'Programme Recommendations Tracker'.

**5.1.2** The NR 'Programme Recommendations Tracker' planned that the 77 key recommendations would be 'closed-out' in 'tranches' due in Dec 2011, Feb 2012, March 2012 and June 2012.

**5.1.3** For record purposes, ORR placed a copy of the 'Programme Recommendations Tracker' on their website (ORR letter 433113.01 dated 23 Nov 2011 - Ref 6- copy appended in Appendix C1) and noted that this would be used as a 'baseline' for progress evaluation.

**5.1.4** In the Mandate AO/007 Structures Review (Ref 1) each of the 77 key recommendations was assigned a 'priority'. For our assurance work we adopted a similar approach allocating a priority to each recommendation from '0' as highest priority to '4' as lowest priority. Figure 5.1, tabulates the NR planned dates for closure of against priority.

| | Number of Recommendations | | | | |
|---|---|---|---|---|---|
| Priority | **Due Dec 2011** | **Due Feb 2012** | **Due March 2012** | **Due June 2012** | |
| 0 | 3 | 1 | 2 | | 6 |
| 1 | 10 | 11 | 5 | | 26 |
| 2 | 7 | 9 | 9 | 1 | 26 |
| 3 | 3 | 2 | 3 | | 8 |
| 4 | 3 | 6 | 2 | | 11 |
| *Total* | 26 | 29 | 21 | 1 | 77 |

**Figure 5.1 Tripartite Recommendations vs Priority & Date for Closure (November 2011)**

## 5.2 Progress at End March 2012

**5.2.1** At the 31st March 2012 our assessment of progress was

- Overall Progress 88% complete (based on recommendations due at end March)
- 59 Recommendations closed (out of 76 due at end March 2012).
- 18 Recommendations outstanding

This is summarised in our Annual Progress Report for 2011/12 (Ref 7) – extract in Appendix D1.

## 5.3 Updated Baseline – May 2012

**5.3.1** In March 2012, NR indicated that due to the emerging scale of change, 10 recommendations (which NR referred to as the 'Ruby Recommendations') would require additional time to close. NR provided proposed revised dates for closure of these 10 recommendations.

**5.3.2** A revised baseline was subsequently agreed with ORR (ORR letter dated 21st May 2012 – Ref 8 - copy appended in Appendix C2). This extended the programme for closure of the remaining 18no. recommendations from 30th June 2012 to 31st December 2012.

**5.3.3** ORR letter dated 21st May 2012 included an updated tracker which we developed with NR. That tracker has been subsequently used as the updated baseline plan for progress measurement. Figure 5.2, tabulates the NR planned dates for closure of against priority.

| | Number of Recommendations Due | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Priority | Closed at April 2012 | Due June 2012 | Due July 2012 | Due Aug 2012 | Due Sept 2012 | Due Oct 2012 | Due Nov 2012 | Due Dec 2012 | Total |
| 0 | 4 | | | 1 | | | 1 | | 6 |
| 1 | 16 | 1 | | 2 | 1 | 2 | | 4 | 26 |
| 2 | 21 | | 1 | | 1 | | | 3 | 26 |
| 3 | 7 | | | | | | | 1 | 8 |
| 4 | 11 | | | | | | | | 11 |
| *Total* | 59 | 1 | 1 | 3 | 2 | 2 | 1 | 8 | 77 |

**Figure 5.2 Tripartite Recommendations vs Priority & Date for Closure (May 2012)**

## 5.4 Interface with SBP Progressive Assurance

**5.4.1** As part of a separate Mandate for NR and ORR we are also reviewing progress towards the Strategic Business Plan (SBP) submission - (Mandate AO/030[10]). In assessing BCAM progress we have considered material and information provided by NR as part of that Mandate so far as it is pertinent to our assessment.

**5.4.2** It should be noted that a clear distinction between the Mandate AO/019 and AO/030 has been maintained, with BCAM (Mandate AO/019) focussing on evidence that change (arising from a recommendation) has started to be 'implemented' then introduced into NR operations, Mandate AO/030 focussing on the robustness and sustainability of the SBP submission for CP5.

## 5.5 Progress at end December 2012

**5.5.1** Our assessment is tabulated in Appendix D2 and summarised below. This indicates:

- Overall Progress 97% complete (75 Recommendations have been closed out of 77 due at end December 2012)
- Work on two Recommendations (R8.14 and R8.15) relating to Asset Data is ongoing and we consider that against the agreed criteria these remain to be closed.

**5.5.2** In respect of the two recommendations (R8.14 and R8.15) we consider that NR has made significant progress in the last four months of the 18 month programme (moving from 32% complete at 3rd Oct 2012) but that these are still work in progress. Specifically we consider that:

- the listing of asset data (R8.14) is still in development (e.g. does not include the information NR requires to quantify the volume and nature of work to underbridges) and has not as far as we are aware been reviewed and agreed with ORR (R8.14);
- evidence of the start of implementation of gap filling has not been supplied at the assessment date of 31st December 2012 (R8.15).

**5.5.3** We note that NR indicate that they have initiated a data gap filling project[11] which runs from January 2013 to end of December 2013. On this basis we anticipate that NR should be in a position imminently to provide an updated and more detailed listing of data / information (to close out R8.14) and evidence of the start of implementation (to close out R8.15).

[10] Mandate AO/030 - PR13 M&R review of asset policies and their application in planning: progressive assurance and SBP submission.
[11] BCAM-TP-0292 Issue 1.0 dated 8 Jan 2013 'Closure of Critical Recommendation 8.15: Civils Structures Asset Information Gap Filling Project'

# 6 Comment and Opinion

## 6.1 Overall Context

**6.1.1** Our Tripartite Review that led to the 77 Recommendations was conducted between June 2010 and December 2010. Since that time, outside of the BCAM Transformation Programme there have been a number of significant changes in NR that to a greater or lesser extent have had an impact on the progress with the BCAM Transformation Programme.

### Devolution

**6.1.2** In November 2011, NR devolved the day-to-day running of Britain's railway infrastructure to 10 strategic routes[12]. The revised arrangement is a central part of NR plans to deliver continued efficiency savings, with a target to cut the cost of running Britain's railway by more than £5bn between 2009 and 2014.

### Transfer of CP5 B&C Delivery

**6.1.3** In December 2011, the BCAM Transformation Programme was combined with the CP5 programme. Accountability for delivery of CP5 (for Buildings & Civils) and Transformation transferred to the respective Heads of Asset Management for Structures, Geotechnics and Buildings[13] (Ref 5).

## 6.2 Comment and Opinion

**6.2.1** It is of particular note that NR have been very open and transparent with their progress under the BCAM Transformation Programme, have fully supported the progressive assurance approach and worked in an open collaborative manner with ourselves and ORR.

**6.2.2** It is very positive that in addressing the 77 recommendations, NR have focussed on the *'intent'* of the recommendation not just the *'letter'*. This is evidenced by their creation and support of the BCAM Transformation Programme itself. We believe that this collaborative working approach has enabled NR to make more significant progress than might otherwise have been possible.

**6.2.3** We see it as very positive that the B&C CP5 development was incorporated in the BCAM Transformation Programme – this led to a significant improvement in the co-ordination of the various programme workstreams following that transfer.

**6.2.4** The direct impact of Devolution was that B&C staff previously under central control were transferred to management teams in each route. Our view is that the change associated with Devolution significantly impacted on progress with the BCAM Transformation.

**6.2.5** Specifically Devolution increased the requirement within NR for internal communication and stakeholder management between the BCAM

[12] http://www.networkrail.co.uk/devolution.aspx

[13] The HAM role has subsequently been replaced by the appointment of the Professional Head (one each for Structures and Earthworks) with effect from 2 April, 2013

Programme and the Routes, and also placed additional staff resource pressures on the BCAM programme team.

**6.2.6** The BCAM team have and are expending significant effort on this engagement, but embedment of the revised procedures into the 'business as usual' at 10 separate Routes will remain a challenge and is the largest risk still facing the BCAM Programme.

**6.2.7** In summary, our view is that the BCAM Transformation Programme has delivered very significant change to the way that NR are seeking to manage their Civil Structures. Key aspects are

- Development of explicit Asset Management Targets;
- Adoption of a Risk based approach to Asset Policy;
- Development of an unconstrained workbank approach;
- Policy on a Page and associated lifecycle modelling;
- Consideration of Planned Preventative Maintenance;
- Introduction of an explicit overall Asset Management Process;

and the overall co-ordinated linkage between closure of the 77 B&C Tripartite Recommendations, Policy Development, Whole Life Cycle modelling , Route Asset Management Plans and development of the Strategic Business Plan for Buildings and Civils. This is very positive and is clearly evidenced by aspects such as the improvement in the Structures and Earthworks Asset Policies during the last 18 months.

**6.2.8** As recognised from the outset, the BCAM Transformation is a long term programme with work to date focussing on starting to implement change arising from recommendations and introducing this into NR day to day operation. Embedment of change into the NR 'business as usual' operation will still take some time.

## 6.3 Next Steps

**6.3.1** As noted above there are two recommendations still to be addressed and significant work is still associated with this. However, based on our limited review of NR's proposed plans these seem capable of closing these key remaining recommendations in the timescales proposed by NR providing key risks are appropriately managed.

**6.3.2** The Civil Structure categories included in the original review (Mandate AO/007) comprised:

a) bridges and culverts (including footbridges)
b) retaining walls
c) tunnels
d) earthworks
e) coastal, estuarine, and river defences.

Key focus to date by the BCAM Transformation Programme has been on bridges and earthworks with some activity in relation to retaining walls and tunnels. The asset management principles will need to continue to be developed and implemented for all the other categories and sub-groups (such

as Major Structures). This is potentially a significant amount of work and a risk still facing the BCAM Programme.

**6.3.3** The key next step will be 'embedment' of all the 77 recommendations into 'business as usual' at a Central and Route level. To facilitate this it will be important to continue the engagement between the BCAM Programme Team and the Routes. It will also be important to continue to provide central guidance and technical support to the Routes to ensure consistent application of the principles developed under BCAM Transformation.

**6.3.4** It is suggested that (if not done so already) a formal stakeholder engagement and business change / transition plan should be prepared to provide increased confidence that the actions implemented by the BCAM Programme will become embedded in the business as usual processes in the 10 Routes.

**6.3.5** In terms of programme risk, we see the areas of most significant risk being in terms of this 'embedment' together with the development of appropriate asset data / knowledge and information to support effective asset management decisions by the Routes. It will also be important to have clear ongoing 'sponsorship' of the programme from within NR.

**6.3.6** NR have produced an outline plan for further BCAM development and 'embedment' (See Appendix E).We would suggest that this is developed in more detail by NR such that it could form a clear 'baseline' for progress reviews.

# 7 References

1. Arup 2011a 'Office of Rail Regulation and Network Rail Part A Reporter Mandate AO/007: Review Asset Policy, Stewardship and Management of Structures Final Report – Review and Benchmarking' Job Number 209830-07 Revision 1 March 2011.
2. Arup 2011b 'Office of Rail Regulation and Network Rail Part A Reporter Mandate AO/007: Review Asset Policy, Stewardship and Management of Structures - Supporting Information' Job Number 209830-07 Issue B February 2011.
3. Arup 2011c 'Office of Rail Regulation and Network Rail Part A Reporter Mandate AO/007: Review Asset Policy, Stewardship and Management of Structures – Action Plan Job Number 209830-07 Draft A March 2011.
4. Network Rail 2011a 'Buildings & Civils Asset Management Transformation Programme - Terms of Reference Document' Final V1.0 23 June, 2011.
5. Network Rail 2012a 'Buildings and Civils Asset Management Transformation & CP5 Programme Explanatory Document' Ref BCAM-TP-0044 Version 1.0 23 February 2012.
6. Office of Rail Regulation, 2011a 'Management of Structures Transformation Plan' letter 433113.01 dated 23 Nov 2011.
7. Arup 2012a 'Office of Rail Regulation and Network Rail Part A Reporter Mandate AO/019: Independent Review and Assurance of Network Rail Building & Civil's Transformation Programme – Annual Progress Report 2011/12' Job Number 209830-19 Revision 1 May 2012.
8. Office of Rail Regulation, 2012a 'Management of Structures Transformation Plan' letter dated 22 May 2012.

# Appendix A

Mandate AO/019

## Mandate for Independent Report – Management of Structures Assurance

| | |
|---|---|
| Audit Title: | Asset Policy, Stewardship and Management of Structures – Independent Review and Assurance of Network Rail Buildings & Civil's Transformation Programme |
| Mandate Ref: | AO/019 |
| Document version: | Draft C |
| Date: | 29 June 2011 (Draft C) |
| Draft prepared by: | Mervyn Carter / Jim Bostock / John Halsall |
| Remit prepared by: | |
| Network Rail reviewer: | Bill Davidson |

Authorisation to proceed

| | | |
|---|---|---|
| ORR | | |
| Network Rail | | |

### Background

As a single organisation NR has the UK's largest stock of bridges exceeding 35,000, as well as an extensive asset base of embankments (circa 8000 km), cuttings (circa 6500km), 24,000 culverts, 300km sea defences, 700 tunnels, and 17,000 retaining walls.

In June 2010, the Independent Reporter was commissioned by NR and ORR to work in tripartite collaboration to develop an agreed and benchmarked view of Network Rail's current position with respect to Civil Structures' Asset Policy, Stewardship and Management of Structures together with proposed opportunities for improvement (Mandate AO/007).

The Final Report from this study was issued on 3 March 2011 (Reference 1). A Draft Action Plan was also issued in March 2011 (Reference 2 ) setting out the Independent Reporter's view as to work required in response to the recommendations in the Final Report.

At the time of writing, NR are in the process of initiating and defining their Building & Civils Transformation Programme in response to the Mandate AO/007 Tripartite Review. A first draft was received on 6 June 2011 followed by an update on 10 June (Reference 4). It is expected that this will be finalised by 22 June.

### Purpose

The overall intent of this Mandate is for the Reporter to provide robust constructive review and assurance[14] of the NR B&C Transformation Programme activity. The

[14] Assurance: All the systematic actions necessary to provide confidence that the target (system, process, organisation, programme, project, outcome, benefit, capability, product output, deliverable) is appropriate. Appropriateness might be defined subjectively or

objective is to provide ORR and NR with increased confidence that the issues identified in Mandate AO/007 will be suitably addressed by the NR B&C Transformation Programme and its specific workstreams (or other documented NR activity) in a suitably prioritised and timely manner.

The previous mandate included the statement that the underlying requirement of a future state (of) excellent asset management process is to sustainably deliver acceptable performance and safety commensurate with the available budget. The Transformation Programme should deliver this.

## NR B&C Transformation Programme Governance

The B&C Transformation Programme Board will be responsible for assurance and confirmation that the programme as a whole or any of its aspects are on track, applying relevant practices and procedures, and that the projects, activities and business rationale remain aligned to the programme's objectives.

As one of the key 'users' to be satisfied by the programme outcome, ORR has decided to appoint the Independent Reporter to support its own team and undertake the following independent assurance activities set out below. The role is that of 'User Programme Assurance' responsible to ORR and supporting / advising NR.

## Scope

### 4.1 Overall Scope

The overall scope of this assurance is the Transformation Programme defined in the document referenced above (or the final version thereof) and the recommendations contained in the final report from Mandate AO/007.

### 4.2 For the purpose of this brief civil engineering structures consist of:

- Bridges (including footbridges)
- Tunnels
- Retaining walls
- Culverts
- River and estuarial defences
- Earthworks

### 4.3 Exclusions

OLE masts signal posts and other subsidiary structures are excluded.

It is understood that NR's transformation programme is intended to cover both structures and buildings, however the original reporter study under Mandate AO/007 specifically excluded operational property. This assurance process will also exclude operational property. (TO BE DISCUSSED ORR/NR)

objectively in different circumstances. The implication is that assurance will have a level of independence from that which is being assured.

## Methodology

The reporter is to
:

i. Examine and review NR Programme and associated documentation produced throughout its planning and implementation
ii. Undertake selected interviews with NR staff
iii. Undertake specific audits of areas of potential concern
iv. Attend ad-hoc programme meetings
v. Attend Programme Board Meetings.

The frequency and level of detail for these activities it to be agreed on a rolling basis with ORR and Network Rail as part of an annual Forward Assurance Plan.

## Deliverables

The findings from the assurance work shall be reported on a monthly basis to ORR and to the Programme Board Meetings..

The reporter is to deliver:

- Forward Assurance Plan setting out proposed Interview / Audit areas and Reports in 12 month periods. The first such Plan is to be prepared within one month of commencement.

- Monthly update of progress including:-
  - interviews / audits conducted,
  - work reviewed, meetings attended, documents provided
  - emerging findings,
  - conclusions based on work to date
  - future actions / recommendations
  - deliverables completed under the transformation programme or an estimate of their partial completion
  - recommendations closed out from Mandate AO/007 final report

- Working Notes with specific comment / review of NR Programme documentation.

- Detailed Audit / Assurance Reports (on aspects to be agreed with ORR / NR )

- A risk and issue register shall be maintained to track the aspects identified during the assurance process and to record their status and mitigation.

All reports shall be formatted such that all paragraphs are numbered.

ORR and Network Rail shall be provided with copies of all minutes and working papers which contribute to the preparation of reports, whether interim or final.

Annually and at the conclusion of the Transformation Programme a summary report shall be prepared which shall be suitable for publishing on the ORR website.
Where agreed a version of the intermediate Detailed Audit / Assurance Reports shall also be prepared for publishing on the ORR website.

## Timescales

Draft timescales are detailed below. However, a final programme will be submitted by the project team 2 weeks after award for sign off by the Project Governance Board

- Assurance Support to be provided from the start of NR B&C Transformation Programme to the conclusion of the current Reporter contract, envisaged to be 1 May 2011 to 31st December 2012. Assurance support will continue to the conclusion of the Transformation Programme under separate remit to reflect the reporter arrangements applying after December 2012.
- Monthly reports to commence [30 June] 2011
- Forward Assurance Plan for 2011/12 to be provided by [30th June] 2011 (assumes NR provides Project Definition by 15th June 2011).
- Annual Summary Reports to commence 31 March 2012, ie for work in the year 2011-12
- A handover report should be provided at the end of December 2012 to facilitate the next reporter remit.

## Documentation and references

The Independent reporter shall base his audit work on the following:-

1. Arup 2011a 'Office of Rail Regulation and Network Rail Part A Reporter Mandate AO/007: Review Asset Policy, Stewardship and Management of Structures Final Report – Review and Benchmarking' Job Number 209830-07 Revision 1 March 2011.

2. Arup 2011b 'Office of Rail Regulation and Network Rail Part A Reporter Mandate AO/007: Review Asset Policy, Stewardship and Management of Structures – Action Plan Job Number 209830-07 Draft A March 2011.

3. Network Rail 2011a 'April 21 - B&C Transformation Programme Final Plan - PPT version v0.19.ppt'

4. Buildings & Civils Asset Management Transformation Programme, Terms of Reference Document, Draft V0.38, 10 June 2011.

. In addition to the documentation provided for the original audit the reporter shall also be provided with supporting documents relevant to NR's B&C Transformation Programme and associated interfacing projects / programmes and

5. Network Rail's Asset Management Policy for Civil Engineering (Structures), expected July 2011

## Independent Reporter remit proposal

The Independent Reporter shall prepare a remit for review and approval by the ORR and Network Rail on the basis of this mandate. The approved remit will form part of the mandate and shall be attached to this document.

The remit will detail methodology, tasks, programme, deliverables, resources and costs.

## Governance process for issuing reports

Further to the discussion regarding the review and issue process for independent reporter audit reports, the table below sets out a modified version of the process discussed on 8 December 2009. This will only apply to annual summary and other reports which are to be made public under this mandate.

Monthly and other intermediate reports are expected to be internal 'flash reports' and subject only to the Reporters' own quality assurance procedures before issue to ORR/NR

| Revision | By | Purpose | Outcome |
|---|---|---|---|
| Draft A | ORR / NR | Review for factual correctness and comments | Within 5 working days, both the ORR and NR should provide written responses detailing their comments on the report Where requested, the Independent Reporter will provide expansion of sections of the report where NR or ORR require further detail. |
| Draft B | ORR / NR | Review | Draft B will take into account the red lined comments from the ORR and NR (showing originator initials).<br>Where this is not possible due to multiple comments on the same text, then the original text and the two different comments will be shown.<br>The Independent Reporter will issue Draft B report to both ORR and NR.<br>All three parties will meet to discuss the report and agree its contents and recommendations as far as possible<br>It is anticipated that the review of Draft B would take no longer than 3 working days. |
| Revision 1 | Independent Reporter | Issue | The Independent Reporter will issue its final report<br>If agreement over its contents has not been reached the report will contain the Independent Reporter's independent assessment and also include opinions from ORR and NR to document their positions<br>ORR will publish the report on their website<br>It is anticipated that the issue of version 1 would take no longer than 1 working week after receiving full comments on Draft B. |

## Project Review Board

As a minimum the progress of this audit will be reviewed on a monthly basis at the Transformation Programme Project Board meeting.

A Project Board has been identified within the Transformation Programme with representatives from the ORR, Network Rail and the Independent Reporter.

However, ad hoc meetings may be held as required.

# Appendix B

Mandate AO/007 Executive Summary

Office of Rail Regulation and Network Rail

# Part A Reporter Mandate AO/007: Review Asset Policy, Stewardship and Management of Structures

## Final Report – Review and Benchmarking

209830-07

Revision 1| March 2011

**Ove Arup & Partners Ltd**
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Job number 209830-07

ARUP

# Contents

## Appendices

# 1 Executive Summary

## General

1.1.1 This report presents the findings from the review and benchmarking undertaken in response to Independent Reporter Mandate AO/007 'Review Asset Policy, Stewardship and Management of Structures'. The review has been undertaken by Arup in our role as Part A Independent Reporter.

1.1.2 A phased approach to the Mandate has been agreed and this report is our Final Report containing our detailed findings and recommendations. The recommendations will subsequently be developed into an Action Plan.

## Purpose

1.1.3 The purpose of Mandate AO/007 was to work in collaboration with Network Rail (NR) and the Office of Rail Regulation (ORR) to develop an agreed and benchmarked view of NR's current position with respect to Civil Structures asset management processes and identify opportunities for improvement. The Mandate was drafted to complement previous work by AMCL[1], the Part B Independent Reporter for Asset Management, and specifically to focus on the technical aspects of managing Civil Structures. The Civil Structure categories included in the Mandate are comprised of bridges and culverts (including footbridges), retaining walls, tunnels, earthworks, coastal, estuarine and river defences. The Mandate asked us to focus on understanding NR's current management of Civil Structures and developing a plan for achieving best practice management of Civil Structures.

## Approach

1.1.4 Our approach has been to follow the guidance set out in PAS 55[2], and to examine the key processes associated with NR's asset management of Civils Structures. This has been used as a means of assessing the degree of confidence in the current NR practice in the management of Civil Structures.

1.1.5 We have adopted a simplified asset management framework model which considers asset management in three broad stages namely: Policy and Strategy, Planning and Programming, and Definition and Delivery. These processes are central to the way an asset owning organisation decides:

a) what demands it has to serve and what outcomes are required;

b) how, where and in what to invest to meet those outcomes;

c) what assets are most critical, what risks need to be managed;

d) how investments and improvements will be delivered; and

e) how actual output performance will be demonstrated.

[1] Asset Management Consulting Limited
[2] BSI, 2008. PAS 55-1:2008 Asset Management – Part 1: Specification for the optimised management of physical assets. The Institute of Asset Management, British Standards Institute.

We have also considered the Enablers that support these core asset management processes and the Continual Improvement that is in place.

1.1.6 The asset management approach is seen as a way for asset intensive organisations to improve their effectiveness by promoting a clear 'line of sight' between the demands / outcomes that the asset owner has to deliver to customers, and the actions they are taking in terms of investments in their assets. This is important as the most significant opportunities for savings generally arise through improvements in effectiveness rather than simply improvements in efficiency and economy.

1.1.7 To reflect the collaborative nature of this review, our work has not involved a formal audit of NR systems and processes. We have however met and discussed systems and processes with a wide range of staff from NR and ORR. We have joined in over thirty meetings with NR/ORR staff at Headquarters and Route levels and we have spent two weeks with the Western Route Civils Team. In addition, we have researched a large number of external documents.

1.1.8 We have posed ourselves several key questions as a basis for our review:

### Asset Processes

- *What is the evidence that an asset management approach is being adopted by NR?*

### Asset Condition

- *What is the evidence that the volume of renewal and maintenance work is maintaining the value of the asset and preventing an inconspicuous decline?*

### Asset Performance

- *What is the evidence that specific outcomes are being delivered effectively?*

### Asset Risk

- *What is the evidence that risks (current and trajectory) associated with Civil Structures are understood, communicated and controlled?*

## Key Conclusions and Recommendations

## General

1.1.9 NR has a very extensive Civil Structures asset base to manage consisting of 35,127 underbridges and overbridges, 17,000 retaining walls, 14,186 km of earthworks, 327 km of tunnels and 300 km of coastal, estuarine and river defences. The quantity of assets is several times larger than that managed by the Highways Agency, for example. Primarily due to the age and level of historic investment, NR has a significantly lower percentage of assets in 'good' condition than most similar asset owners. NR is a company in

transition with a significant number of business changes being implemented associated with their Transformation Plan, many of which will have an effect on the management of Civil Structures. They have significant efficiency and economy targets to achieve to meet their Control Period 4 (CP4) obligations. We have found a strong drive centrally in NR to make changes rapidly. In the part of the organisation responsible for the day to day operation (Route level) we have found highly dedicated engineering staff focused on day-to-day activities associated with managing a complex legacy asset of Civil Structures. Much local practice is very good but this practice is not necessarily uniform across the Routes. To some extent the centrally driven transition is seen as a distraction to the day-to-day business of managing the assets. There is an opportunity to acquaint Routes of the purpose of change in a more effective manner. There is also considerable pressure on the Routes to attend to immediate urgent issues such as bridge strikes which take priority over longer-term asset management planning.

1.1.10 In terms of asset management, there is a very strong reliance on the engineering judgement of senior technical staff in the Routes and the CEFA[3] Contractor. Whilst this is not unusual with infrastructure operators, it does make it difficult to operate and then evaluate compliance in absolute terms. Asset data and asset systems (IT) available to the Routes are improving but currently do not fully support the current and changing business needs.

## Asset Processes

1.1.11 NR is making significant progress towards a process led organisation, with well defined process maps for their Business Investment procedures. This is seen as a positive step. NR engineering standards, processes and procedures are currently fragmented and place a strong reliance on engineering judgement. Whilst this is not unusual with infrastructure operators, it does make it difficult to operate and then evaluate compliance in absolute terms. The move towards defining processes should support the reliance on engineering judgement and improve consistency of decision making. The detailed definition of such processes is vital before an Asset Information System purchase is made.

1.1.12 It is recommended that:

a) NR develops process maps for the management of Civil Structures to form part of an Asset Management Manual. The Manual and process maps would clearly:

   i) rationalise and simplify the suite of engineering standards, guidance, processes and procedures

   ii) articulate and improve the linkage between Central and Route Asset Management Teams;

   iii) articulate and improve the interaction between NR standards and guidance;

   iv) promote consistency of practice;

   v) allow improved audit and verification; and

[3] Civil Examination Framework Agreement

vi) provide a clear base-line for continuous improvement.

## Asset Condition

1.1.13 Following recent events, such as Stewarton and Enterkin Burn, NR is making renewed effort to understand the nature, current condition and behaviour of their Civil Structures. However the sheer number of Civil Structures (for example there are over 35,000 bridges) makes this a significant task. NR holds extensive asset datasets held in various databases and are making significant progress in using this for developing RAMPs[4] for their 300 strategic route sections. It is our opinion that there needs to be improved focus on collecting the critical data that will allow effective management of each asset. This should also include data which demonstrates compliance with statutory and licence obligations.

1.1.14 It is recommended that:

a) NR more explicitly defines the critical elements of different types of Civil Structures and identifies suitable sub-groups such as different types of arch bridges, overconsolidated clay cuttings etc. based on their differences in engineering behaviour. The use of FMEA[5] and similar techniques should be considered by NR for this activity.

b) NR then collates existing asset information for these critical elements of Civil Structures and then jointly reviews and agrees with ORR the need for further inventory and condition data for the effective management of each asset sub-group. This work should be treated as a project with a specific full-time resource allocated.

c) Based on the outcome from the collation exercise, a specific asset knowledge gap filling project should be initiated to provide missing critical asset data.

d) NR should then consider obtaining this critical data more frequently and accurately to support deterioration modelling. Better integration of examination and assessment processes may assist in this respect.

e) NR should consider developing Asset Management Plans at an Operational Route level and at an Asset Specific Sub-Group Level. In our opinion, the RAMPs, whilst a good collation of existing diverse data, do not form a suitable asset management planning tool in themselves. The RAMPs should be complemented by asset specific plans which would include explicit technical lifecycle options which could be selected based on route priority and available funding. Lifecycle options would consider several asset policies such as:

i) do minimum;

ii) managed deterioration;

iii) lowest initial cost;

iv) lowest whole life cost;

v) enhancement; and

[4] Route Asset Management Plans
[5] Failure Mode and Effects Analysis

vi) heritage structures.

1.1.15 The lifecycle plans would consider preventive maintenance as well as renewal. The operational route asset planning would use collated RAMPs and select asset specific lifecycle options that suit the required performance requirements, for example certainty of delivery and available funding and safety.

## Asset Performance

1.1.16 Our review has identified that the required performance (in terms of operation, safety etc.) from Civil Structures is not explicitly defined by ORR. Similarly we have not identified suitable NR explicit targets for the level of service required from Civil Structures or the certainty of delivery (risk tolerance) to be associated with such levels of service. In particular we have identified instances where the balance between safety and performance requirements could usefully be clarified. Having explicit linkages between strategic goals and objectives and asset management actions increases the likelihood that the right sort of work will be correctly identified in the first instance and then appropriately prioritised.

1.1.17 In terms of planning of renewal requirements, our meetings with NR have confirmed our initial view that the CECASE[6] modelling undertaken to date has very similar aims, objectives and approach to work being undertaken by the Highways Agency and London Underground Limited to estimate future medium / long-term renewal requirements for their civil engineering structures assets.

1.1.18 It is recommended that:

a) ORR with NR should consider including more explicit asset stewardship performance measures (in terms of operation, safety etc.) for Civil Structures in the Control Period 5 (CP5) Regulatory Targets. This is primarily to lend suitable importance to asset stewardship of Civil Structures.

b) ORR with NR should develop a more explicit definition of tolerable risk levels associated with each of the Civil Structures performance measures (operation, safety etc.) for the management of Civil Structures. Such a definition would assist NR in their development and prioritisation of a workbank for Civil Structures on a risk basis. Ideally for safety performance the tolerable risk levels would link directly back to a DfT[7] / HLOS[8] safety target / requirement.

c) NR should develop explicit level of service criteria at a sub-group level for Civil Structures.

d) NR should develop explicit guidance on prioritisation of maintenance and renewal activities for Civil Structures. This prioritisation should link back to the performance criteria discussed above.

e) ORR with NR should jointly develop a more robust set of performance indicators to support the effective management and stewardship of Civil

[6] Civil Engineering Cost and Strategy Evaluation
[7] Department for Transport
[8] High Level Output Statement

Structures. The indicators should cover those items within the management system that pose significant threat as well as areas with the greatest opportunity for improvement. Specific focus should be placed on indicators that can be directly related to asset condition, asset performance and the management of asset risk (operation, safety etc). In particular there should be an improved leading indicator for reporting on the condition of bridge structures.

f) Most infrastructure owners find estimation of future medium / long-term renewal requirements for Civil Structures to be a challenge. It is recommended that specific discussions with some of the key utility and infrastructure organisations about decision support tools and modelling should continue to be undertaken to benchmark and share experience in this area. It is recommended that ORR should be involved in such meetings and in reviewing the decision support tools and modelling as the work proceeds.

## Asset Risk

1.1.19 In light of the above, our review has been unable to form an opinion as to the level of risk (current and trajectory) associated with the performance (operation, safety etc.) of Civil Structures. A better understanding of risk will require a number of the above identified actions to be undertaken. However in the immediate term it is recommended that:

a) NR develop and make available, internally and to ORR, an explicit workbank list based on technical need, unconstrained by funding availability, and how this relates to the CP4 workbank. This would assist the understanding of the current level of risk faced by the business before decisions are taken on financial resource allocation.

## Enablers/ Continuous Improvement

1.1.20 NR specification NR/SP/CMT/017 sets out training, competence and assessment requirements for both earthworks and structures examiners. The specification sets out comprehensive competency requirements for specific posts in the examination regime which are generally assessed by the post holder's line manager. There are no explicit technical or professional qualifications in this specification or levels of experience required for any of the posts, including Structures Managers and Earthworks Examining Engineers. The current Tunnel Examination Code of Practice [9] requires Tunnel Examiners to be Chartered Civil Engineers, with experience in the examination and maintenance of tunnels.

1.1.21 The requirements for structures and earthworks examiners are less demanding than under previous standards, and also lower than current standards for Tunnel Examiners. We have not seen evidence which supports these changes and apparent anomalies.

1.1.22 We note that NR is undertaking significant collaborative research primarily focussed on current issues. Our review has also identified that the quantity of engineering resource available at operational route level for the asset

[9] Examination of Tunnels (NR/GN/CIV/026, Ref 230)

management of Civil Structures in relation to the number of assets appears to be significantly lower than in comparable organisations, such as the Highways Agency.

1.1.23 It is recommended that:

a) NR benchmark their resource levels for asset management planning and delivery against a number of other infrastructure operators and share their findings with ORR.

b) NR review their succession planning strategy for route level engineering support.

c) NR develop more formal knowledge sharing processes supported by simple tools.

d) NR undertake business process benchmarking with other infrastructure operators to help in defining their future needs in relation to asset management. This benchmarking should be led by the AM[10] route engineering team and supported by the IT function, so that the future information system fully supports the emerging business needs.

e) NR with ORR establish a broadly based Civil Structures Development Group to collaboratively consider the longer term strategy for risk management of Civil Structures. This would include foresighting, and similar, to explore possible future risks relating to Civil Structures. Such a forum would define future areas for research and development associated with Civil Structures and be a means of engagement with TSAG[11] and other research groups.

## Acknowledgement

1.1.24 The Independent Reporter Team would like to thank both NR and ORR staff for their assistance with this study, for providing documents as requested and explaining the current procedures and future plans.

[10] Asset Management
[11] Technical Strategy Advisory Group

# Appendix C

ORR Letters with Baseline Programme Recommendations Trackers

# C1 ORR Letter dated 23 November 2011

**Jim Bostock**
**Head of Engineering and Asset Management**
Telephone 020 7282 2113
Fax 020 7282 2042
E-mail jim.bostock@orr.gsi.gov.uk

OFFICE OF **RAIL REGULATION**

23 November 2011

Mr John Halsall
Director, Buildings and Civils Asset Management
Network Rail
40 Melton Street,
London,
NW1 2EE

Dear John

**Management of Structures Transformation Plan**

I am writing to summarise my understanding of your progress with the above since the independent reporter Ove Arup's final report 'Review Asset Policy Stewardship and Management of Structures' was published on our website on 3 March 2011.
http://www.rail-reg.gov.uk/upload/pdf/reprters-audit-rev-policy-arup-mar11.pdf

Since then you have developed a comprehensive transformation programme to address concerns identified in Arup's study together with other improvements you wished to undertake.

Ten final draft project information documents (PIDs) were issued to us on 30 August 2011 covering the principal work streams of your project as follows:-

Project 1:Defining Success
Project 2:Policies and Standards
Project 3:Process and Planning
Project 4:Management of Workbank and Asset Risk
Project 5:Civil Engineering Framework Agreement (CEFA)
Project 6:Asset Information
Project 7:Information Systems and Tools
Project 8:People
Project 9:Route Asset Management Plans (RAMPs)
Project 10: Programme Management Office and Change Management

Subsequently you have removed Project 10 since this is essentially a 'how to' document rather than a key heading of an area where you wish to effect an improvement. You have

also developed a schedule of deliverables and detailed programme of work and assembled a team to deliver this transformation. I attach a version of the current 'Programme Recommendation Tracker' which you issued to us on 14 November and which has been enhanced by the Independent Reporter to include interim milestones.

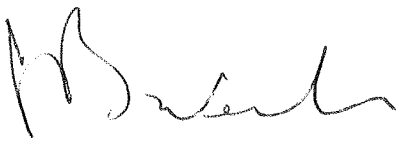
I am aware that an unplanned change in project management staff at the end of August resulted in some loss of momentum and an appropriate review and reprogramming was subsequently undertaken by the replacement project management lead. Whilst you are continuing to manage anticipated risks to the programme, devolution has inevitably also had an impact on the project.

Given the time that has elapsed since publication of the original study I am keen that the transformation programme should now move into serious delivery mode and make the obvious and embedded improvement to the management of civil engineering assets that both of us wish to see. In particular it has become apparent from our review of the draft final Structures Policy submitted as part of the IIP progressive assurance that there is a clear and vital need for the Transformation Programme to deliver input to improve this policy and make it fit for purpose. I am aware you are working on this and have already shared with us early drafts of your 'policy on a page' documents. As agreed the Independent reporter will continue to monitor progress of the Transformation Project and report to both of us on a monthly basis.

To that end and following the December progress report I should like review progress with you as soon as possible after 31 December 2011, when a number of key deliverables should have been achieved. I am recommending to NRRG that this issue remains on the Regulatory Escalator until we have carried out this review.

I am placing a copy of this letter on our website.

Yours sincerely



**Jim Bostock**

Enc. Deliverable Tracker

Cc: M Rudrum Arup

# *Buildings & Civils*
# *Asset Management*
# *Transformation Programme*

## *Programme Recommendation Tracker*

**DRAFT**

Version 2.0  Baseline Document for Tracking

20/11/2011

Simon Oakley

Updated to reflect discussions on 1st, 2nd, 3rd Nov 2011 with Arup Independent Reporter

***Overview:***

This document (next tab) sets out each Tripartite Recommendation and provides its planned closure date and

The document is a proposed means for tracking progress in the programme.

| Rec No | Recommendation | Deliverable Product | Interim Milestone Product | Interim Milestone Date | RAG Status | Planned Recommendation Closure Date | RAG Status |
|---|---|---|---|---|---|---|---|
| R5.1 | With targets there is always an element of 'what gets measured gets done …' and, we believe that the ORR should consider including more explicit asset stewardship performance measures (in terms of operation, safety etc.) for Civil Structures in the CP5 Regulatory Targets to confer suitable importance to asset stewardship of Civil Structures. These measures would be supported by a balanced set of performance indicators to assist NR in their management of the assets. The performance indicators would be derived from effective business information systems that would allow the easy derivation of current performance. | "To-Be" Outcomes Document | 1st Draft | 30/11/2012 | | 16/02/12 | |
| R5.2 | We consider that ORR with NR should develop a more explicit definition of tolerable risk levels for the management of Civil Structures. Such a definition would assist NR in their development and prioritisation of a workbank for Civil Structures on a risk basis. Ideally the tolerable risk levels would link directly back to a DfT HLOS Safety target. There is also an opportunity to link safety risk into the revised Civil Asset Intervention Policies currently being developed by NR. | Definition of Tolerable Risk Document | | | | 09/12/11 | |
| R5.3 | There is an opportunity to more clearly define the success criteria for the asset stewardship and management of Civil Structures (e.g. level of service objectives, relative weightings between criteria) between ORR and NR. These level of service criteria should be derived from and be consistent with the Strategic Goals and Objectives set for CP5 | "To-Be" Outcomes Document | 1st Draft | 30/11/2012 | | 16/02/12 | |
| R5.4 | It is recommended that the connection between the NR high-level AM Policy and AM Strategy and tactical management of the Civil Structures asset is defined more fully in future revisions of the documents | Target Operating Model Document | Blue Print Target Operating Model | 04/12/2011 | | 16/02/12 | |
| R6.1 | It is recommended that asset groups for lifecycle planning are made more specific. This will allow lifecycle plans to be developed at a Sub-Group level and the more effective management of assets | "Policy on a Page" | | | | 25/11/11 | |
| R6.2 | It is recommended that NR 'asset intervention policies' are developed to reflect a wider range of intervention options. These policies would then be used as a basis for 'lifecycle' option development | Asset Interventions Policy Document | Policy on a Page | 09/12/2011 | | 30/03/12 | |
| R6.3 | It is also recommended that Asset Intervention Policies such as the following are adopted:<br>• Do Minimum<br>• Managed Deterioration<br>• Lowest Initial Cost<br>• Lowest Whole Life Cost<br>• Enhancement<br>• Heritage Structures<br>with lifecycle plans being developed at a Sub-Group level to reflect the individual needs of particular Sub-Groups of Civil Structures assets. | Asset Interventions Policy Document | Policy on a Page | 09/12/2011 | | 30/03/12 | |
| R6.4 | We note that LNW have approximately 12,000 bridges, and 5,000 retaining walls. From our discussions with the Route Structures Engineer, we understand that there are typically about 100 major interventions (Investment Projects) and about 1000 Minor Works instructions per annum. NR has confirmed these numbers are typical of other Routes of the network. We estimate that, on average, structures are currently subject to a major intervention about once every 170 years, with minor works being carried out at a rate of once every 17 years. Some minor works are likely to be unrelated to the condition or integrity of a structure. The frequency of intervention seems surprisingly low. It is recommended that intervention rates for similar infrastructure operators are obtained and compared with these figures. | Structures Policy Document | | | | 09/12/11 | |
| R6.5 | It is recommended that preventative maintenance is explicitly considered as part of the lifecycle planning options for Civil Structures at a Group / Sub-Group level. | Structures Policy Document | | | | 09/12/11 | |
| R6.6 | It is recommended that 'lifecycle' plans are developed at a Sub-Group level to reflect the individual needs of particular Sub-Groups of Civil Structures assets and that a series of technical options considering both maintenance and renewal are produced for most or all of the defined Asset Intervention Policies. | Structures Policy Document | | | | 09/12/11 | |
| R6.7 | NR has advised that they are unable to demonstrate the cost effectiveness of maintenance painting. We understand that this conclusion is reached by comparing the net present value of bridge deck replacement with the current cost of maintenance painting; and therefore it is not done under normal circumstances. We have not reviewed the evidence which supports this conclusion. Given the large number of metal bridges under NR stewardship, there is an opportunity to work with the supply chain to develop improved specifications, materials and techniques which will enable this work to be carried out efficiently and cost effectively. It is recognised that this is a complex technical issue because there are many legacy paint systems in use. | TBA | Interim Note | 09/12/2011 | | 30/03/12 | |
| R6.8 | It is recommended that NR develops a formal explicit structures workbank of all work that is currently outstanding on a route independent of funding constraints / overall priorities and that this is made available and reviewed when funding levels are being set. | CEFA Recovery Plan | Interim | 12/11/2011 | | 16/02/12 | |

| Rec No | Recommendation | Deliverable Product | Interim Milestone Product | Interim Milestone Date | RAG Status | Planned Recommendation Closure Date | RAG Status |
|---|---|---|---|---|---|---|---|
| R6.9 | It is suggested that specific discussions about decision support tools and modelling should continue to be undertaken to benchmark and share experience in this area. | Initial External Benchmarking Results | | | | 09/12/11 | |
| R6.10 | We consider that ORR/NR should jointly develop a set of explicit business rules to be used by NR in their asset planning and future development of a medium / long-term asset investment planning tool. These should be aligned to life cycle planning principles as outlined above. | "To-Be" Processes | Interim | 09/12/2011 | | 16/02/12 | |
| R6.11 | It is recommended that the development of these business rules and their implementation in to a medium / longterm asset investment planning tool should be independently reviewed in parallel with the development to ensure clarity of assumptions made in the planning. | "To-Be" Processes | Interim | 09/12/2011 | | 16/02/12 | |
| R6.12 | As part of the development process, consideration should be given to identifying Civil Structures asset data sets likely to be required for the medium / long-term modelling so that any additional data sets can start to be collected as part of the inspection and examination process. | Asset Data Sets Agreed | Interim | 09/12/2011 | | 09/12/11 | |
| R6.13 | Decision support tools can be particularly useful for developing medium / long-term work banks and optimising different conflicting factors such as direct costs, penalty costs, costs from lost performance and amortised costs. The inclusion of an optimisation function may be a specific area to consider in the future tool. | Business Requirements Catalogue/ IT Systems Functional Specification | Interim | 09/12/2011 | | 16/02/12 | |
| R6.14 | The application of risk based decision support tools is a developing area and it is recommended that this is a specific area for future research and development | Business Requirements Catalogue/ IT Systems Functional Specification | Interim | 09/12/2011 | | 16/02/12 | |
| R6.15 | It is suggested that collaborative research would be a very appropriate way to develop the application of risk based decision support tools. | Business Requirements Catalogue/ IT Systems Functional Specification | Interim | 09/12/2011 | | 16/02/12 | |
| R6.16 | We have not seen a commentary or similar document explaining how the recommendations made in the RAIB Report in December 2008 have been progressed. It is recommended that this is reviewed | RAIB Report Recommendations Response Document | | | | 09/12/11 | |
| R6.17 | NR have 17,00 retaining walls. Based on limited discussions and our review of NR Standards we understand that retaining walls do not have an SCMI score from inspections or and that their capacity is not routinely assessed. It is recommended that a condition scoring system for retaining walls is initiated together with a formal capacity assessment. [R6.18]. Further work to understand the level of asset knowledge (inventory and condition etc.) and risks posed by of NR retaining walls is recommended. | Nigel Ricketts Document | | 28/10/2011 | | 25/11/11 | |
| R6.18 | In the light of the above, it is recommended that the prioritisation process is reviewed in some detail to understand how the relative merits of different asset renewal projects are evaluated | TBA | Interim | 16/02/2012 | | 30/03/12 | |
| R6.19 | Our remit did not include consideration of drainage issues. However, it is recommended that consideration is given to the prioritisation of slope drainage schemes as part of the wider review of relative priorities for maintenance works. | Target Operating Model Document | Blue Print Target Operating Model | 04/12/2011 | | 16/02/12 | |
| R6.20 | We have not been provided with the justification for the reduction in annual earthworks expenditure over the control period, or information as to how this expenditure relates to condition, performance and risk associated with the earthworks asset. It is recommended that this is clarified with NR. | Justification for the reduction in annual earthworks expenditure response Document | | | | 09/12/11 | |
| R6.21 | It is recommended that NR consider producing a National Level Asset Management Plan to support requests for funding or to summarise how allocated funding will be used to deliver an agreed level of service within an acceptable risk profile. This should also include an explicit planned volume of work. | National RAMP Template | | | | 30/11/11 | |
| R6.22 | A key purpose of an AMP is to quantify any gap between current performance and the desired target performance. The current RAMP does not define a target performance for Civil Structures or current performance of Civil Structures on the route. This means that the RAMP is more of an inventory listing than a tool to direct future expenditure to achieve targets / outcomes. This is a key area for future development. | National RAMP Template | | | | 30/11/11 | |
| R6.23 | We have not had sight of the planned development trajectory for RAMPs, and recommend that (if not done so already) a clear vision / blueprint for the 'to be' RAMP and how it will be used by the business is developed. | National RAMP Template | | | | 30/11/11 | |
| R6.24 | In particular it would be useful for the RAMP in the future to include more about the planning and programming stage rather than simply being a summary of planned renewals delivery | National RAMP Template | | | | 30/11/11 | |

| Rec No | Recommendation | Deliverable Product | Interim Milestone Product | Interim Milestone Date | RAG Status | Planned Recommendation Closure Date | RAG Status |
|---|---|---|---|---|---|---|---|
| R6.25 | This would recognise that the development will be incremental but provide a clear overall direction for the asset management planning process. Specifically it would be useful for the 'to be' process defining how the RAMPs will support the Interim Strategic Business Plan (ISBP) for CP5 to be articulated and shared with the ORR. This would link across to the business process mapping required for overall AM and for AM Information System development. | National RAMP Process | Interim | 30/11/2011 | | 16/02/12 | |
| R6.26 | We would recommend that NR consider producing AMPs at an operational route level | National RAMP Process | | | | 30/11/11 | |
| R6.27 | We find it surprising that only 13 out of the 300 major structures are planned to require maintenance expenditure in the 5 year CP4 period. It is recommended that this is investigated further | CP5 Major Structures Policy | | | | 09/12/11 | |
| R6.28 | It is recommended that NR consider producing structure group / sub-group level AMP to help improve the sharing of best practice for Civil Structures management, promote uniformity of practice and provide clarity as to the technical needs for on a structure group / sub-group level. | Structures Policy Document | Policy on a Page | 09/12/2011 | | 30/03/12 | |
| R6.29 | In addition, it was suggested that a more holistic view should be taken at an individual bridge structure level. Initially, this potentially would require significant resource to develop individual plans but is something that NR should consider. | "To-Be" Processes | Interim | 09/12/2011 | | 16/02/12 | |
| R6.30 | NR should also consider combining the various individual separate processes and procedures as part of their 'to be' asset management process definition activity. | "To-Be" Processes | Interim | 09/12/2011 | | 16/02/12 | |
| R6.31 | It is recommended that NR explicitly consider future demand in their asset management planning process | "To-Be" Processes | Interim | 09/12/2011 | | 16/02/12 | |
| R6.32 | The process of prioritisation is revised to show a clear decision making process which is based on knowledge not systems (e.g. RAMP Chesterfield Canal ) | "To-Be" Processes | Interim | 09/12/2011 | | 16/02/12 | |
| R6.33 | Conditions score for bridges are enhanced to include both the overall SCMI score and a set of SCMI crit scores for critical elements | Structures Policy Document | Interim | 16/12/2011 | | 09/12/11 | |
| R6.34 | A more effective means of updating SCMI is developed | "To-Be" Processes | Interim | 16/12/2011 | | 16/02/12 | |
| R6.35 | A system of grouping / sub-grouping of assets by type and behaviour is developed | "Policy on a Page" | | | | 25/11/11 | |
| R6.36 | The prioritisation process is made more explicit and transparent to include level of service considerations | "To-Be" Processes | Interim | 09/12/2011 | | 16/02/12 | |
| R8.1 | In our review we did not find clear NR guidance on workbank prioritisation / value management. It is recommended that formal guidance is developed by NR. | Guidance on workbank prioritisation / value management Document | Draft Business Process | 19/01/2012 | | 30/03/12 | |
| R8.2 | There is an opportunity to develop an 'Asset Manual for Management of Civil Structures' to clearly link and present a line of sight, based on a process led basis to promote consistency and provide a clear base-line for future improvements. This would include a clear description of the connection between the processes at route level and the relevant standards | Initial 'Asset Manual for Management of Civil Structures' for Route Devolution | 1st Draft for Routes | 09/12/2011 | | 30/03/12 | |
| R8.3 | It is recommended that NR considers measures to reduce this perceived two-tier organisation | People Engagement Complete | Interim - RAMP process | 30/11/2011 | | 30/03/12 | |
| R8.4 | Based on a NR bridge stock of 35,127 bridges and a suggested assessment interval of 18 years, this would imply 1,951 bridge assessments are required per annum. We have reviewed the Building &Civils team meeting 'fat pack' for Period 07 (Ref 385) and this indicates that 287 bridge assessments are planned to be undertaken nationally by the CEFA contractor during the FY 2010/11. It is recommended that this apparent disparity is reviewed and that an explicit way forward is defined. It is our opinion that NR is not collecting sufficient asset measurement and condition data | TBA | Interim Data Quality Review Report with gap and plan to fill | 09/12/2011 | | 30/03/12 | |
| R8.5 | It is recommended that the resource level of route structures teams and level of funding available for assessments is reviewed and benchmarked against other Infrastructure organisations | Initial External Benchmarking Results | Report on HA Benchmarking | 09/12/2011 | | 30/03/12 | |
| R8.6 | In our review we have not spent sufficient time with all routes to enable us to understand whether there are any clear differences in experience, qualifications and competence between Route Engineers and Managers in the various routes. It is recommended that this is investigated further. | People Engagement Complete | Basis for Role Comparison | 09/12/2011 | | 30/03/12 | |
| R8.7 | We also would note that care should be exercised by NR when moving from the current engineering judgement model to a process defined model to make sure that areas that require engineering judgement are maintained such that complex decisions are not over simplified | "To-Be" Processes | Blue Print Target Operating Model | 04/12/2011 | | 16/02/12 | |
| R8.8 | We would recommend that NR considers secondment of staff to the CEFA contractor to ensure that such knowledge and experience is built up by future staff | Secondments agreed with AMEY | Interim | 09/12/2011 | | 30/03/12 | |
| R8.9 | We recommend that NR considers specific training courses for engineers maintaining different types of structure such as masonry arch structures and riveted and wrought iron bridges | Training Courses agreed with AMEY | Interim | 09/12/2011 | | 30/03/12 | |
| R8.10 | Many of the inspectors we met are towards the end of their careers with little evidence of any succession planning. We recommend that NR consider training and recruitment of future inspectors with AMEY | Succession Plan agreed with AMEY | Interim | 09/12/2011 | | 30/03/12 | |

| Rec No | Recommendation | Deliverable Product | Interim Milestone Product | Interim Milestone Date | RAG Status | Planned Recommendation Closure Date | RAG Status |
|---|---|---|---|---|---|---|---|
| R8.11 | There will be a need for significant input from the route teams to define both the 'as is' processes and the 'to be' processes | First Business User Group Workshop held | | | | 29/11/11 | |
| R8.12 | It is recommended that NR consider the following specific aspects when scoping their requirements:<br>a) Adopting a GIS based asset information system in the future to facilitate map based access to asset data;<br>b) Including a facility for incorporating data from imaging and remote sensing techniques to provide improved qualitative and quantitative techniques;<br>c) Including a facility for incorporating instrumentation / monitoring data; and<br>d) Including use of handheld devices to record data in the field and transfer directly to the database. The handheld device would be able to upload historic asset information to support field inspections. | Business Requirements Catalogue/ IT Systems Functional Specification | Interim | 19/01/2012 | | 16/02/12 | |
| R8.13 | NR more explicitly define the critical elements of different types of Civil Structures and identify suitable sub-groups such as different types of arch bridges, overconsolidated clay cuttings etc. based on their differences in engineering behaviour. The use of FMEA and similar techniques should be considered by NR for this activity. | Structures Policy Document | Policy on a Page | 09/12/2011 | | 09/12/11 | |
| R8.14 | NR then collate existing asset information for these critical elements of Civil Structures and jointly review and agree with ORR the need for further inventory and condition data for the effective management of each asset sub-group. This work should be treated as a project with a specific full-time resource allocated, and should draw on the experience on the experience of other organisations. | Interim Data Quality Review | | | | 09/12/11 | |
| R8.15 | Based on the outcome from the collation exercise, a specific asset knowledge gap filling project should be initiated to provide missing critical asset data. | Interim Data Quality Review | | | | 09/12/11 | |
| R8.16 | NR should then consider obtaining more frequent measurements of condition to support deterioration modelling. Better integration of examination and assessment processes may assist in this respect. | "To-Be" Processes | Draft Business Process | 19/01/2012 | | 16/02/12 | |
| R8.17 | From the figures supplied by Western it appears that this assessment work will not complete by 2014 and that the rate of completion of assessments is significantly less than required. The main issue is the cost of carrying out assessments which may find no or few capacity issues. There is an opportunity to develop a more focused, cost effective and more timely assessment regimes | "To-Be" Processes | Draft Business Process | 19/01/2012 | | 16/02/12 | |
| R8.18 | We have identified organisations such as LUL and TfL who report condition scores for the critical elements in addition to the average for the structure. In our opinion this provides a better indication of the variability of condition. It is recommended that NR consider adopting a similar approach | Initial External Benchmarking Results/ Condition Scores for Critical Elements | Interim | 16/12/2011 | | 16/02/12 | |
| R8.19 | Opportunities also exist to derive more useful measures of condition by taking measurements from defined points for example, mid span, quarter points and ends so that a reliable framework of data can be built on which to assess trends. Measuring condition at known points would also assist over a period of time in linking condition information to assessed capacity data. Other attributes would need to be taken into account in such an assessment (age, material, exposure etc). It is recommended that NR review their examination requirements to consider this opportunity. | "To-Be" Processes | Draft Business Process | 19/01/2012 | | 16/02/12 | |
| R8.20 | There is an opportunity to derive further useful data for selected structures by relating SCMI scores to historic examination records | Critical Elements Policy Document | Interim | 16/12/2011 | | 30/03/12 | |
| R8.21 | A change to risk based examination intervals requires a thorough understanding of the condition, performance and risk level of each asset sub group. We have not seen any evidence related to these issues. In principle the adoption of Risk Based examination intervals provides a method of targeting examination effort in a more effective way. However in our opinion the implementation of Risk Based examination intervals requires further review by NR, because of the short comings in asset knowledge discussed elsewhere in this report. | Structures Policy Document | Policy on a Page | 09/12/2011 | | 16/02/12 | |
| R8.22 | It is suggested that Risk Based examination intervals are explicitly considered in the lifecycle planning for each Sub-Group of Civil Assets | Policy Document | Interim | 09/12/2011 | | 30/03/12 | |
| R8.23 | It is recommended that initially NR consider data collection and analysis to substantiate the risk-based approach as suggested by RSSB | Policy Document | Interim | 09/12/2011 | | 30/03/12 | |
| R9.1 | It is recommended that civils specific guidance is included in the next issue of NR/L3/EBM/071 to explicitly define civils specific guidance | Next Issue Version of NR/L3/EBM/071 Policy | Draft | 09/12/2011 | | 30/03/12 | |
| R9.2 | There is potentially an opportunity for NR to link the engineering verification process maps more explicitly into the overall asset management of Civil Structures and to develop and implement a specific regime of audits / verification related to critical aspects of Civil Structures asset management. | "To-Be" Processes | Draft Business Process | 19/01/2012 | | 16/02/12 | |
| R9.3 | It is our view that there is an opportunity for more formal pooling of knowledge and experience between routes and which is not currently shared. This would be part of a formal continual improvement process | Tolerable Risk Model | Definition of Tolerable Risk Document | 09/12/2011 | | 30/03/12 | |

| Rec No | Recommendation | Deliverable Product | Interim Milestone Product | Interim Milestone Date | RAG Status | Planned Recommendation Closure Date | RAG Status |
|---|---|---|---|---|---|---|---|
| R9.4 | It is recommended that NR/ORR to establish a broadly based group to consider the longer term strategy for risk management of Civil Structures. This would include foresighting and similar to explore possible future risks | Risk Management Strategy Group | Research Needs | 30/12/2012 | | 30/06/12 | |
| R9.5 | We have not seen any explicit evidence of internal asset management performance benchmarking between operational routes. It is recommended that this is considered | Initial Internal Benchmarking Results/ Asset Management Performance | | | | 09/12/11 | |
| R9.6 | We have not seen any evidence of business process benchmarking in relation to NR Civil Structures AM. However, we understand that as part of the IT system definition, a business process mapping exercise is underway to identify the 'As Is' and 'To Be' processes before the IT project is commenced. This involves identifying potential best practice reference sites from both a process and systems perspective that NR could visit. | Initial External Benchmarking Results | | | | 09/12/11 | |
| R9.7 | It is recommended that TSAG development opportunities are investigated by NR and that an active role is taken in developing and shaping such opportunities to support the asset management of Civil Structures. | Target Operating Model Document | Research Needs | 30/12/2012 | | 30/03/12 | |
| R9.8 | It is recommended that a specific role of a Civil Structures Development Group would be to define future areas for research and development associated with Civil Structures and be a means of engagement with TSAG and other research groups | Target Operating Model Document | Research Needs | 30/12/2012 | | 30/03/12 | |
| R9.9 | A more robust set of performance measures should be developed to support the effective management and stewardship of Civil Structures | "To-Be" Outcomes Document | 1st Draft | 30/11/2012 | | 16/02/12 | |
| R9.10 | Condition, Asset performance and risk data should be made available to ORR together with measures relating to the management of the Asset such as progress with examinations and assessments compared to the number of assets | "To-Be" Outcomes Document | 1st Draft | 30/11/2012 | | 16/02/12 | |
| R9.11 | It is recommended that existing measures are maintained and run in parallel until confidence in the data quality of the new measures has been established (re: performance indicators) | "To-Be" Outcomes Document | 1st Draft | 30/11/2012 | | 16/02/12 | |
| R9.12 | There is also the opportunity to produce an overall annual State of Network Report for Civil Structures Assets which would complement the NR Annual Return and present the performance indicators | "To-Be" Outcomes Document | | | | 16/02/12 | |
| R9.13 | We have found it challenging to understand how recommended improvements and current planned changes (AM Strategy, Building and Civils Improvement Plan, Transformation Plan etc.) all relate to each other and to the overall AM strategy. It is recommended these linkages are mapped so that it can be understood which aspects specifically impact on the management of Civil Structures | Programme Plan "Programme on a Page" | | | | 30/11/11 | |
| R9.14 | It is recommended that NR subsequently develop a Civil Structures Asset Management Improvement Plan to build on the base-line defined in the Asset Manual for Management of Civil Structures and to set out the planned future developments on a time and cost constrained basis | Civil Structures Asset Management Improvement Plan/ "To-Be" Processes | | | | 16/02/12 | |

# C2 ORR Letter dated 21 May 2012

**Jim Bostock**
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OFFICE OF **RAIL REGULATION**

Monday 21st May 2012

Mr John Halsall
Director, Buildings and Civils Asset Management
Network Rail,
40 Melton Street,
London,
NW1 2EE

Dear John,

**Management of Structures Transformation Plan**

I am writing to record my understanding of your current progress with the above plan since my letter dated 23 November 2011 and our review in early January 2012. I have included reference to the Independent Reporter Ove Arup's original report below

Together with the Reporter we have continued to monitor progress against the agreed tracker included with my 23 November letter. Arup have provided a summary report of the progress to the 31 March 2012 which shows the following:-

- 59 recommendations have been closed out compared with 76 due by 31 March 2012 (77 recommendations were made in total with the last previously due 30 June 2012)
- 18 recommendations remain to be closed. Of these you have defined twelve as 'ruby' or critical.

The reporter has noted significant progress towards implementing in the way you will manage your civil structures assets in future and has listed the following:

- Development of asset management targets
- Risk based approach
- Lifecycle modelling and linkage to asset policies
- Consideration of planned preventative maintenance
- Workbank development and prioritisation
- Overall asset management progress

The Reporter has further noted that your current plans appear capable of closing the key recommendations providing a number of risks are managed.

These key risks to the programme include resources and engagement of the route teams to deliver the required changes. It is essential these continue to be positively managed to effect the improvement we both wish to see. You will also need to continue to manage risks to the network whilst the transformation programme is rolled out.

The scale of change required to improve Network Rail's management of structures and earthworks has extended the programme to 31 December 2012 and an updated tracker has been produced by yourselves with support from the Reporter and I am also enclosing a copy with this letter. This will be need to be closely monitored in the coming weeks.

The independent reporter will continue to monitor and report progress to both of us on a monthly basis. I should also like a formal review with you at the end of August when you should have delivered a further five critical deliverables.

In the meantime I shall continue to recommend to ORR's Industry Delivery Review Group that this item remains on the regulatory escalator until we are both satisfied that the programme has been successfully delivered and the necessary improvements are adequately embedded in 'business as usual'.

I am placing a copy of this letter, the current progress tracker and Arup's end of year progress report on the ORR website.

Yours sincerely

**Jim Bostock**

Footnote: . 'Review Asset Policy Stewardship and Management of Structures' was published on our website on 3 March 2011. (http://www.rail-reg.gov.uk/upload/pdf/reprters-audit-rev-policy-arup-mar11.pdf )

Enc 1 Deliverable Tracker v9.2 dated April 2012

2 Arup Report Part A Reporter Mandate AO/019: Independent Review and Assurance of Network Rail Buildings & Civil's Transformation Programme Annual Progress Report 2011/12 Revision 1 May 2012

cc M Rudrum Arup

# *Buildings & Civils*
# *Asset Management*
# *Transformation Programme*

## *Programme Recommendation Tracker*

**DRAFT**

Version 2.0 Baseline Document for Tracking
20/11/2011
Simon Oakley

Updated to reflect discussions on 1st, 2nd, 3rd Nov 2011 with Arup Independent Reporter

**v1 Updated by Arup to Record Arup View of Progress at 13 Dec 2011**

**v2 Updated by Arup to Record Arup View of Progress at 19 Dec 2011**

**v3 Updated by Arup to Record Arup View of Progress at 19 Dec 2011 and Summary Sheet Added plus typographical corrections made**

**v4 Updated following meeting with NR on 22 Dec 2011 - showing ORR first reaction at**

**v5 Updated by Arup on 5 Jan 2012 following review of documents provided on 22 Dec 2011**

**v6 Updated by Arup at end Feb 2012 - incomplete issued to NR for info on 29 Feb 2012 @**

**v7.2 Updated by Arup on 1st March 2012 - Summary completed**

**v8.0 Updated by Arup on 19th March 2012**

**v8.1 Updated by Arup on 22nd March 2012**

**v8.2 Updated by Arup on 18th April 2012**

**v8.3 Updated by Arup on 18th April 2012 following meeting with NR**

**v9.2 Issue Updated by Arup to new Format to record progress post April 2012 - closed Recommendations deleted and Interim Milestones added by NR.**

***Overview:***

This document (next tab) sets out each Tripartite Recommendation and provides its planned closure date and

The document is a proposed means for tracking progress in the programme.

Version 2.0 Baseline Document for Tracking

v9.2 Issue Updated by Arup to new Format to record progress post April 2012 - closed Recommendations deleted and Interim Milestones added by NR.

| Rec No | Recommendation | Arup Assessed Priority | Interim Milestone Product | Interim Milestone Date (Structures) | Interim Milestone Date (Geotech) | Interim Milestone Date (Central) | Planned Closure Date |
|---|---|---|---|---|---|---|---|
| R5.2 | We consider that ORR with NR should develop a more explicit definition of tolerable risk levels for the management of Civil Structures. Such a definition would assist NR in their development and prioritisation of a workbank for Civil Structures on a risk basis. Ideally the tolerable risk levels would link directly back to a DfT HLOS Safety target. There is also an opportunity to link safety risk into the revised Civil Asset Intervention Policies currently being developed by NR. | 0 | | | | | 31-Aug-12 |
| | | | Tolerable risk report (Version 1) issued for review | | | 08-Jul-12 | |
| | | | Tolerable risk report (Final Version) issued for review | | | 31-Aug-12 | |
| R5.3 | There is an opportunity to more clearly define the success criteria for the asset stewardship and management of Civil Structures (e.g. level o service objectives, relative weightings between criteria) between ORR and NR. These level of service criteria should be derived from and be consistent with the Strategic Goals and Objectives set for CP5 | 1 | | | | | 31-Aug-12 |
| | | | Targets for Policy Iteration 2 | 30-Apr-12 | 30-Apr-12 | | |
| | | | Draft Report, Regulatory Targets & KPIs Complete | 31-Jul-12 | 31-Jul-12 | | |
| | | | (Targets for Policy Iteration 3) Final Issue of Targets Report | 31-Aug-12 | 31-Aug-12 | | |
| R6.1 | It is recommended that asset groups for lifecycle planning are made more specific. This will allow lifecycle plans to be developed at a Sub-Group level and the more effective management of assets | 1 | | | | | 31-Aug-12 |
| | | | Policy Iteration 1 issued to Planning & Regulation | 30-Apr-12 | 30-Apr-12 | | |
| | | | Policy Iteration 2 issued | 31-Aug-12 | 31-Aug-12 | | |
| R6.8 | It is recommended that NR develops a formal explicit structures workbank of all work that is currently outstanding on a route independent of funding constraints / overall priorities and that this is made available and reviewed when funding levels are being set. | 1 | | | | | 31-Dec-12 |
| | | | Refine and Issue of Decision Support tools to prioritise UCWB | 30-Jun-12 | | | |
| | | | Uplift of Constrained workbank into RAMP Iteration 3 | 31-Aug-12 | | | |
| | | | UCWB Guidance & Process Developed | | 29-Jun-12 | | |
| | | | UCWB Guidance & Process Tested & DST Developed | | 31-Aug-12 | | |
| | | | Consistently populated UCWB across all routes available for review. | 31-Dec-12 | 28-Dec-12 | | |
| R6.11 | It is recommended that the development of these business rules and their implementation in to a medium / longterm asset investment planning tool should be independently reviewed in parallel with the development to ensure clarity of assumptions made in the planning. | 2 | | | | | 31-Jul-12 |
| | | | Begin validation of Scenarios against Policy Updates | 11-May-12 | | | |
| | | | Tier 2 Models available for use (both Geotech & Structures) | 30-May-12 | 30-May-12 | | |
| | | | Tier 1 Models available for use (both Geotech & Structures) | 15-Jun-12 | 15-Jun-12 | | |
| | | | First phase Policy validation by Tier 1 & 2 modelling complete | 31-Jul-12 | 31-Jul-12 | | |
| R6.17 | NR have 17,000 retaining walls. Based on limited discussions and our review of NR Standards we understand that retaining walls do not have an SCMI score from inspections or and that their capacity is not routinely assessed. It is recommended that a condition scoring system for retaining walls is initiated together with a formal capacity assessment. [R6.18]. Further work to understand the level of asset knowledge (inventory and condition etc.) and risks posed by of NR retaining walls is recommended. | 0 | Under Development and Consultation<br>S&I Report, with initial programme of works has been prepared and approved by Professional Head (Structures). Currently with HAM for approval and sign off ahead of issue to ORR & ARUP. | | | | 30-Nov-12 |
| | | | Milestone 1 | TBC | | | |
| | | | Milestone 2 | TBC | | | |
| | | | Critical Rec 6.17 | 30-Nov-12 | | | |
| R6.22 | A key purpose of an AMP is to quantify any gap between current performance and the desired target performance. The current RAMP does not define a target performance for Civil Structures or current performance of Civil Structures on the route. This means that the RAMP is more of an inventory listing than a tool to direct future expenditure to achieve targets / outcomes. This is a key area for future development. | 2 | | | | | 30-Sep-12 |
| | | | Route AMP Summary and Route Analysis Pack submitted to Planning & Regulation | 31-May-12 | 31-May-12 | | |
| | | | FINAL Route AMP Summary and Route Analysis Pack submitted to Planning & Regulation | 30-Sep-12 | 28-Sep-12 | | |
| R6.30 | NR should also consider combining the various individual separate processes and procedures as part of their 'to be' asset management process definition activity. | 1 | | | | | 31-Dec-12 |
| | | | Process Update Issue 1- Portal Prototype V3.0 | | | 22-May-12 | |
| | | | Process Update Issue 2 - 25% as-is Processes complete | | | 01-Jul-12 | |
| | | | Process Update Issue 3 - 50% as-is Processes complete | | | 01-Sep-12 | |
| | | | Process Update Issue 4 - 75% as is Processes complete | | | 01-Dec-12 | |
| | | | Process Update to close out Recommendation - 100% as is processes complete | | | 31-Dec-12 | |
| R6.33 | Conditions score for bridges are enhanced to include both the overall SCMI score and a set of SCMI crit scores for critical elements | 1 | | | | | 30-Jun-12 |
| | | | Undertake asset count of bridges | 31-Mar-12 | | | |
| | | | Categorise bridges according to Policy on a page (PoAP) | 27-Apr-12 | | | |
| | | | Asset hierarchy to be confirmed including how PLBE data will be presented | 25-May-12 | | | |
| | | | Complete SCMI data mapping | 15-Jun-12 | | | |
| | | | Gap Analysis against absent and poor quality data completed. Report and recovery programme prepared issued to Data & Systems. | 30-Jun-12 | | | |
| R8.5 | It is recommended that the resource level of route structures teams and level of funding available for assessments is reviewed and benchmarked against other Infrastructure organisations | 1 | | | | | 30-Sep-12 |
| | | | Critical Service Pilot - Across Routes Completed | | | 18-Jun-12 | |
| | | | Optimised Service Pilot - Across all routes Completed | | | 30-Jul-12 | |
| | | | Recommendation report issued. | | | 30-Aug-12 | |
| R8.14 | NR then collate existing asset information for these critical elements of Civil Structures and jointly review and agree with ORR the need for further inventory and condition data for the effective management of each asset sub-group. This work should be treated as a project with a specific full-time resource allocated, and should draw on the experience on the experience of other organisations. | 1 | | | | | 30-Oct-12 |
| | | | PLBE Data Outputs Review Competed | | | 31-May-12 | |
| | | | SCMI Outputs Delivery agreed | | | 13-Jul-12 | |
| | | | Data Gap Analysis Report Prepared | | | 12-Oct-12 | |
| R8.15 | Based on the outcome from the collation exercise, a specific asset knowledge gap filling project should be initiated to provide missing critical asset data. | 1 | Forms part of Rec 8.14 | | | | 30-Oct-12 |
| | | | Functional Specification (ADIP Remit) agreed with Asset Info | | | 15-Jun-12 | |
| | | | Data Gap Analysis Implementation Programme Prepared | | | 12-Oct-12 | |

Version 2.0 Baseline Document for Tracking

v9.2 Issue Updated by Arup to new Format to record progress post April 2012 - closed Recommendations deleted and Interim Milestones added by NR.

| Rec No | Recommendation | Arup Assessed Priority | Interim Milestone Product | Interim Milestone Date (Structures) | Interim Milestone Date (Geotech) | Interim Milestone Date (Central) | Planned Closure Date |
|---|---|---|---|---|---|---|---|
| R8.16 | NR should then consider obtaining more frequent measurements of condition to support deterioration modelling. Better integration of examination and assessment processes may assist in this respect. | 3 | Under Development and Consultation<br>Scope of new critical rec covers 6no. Recs (R8.16,8.19, 8.20, 8.21,8.22 & 8.23)<br>S&I report and programme being prepared now, and meeting set up between Richard Frost and Alastair Jackson to conclude remit. | | | | **31-Dec-12** |
| R8.19 | Opportunities also exist to derive more useful measures of condition by taking measurements from defined points for example, mid span, quarter points and ends so that a reliable framework of data can be built on which to assess trends. Measuring condition at known points would also assist over a period of time in linking condition information to assessed capacity data. Other attributes would need to be taken into account in such an assessment (age, material, exposure etc). It is recommended that NR review their examination requirements to consider this opportunity. | 1 | | | | | |
| R8.20 | There is an opportunity to derive further useful data for selected structures by relating SCMI scores to historic examination records | 1 | | | | | |
| R8.21 | A change to risk based examination intervals requires a thorough understanding of the condition, performance and risk level of each asset sub group. We have not seen any evidence related to these issues. In principle the adoption of Risk Based examination intervals provides a method of targeting examination effort in a more effective way. However in our opinion the implementation of Risk Based examination intervals requires further review by NR, because of the short comings in asset knowledge discussed elsewhere in this report. | 2 | | | | | |
| R8.22 | It is suggested that Risk Based examination intervals are explicitly considered in the lifecycle planning for each Sub-Group of Civil Assets | 2 | | | | | |
| R8.23 | It is recommended that initially NR consider data collection and analysis to substantiate the risk-based approach as suggested by RSSB | 2 | | | | | |

# Appendix D

Programme Recommendations Tracker

# D1 Progress Assessment – 31st March 2012

Version 2.0 Baseline Document for Tracking | v8.3 Updated by Arup on 18th April 2012 following meeting with NR

| Rec No | Recommendation | Planned Recommendation Closure Date | Arup Assessed Priority | Arup Comments based on review of NR documents Friday 24th Feb - Wed 29th Feb 2012 | Progress % (Arup assessed at 4 /01/12) | Progress % (Arup assessed at 29/02/12) | Progress % (Arup assessed at 18/04/12) |
|---|---|---|---|---|---|---|---|
| R5.1 | With targets there is always an element of 'what gets measured gets done ...' and, we believe that the ORR should consider including more explicit asset stewardship performance measures (in terms of operation, safety etc.) for Civil Structures in the CP5 Regulatory Targets to confer suitable importance to asset stewardship of Civil Structures. These measures would be supported by a balanced set of performance indicators to assist NR in their management of the assets. The performance indicators would be derived from effective business information systems that would allow the easy derivation of current performance. | 16/02/12 | 0 | Linked to R5.3. Version 1 Report produced by Capita Symonds 'Asset Management - Regulatory Targets Initial Report for Network Rail 16 February 2012' Issue 1<br><br>Capability to be explicit. NR to consider updating<br><br>Capita Report being updated following NR BCAM review - NR to pass to NR Planning for review.<br><br>**Capita Symonds Report 'Civil Structures Asset Management Targets (Initial Report) dated 16 Feb 2012 (Issue 1.3) provided - further / ongoing work in R5.3 - See NR BCAM Letter BCAM-TP-0051 dated 30th March 2012.** | | 70% | 100% |
| R5.2 | We consider that ORR with NR should develop a more explicit definition of tolerable risk levels for the management of Civil Structures. Such a definition would assist NR in their development and prioritisation of a workbank for Civil Structures on a risk basis. Ideally the tolerable risk levels would link directly back to a DfT HLOS Safety target. There is also an opportunity to link safety risk into the revised Civil Asset Intervention Policies currently being developed by NR. | 09/12/11 | 0 | NR letter dated 21 Dec 2011 'ORR Recommendation 5.2' (1 page) and 'Asset Management Transformation Programme - Discovery Phase Conclusion Report: Route B&C Asset Management, Application of Workbank Management and Tolerable Risk (77 pages) seen.<br><br>Structure for Asset Specific Tolerable Risk Document seen - work in progress, engegement about to start. These three documents will be an input to Asset Policies prepared from March 2012 onwards. Plan is final input into RAMPs for 31 August 2012 (final report may follow that).<br><br>Overview Comments (Detailed Review to Follow)<br><br>- Earthworks Asset Policy dated Sept 2011 shows logical risk based approach under development.<br>- Initial informal meeting held by ORR / NR in Sept 2011. Further workshops planned for Jan 2012 by NR.<br>- Discovery Phase Conclusion Report: Route B&C Asset Management, Application of Workbank Management and Tolerable Risk - substantial work but at 'Discovery Stage' - Report is Draft Status unclear how this fits with Asset Policies and how it will be delivered by the Routes. | 40% | 45% | 60% |
| R5.3 | There is an opportunity to more clearly define the success criteria for the asset stewardship and management of Civil Structures (e.g. level of service objectives, relative weightings between criteria) between ORR and NR. These level of service criteria should be derived from and be consistent with the Strategic Goals and Objectives set for CP5 | 16/02/12 | 1 | Two threads - CP5 Regulatory Targets (Structures and Earthworks), and Policy Targets (for Structures only). Earthworks 'line of sight' is included, Policy Targets are in the Earthworks Policy - NR to provide early sight of these.<br><br>Capita Symonds have produced report (v1 16 Feb 2012) on proposed Regulatory Targets - showing 'line of sight' - Draft Received - to be reviewed by NR BCAM. 'Pyramid' of targets seen. End planned to be proposals to go to ORR. First pass of figures 'top-down' figures and 'as-is' position for each metric. Capability / discrepancy bridges. Linkage to configuration of Modelling Tools to be considered by NR. | | 50% | 50% |
| R5.4 | It is recommended that the connection between the NR high-level AM Policy and AM Strategy and tactical management of the Civil Structures asset is defined more fully in future revisions of the documents | 16/02/12 | 1 | Linked to R5.3. Version 1.3 Report produced by Capita Symonds 'Pyramid' of targets seen.<br><br>**AM Policy / AM Strategy linkage to be included in the BCAM Transformation Handbook Issue One dated 28 March 2012.**<br><br>**Structures AM Policy and Strategy - 2 page extract provided 10th April 2012 explicitly recognising linkage to NR high level AM Policy and AM Strategy - further / ongoing work in R5.3 and R6.1 - See NR BCAM Letter BCAM-TP-0051 dated 30th March 2012.** | | 70% | 100% |
| R6.1 | It is recommended that asset groups for lifecycle planning are made more specific. This will allow lifecycle plans to be developed at a Sub-Group level and the more effective management of assets | 25/11/11 | 1 | NR letter dated 21 Dec 2011 'ORR Recommendations 6.1 & 6.35' (3 pages) seen with 'Civil Engineering Structures Assets - Structures Asset Policy & Frontline Intervention Guidance Draft v1 Dec 2011' (3 pages) and 'Civil Engineering Structures Assets - Policy on a Page' (14 Pages) plus 'Policy on a Page' sheets - Earthworks dated 6/12/11 - 7 pages and Structures dated 6/12/11 - 50 pages.<br><br>Overview Comments (Detailed Review to Follow)<br><br>- NR have made very significant progress on this.<br>- FMEA approach is being considered<br>- Documents are still in Draft<br>- Some aspects to be completed (e.g. Natural Slopes).<br>- Some assets appear to be not yet included (Coastal & Estuarine Defences, Major Structures)<br>- Subdivision of Earthworks assets by behaviour - lack of data noted.<br>- Unclear how the Policy on a Page will be actually used in lifecycle planning and delivery at a Route Level.<br>- Unclear how Policies on a Page will relate to WLCC Tier 2 Modelling<br>- Unclear if lowest whole life cost interventions have been identified.<br><br>NR are adopting hierachies as per Policy on a Page.<br><br>First Issue of Structures Policy due at end March 2012 - Chapters 1,2 and 5 (Asset Degradation) seen.<br>Inteventions being discussed by Expert Panel - Metalic Bridges discussed 28th Feb.<br>Awaiting interaction with Tier 2 modelling.<br><br>**NR planning that R6.1 will be closed out by the NR Civils Policy - planned for end of Aug 2012** | 65% | 80% | 80% |
| R6.2 | It is recommended that NR 'asset intervention policies' are developed to reflect a wider range of intervention options. These policies would then be used as a basis for 'lifecycle' option development | 30/03/12 | 1 | Maintenance intervention options are detailed in Policy in a Page.<br><br>- Issue 1 Structures Policy due 2nd week April 2012<br>- Interim Issue Earthworks Policy due end March 2012<br><br>**Draft Chapter 6 of Policy Document for Structures Asset Management seen including planned preventative maintenence and three Policy options ('Minimal', 'Sustainable', 'Enhanced' )**<br><br>**NR confirmed at meeting on 18th March 2012 that Issue 0.2 of the Structures Policy will consider Retaining Walls, Coastal & Estuarine Defences etc. due 31st August 2012.** | | 50% | 100% |
| R6.3 | It is also recommended that Asset Intervention Policies such as the following are adopted:<br>• Do Minimum<br>• Managed Deterioration<br>• Lowest Initial Cost<br>• Lowest Whole Life Cost<br>• Enhancement<br>• Heritage Structures<br>with lifecycle plans being developed at a Sub-Group level to reflect the individual needs of particular Sub-Groups of Civil Structures assets. | 30/03/12 | 1 | Policy on a Page starts to address this (Structures and Earthworks)<br><br>Work ongoing<br><br>**See R6.2 above.**<br><br>**Further work to be taken forward as part of overall lifecycle planning - see R6.1 above** | | 50% | 100% |
| R6.4 | We note that LNW have approximately 12,000 bridges, and 5,000 retaining walls. From our discussions with the Route Structures Engineer, we understand that there are typically about 100 major interventions (Investment Projects) and about 1000 Minor Works instructions per annum. NR has confirmed these numbers are typical of other Routes of the network. We estimate that, on average, structures are currently subject to a major intervention about once every 170 years, with minor works being carried out at a rate of once every 17 years. Some minor works are likely to be unrelated to the condition or integrity of a structure. The frequency of intervention seems surprisingly low. It is recommended that intervention rates for similar infrastructure operators are obtained and compared with these figures. | 09/12/11 | 2 | NR letter dated 21 Dec 2011 'ORR Recommendations 6.4' (2 pages) seen .<br><br>- NR developing Policies on a Page and preventatiative maintenance strategies.<br>- NR agree that more maintenance interventions are required. | 100% | 100% | 100% |
| R6.5 | It is recommended that preventative maintenance is explicitly considered as part of the lifecycle planning options for Civil Structures at a Group / Sub-Group level. | 09/12/11 | 1 | NR letter dated 21 Dec 2011 'ORR Recommendations 6.5 & 6.6' (2 pages) seen with 'Civil Engineering Structures Assets - Structures Asset Policy & Frontline Intervention Guidance Draft v1 Dec 2011' (3 pages) and 'Civil Engineering Structures Assets - Policy on a Page' (14 Pages) plus 'Policy on a Page' sheets - Earthworks dated 6/12/11 - 7 pages and Structures dated 6/12/11 - 50 pages.<br><br>- NR considering preventive maintenence as part of lifecycle planning options | 100% | 100% | 100% |
| R6.6 | It is recommended that 'lifecycle' plans are developed at a Sub-Group level to reflect the individual needs of particular Sub-Groups of Civil Structures assets and that a series of technical options considering both maintenance and renewal are produced for most or all of the defined Asset Intervention Policies. | 09/12/11 | 1 | As 6.5 above | 100% | 100% | 100% |
| R6.7 | NR has advised that they are unable to demonstrate the cost effectiveness of maintenance painting. We understand that this conclusion is reached by comparing the net present value of bridge deck replacement with the current cost of maintenance painting; and therefore it is not done under normal circumstances. We have not reviewed the evidence which supports this conclusion. Given the large number of metal bridges under NR stewardship, there is an opportunity to work with the supply chain to develop improved specifications, materials and techniques which will enable this work to be carried out efficiently and cost effectively. It is recognised that this is a complex technical issue because there are many legacy paint systems in use. | 30/03/12 | 0 | NR agree with this recommendation<br><br>Policy on a Page starts to address this (Structures) - NR recognise that PPM<br><br>Tier 2 Models - need data on this to allow intervention options to be considered.<br><br>NR to consider getting improved pricing / some pricing data<br><br>NR need cost data for Tier 2 models.<br><br>NR to issue report on 23 March 2012<br><br>**Report on 'Cost Effectiveness of maintenence painting on steel bridges' Version 1.0 dated 29 March 2012 provided. Confirms that maintenence painting will be adopted by NR as an intervention considered in WLCC analyses - Further work ongoing as part of R6.1** | | 50% | 100% |
| R6.8 | It is recommended that NR develops a formal explicit structures workbank of all work that is currently outstanding on a route independent of funding constraints / overall priorities and that this is made available and reviewed when funding levels are being set. | 16/02/12 | 1 | Relates to unconstrained workbank<br><br>NR have reviewed cause, effect, feedback from Routes pre-devolution and post devolution. Concluded that Scotland has most mature proceesses.<br><br>**Draft 'Procedure for raising and managing structures renewal work items in CARRS' - dated 2012 - rev status unclear seen drafted by NR Scotland Structures Team.**<br><br>**Similar for Earthworks ??** | | 35% | 45% |
| R6.9 | It is suggested that specific discussions about decision support tools and modelling should continue to be undertaken to benchmark and share experience in this area. | 09/12/11 | 3 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.9' (2 pages) and 'Building and Civils Asset Management Transformation Programme - Project 10 Asset Management Benchmarking Decision Support Tools and Modelling - Phase 1 Dec 2011 (34 pages) seen<br><br>- NR preparing to undertake benchmarking<br>- Compared with LoBeg | 100% | 100% | 100% |
| R6.10 | We consider that ORR/NR should jointly develop a set of explicit business rules to be used by NR in their asset planning and future development of a medium / long-term asset investment planning tool. These should be aligned to life cycle planning principles as outlined above. | 16/02/12 | 2 | CeCOST and Tier 1 and Tier 2 work<br><br>Meeting held 6th March 2012 to brief ORR / Arup and piece together<br><br>Noted subequently that NR consider that CECOST is not developed yet to be externally reviewed (Bill Davidson's e-mail dated 23 March 2012 refers)<br><br>Evidence that asset planning is being briefed out to the Routes 'Policy on a Page and Bridge Modelling alignment workshop' dated 28 Feb 2012 seen<br><br>**NR work ongoing as part of R6.11** | | 50% | 100% |

Version 2.0 Baseline Document for Tracking

v8.3 Updated by Arup on 18th April 2012 following meeting with NR

| Rec No | Recommendation | Planned Recommendation Closure Date | Arup Assessed Priority | Arup Comments based on review of NR documents Friday 24th Feb - Wed 29th Feb 2012 | Progress % (Arup assessed at 4 /01/12) | Progress % (Arup assessed at 29/02/12) | Progress % (Arup assessed at 18/04/12) |
|---|---|---|---|---|---|---|---|
| R6.11 | It is recommended that the development of these business rules and their implementation in to a medium / longterm asset investment planning tool should be independently reviewed in parallel with the development to ensure clarity of assumptions made in the planning. | 16/02/12 | 2 | Due to be completed 31 July.<br><br>Report to be commissioned. Workshops with NR SME's being set up wrt Policy on Page and translation into modelling.<br><br>**Briefing meeting was held 6th March 2012 on Tier 2 and Tier 1 Models. NR still developing their overall approach. 'policy on a Page Translation pro-forma seen for Metallic Underbridge etc.** | | 20% | 50% |
| R6.12 | As part of the development process, consideration should be given to identifying Civil Structures asset data sets likely to be required for the medium / long-term modelling so that any additional data sets can start to be collected as part of the inspection and examination process. | 09/12/11 | 1 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.12' (2 pages) seen.<br><br>- ADIP Programme commenced - unclear status wrt Civil Structures assets.<br><br>- We are of the opinion that additional data on the current condition and long-term behaviour of the civil structures assets is required to effectively predict future maintenance and renewal requirements.<br><br>- Noted that NR are considering additional data sets and work is ongoing. This is important in the light of our opinions on the Civil Structures Asset Policy.<br><br>- We are still of the opinion that additional data sets are required to effectively manage the Civil Structures asset - unclear what data and when it will be collected.<br><br>- NR still need to define what is required<br><br>- Retaining Walls and Culverts - data sets exist - **Capita Symonds - SCMI for Retaining Walls**, Culverts - data available. **Examples to be issued by NR**<br>- Footbridges - Lloyds Register invited to prepare proposal for SCMI for Footbridges - **NR to advise**<br><br>**R6.14 will continue this work**<br><br>**ADIP Remit to be provided** | 40% | 50% | 100% |
| R6.13 | Decision support tools can be particularly useful for developing medium / long-term work banks and optimising different conflicting factors such as direct costs, penalty costs, costs from lost performance and amortised costs. The inclusion of an optimisation function may be a specific area to consider in the future tool. | 16/02/12 | 4 | Due to be completed 16 Feb 2012.<br><br>NR are reviewing optimisation software - Andy Kirwan. Not to be implemenetd in short term, but will be considered | | 100% | 100% |
| R6.14 | The application of risk based decision support tools is a developing area and it is recommended that this is a specific area for future research and development | 16/02/12 | 4 | Tier 2 models include consideration of risk, future development ongoing. | | 100% | 100% |
| R6.15 | It is suggested that collaborative research would be a very appropriate way to develop the application of risk based decision support tools. | 16/02/12 | 4 | Tier 2 models include consideration of risk, future development ongoing. | | 100% | 100% |
| R6.16 | We have not seen a commentary or similar document explaining how the recommendations made in the RAIB Report in December 2008 have been progressed. It is recommended that this is reviewed | 09/12/11 | 0 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.16' (1 page) and accompanying table seen. | 100% | 100% | 100% |
| R6.17 | NR have 17,000 retaining walls. Based on limited discussions and our review of NR Standards we understand that retaining walls do not have an SCMI score from inspections or and that their capacity is not routinely assessed. It is recommended that a condition scoring system for retaining walls is initiated together with a formal capacity assessment. [R6.18]. Further work to understand the level of asset knowledge (inventory and condition etc.) and risks posed by of NR retaining walls is recommended. | 25/11/11 | 0 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.17' (1 page) and proposal letter from Arup (Sara Anderson) dated 15 June 2011 seen.<br><br>- NR have commenced work on this - still work in progress - no output seen<br><br>Arup Report received by NR deals with capability / capacity element.<br><br>Condition scoring work needed - Benchmarking will look at LUL and HA assessment.<br>Proposal for Retaining wall condition assessment planned.<br>What date will this be completed by - 31st August 2012.<br><br>**NR BCAM-TP-0068 letter refers - and copy of Arup Report 'Network Rail Retaining Walls - Scoping Study and Development of Approach' Issue dated 1st February 2012.**<br>**- relates to scoping of potential approach to condition and risk assessment of retaining walls.**<br><br>**No evidence that condition scoring system of formal capacity assesment for Retaining Walls is being / will be implemented by NR.** | 55% | 60% | 75% |
| R6.18 | In the light of the above, it is recommended that the prioritisation process is reviewed in some detail to understand how the relative merits of different asset renewal projects are evaluated | 30/03/12 | 2 | Deliverable will be the process map - this is due to be available end P13 (31st March 2012). NR estimate 10% progress.<br><br>Feeds into unconstrained workbank, policy and modelling.<br><br>As-Is processes has been reviewed as part of the Tolerable Risk (R5.2) .<br><br>Links R6.18, R6.36 and R8.1<br><br>**Risk Discovery Report - provided and linkage to Overall AM Process / R5.2**<br><br>**Building and Civils Asset Managament Transformation Programme - Prioritisation of Work Items Guidelines v1.0 dated 16 March 2012 seen.**<br><br>**Ongoing work to be taken forward under R6.30 (AM Processes and Tools) and R5.2 Tolerable Risk - see NR letter BCAM-TP-0055 dated 30th March 2012.** | | 10% | 100% |
| R6.19 | Our remit did not include consideration of drainage issues. However, it is recommended that consideration is given to the prioritisation of slope drainage schemes as part of the wider review of relative priorities for maintenance works. | 16/02/12 | 2 | Letter submitted 22 Feb 2012 - wrt Recommendation 6.19 and Drainage.<br><br>NR have accepted recommendation and are progressing | | 100% | 100% |
| R6.20 | We have not been provided with the justification for the reduction in annual earthworks expenditure over the control period, or information as to how this expenditure relates to condition, performance and risk associated with the earthworks asset. It is recommended that this is clarified with NR. | 09/12/11 | 3 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.20' (2 pages) seen.<br><br>- Letter explains how expenditure level was set for CP4. | 100% | 100% | 100% |
| R6.21 | It is recommended that NR consider producing a National Level Asset Management Plan to support requests for funding or to summarise how allocated funding will be used to deliver an agreed level of service within an acceptable risk profile. This should also include an explicit planned volume of work. | 30/11/11 | 4 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.21, 6.22, 6.23, 6.24, 6.25, 6.26' (3 pages) seen with various attachments.<br><br>- NR are developing a RAMP Process and we understand this will be summatted into the SBP submission | 100% | 100% | 100% |
| R6.22 | A key purpose of an AMP is to quantify any gap between current performance and the desired target performance. The current RAMP does not define a target performance for Civil Structures or current performance of Civil Structures on the route. This means that the RAMP is more of an inventory listing than a tool to direct future expenditure to achieve targets / outcomes. This is a key area for future development. | 30/11/11 | 2 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.21, 6.22, 6.23, 6.24, 6.25, 6.26' (3 pages) seen with various attachments.<br><br>- NR are developing a RAMP Process and a High Level Process (Tim Kersley presentation on 27 Oct 2011) - work in progress.<br>- Good progress on Earthworks Template with risk based linkage to Policy<br>- Structures RAMP hindered by Structures Policy<br>- NR recognise that it is work in progress how 'top down' policy will interface with 'bottom up' Route based priorities and unconstrained workbanks.<br>- Target performance undefined.<br>- Work in progress<br><br>- Early Guidance to Routes on RAMPs issued by Richard Frost and more detailed user guidance in preparation<br><br>**NR Progressing** | 55% | 65% | 70% |
| R6.23 | We have not had sight of the planned development trajectory for RAMPs, and recommend that (if not done so already) a clear vision / blueprint for the 'to be' RAMP and how it will be used by the business is developed. | 30/11/11 | 2 | As 6.22 above<br><br>- RAMP process and application is work in progress<br>- Early Guidance to Routes on RAMPs issued by Richard Frost and more detailed user guidance in preparation | 55% | 100% | 100% |
| R6.24 | In particular it would be useful for the RAMP in the future to include more about the planning and programming stage rather than simply being a summary of planned renewals delivery | 30/11/11 | 2 | As 6.22 above.<br><br>- NR Considering planning and programming for future. | 100% | 100% | 100% |
| R6.25 | This would recognise that the development will be incremental but provide a clear overall direction for the asset management planning process. Specifically it would be useful for the 'to be' process defining how the RAMPs will support the Interim Strategic Business Plan (ISBP) for CP5 to be articulated and shared with the ORR. This would link across to the business process mapping required for overall AM and for AM Information System development. | 31/12/11 | 4 | As 6.22 above.<br><br>- NR have articulated how the SBP will be developed from the RAMPs | 100% | 100% | 100% |
| R6.26 | We would recommend that NR consider producing AMPs at an operational route level | 30/11/11 | 3 | As 6.22 above<br><br>- NR considering | 100% | 100% | 100% |
| R6.27 | We find it surprising that only 13 out of the 300 major structures are planned to require maintenance expenditure in the 5 year CP4 period. It is recommended that this is investigated further | 09/12/11 | 2 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.27' (2 pages) seen<br><br>- NR are investigating further | 100% | 100% | 100% |
| R6.28 | It is recommended that NR consider producing structure group / sub-group level AMP to help improve the sharing of best practice for Civil Structures management, promote uniformity of practice and provide clarity as to the technical needs for on a structure group / sub-group level. | 30/03/12 | 2 | Chapter 6 of Policy 'Intervention Options' will address - chapter yet to be written<br><br>And Policy on a Page<br><br>**Lifecycle plans in production at sub-group level - examples to be provided by end March 2012 - further work as part of R6.1** | | 10% | 100% |
| R6.29 | In addition, it was suggested that a more holistic view should be taken at an individual bridge structure level. Initially, this potentially would require significant resource to develop individual plans but is something that NR should consider. | 16/02/12 | 2 | Based on discussions with R Frost originally - NR to consider<br><br>**NR Letter BCAM-TP-0068 dated 30th March 2012 states that NR have considered and will take into account as part of their future planned processes - see R6.30 for process development work.** | | 10% | 100% |
| R6.30 | NR should also consider combining the various individual separate processes and procedures as part of their 'to be' asset management process definition activity. | 16/02/12 | 1 | End Dec 12 for implementation<br>Framework and Tier 1 Process Model has been prepared<br>NR setting up Model Office - to be responsible for detailing the overall asset management process (by SME's)<br>Needs to tie in to AM Process Model<br>**BCAM Transformation Handbook Issue One dated 28 March 2012 seen** | | 25% | 40% |
| R6.31 | It is recommended that NR explicitly consider future demand in their asset management planning process | 16/02/12 | 3 | RAMP template includes future demand (section 1.2) | | 100% | 100% |
| R6.32 | The process of prioritisation is revised to show a clear decision making process which is based on knowledge not systems (e.g. RAMP Chesterfield Canal ) | 16/02/12 | 2 | Links to R6.30<br>RAMP process is within Model Office<br>Interim guidance being issued by HAMs | | 100% | 100% |

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|---|---|---|---|---|---|---|---|---|
| R6.33 | Conditions score for bridges are enhanced to include both the overall SCMI score and a set of SCMI crit scores for critical elements | 09/12/11 | 1 | NR letter dated 21 Dec 2011 'ORR Recommendation 6.33' (2 pages) seen with extract from spreadsheet.<br><br>- NR propsing to use Principle Load Bearing Element (PBLE)<br>- Unclear how this will be used in practice<br>- Work in progress<br><br>Started work on Bridge SCMI - work ongoing<br><br>FMEA work provided - ongoing | 55% | 65% | 70% | |
| R6.34 | A more effective means of updating SCMI is developed | 16/02/12 | 1 | NR have reviewed process. NR will instruct IP to update SCMI score using AMEY<br>Tactical Solutions E-Briefing from Richard Frost dated 29 Feb 2012 seen requiring SCMT/TCMI rescoring ater all renewal schemsare completed. | | 100% | 100% | |
| R6.35 | A system of grouping / sub-grouping of assets by type and behaviour is developed | 25/11/11 | 1 | As 6.1 above<br><br>Chapter 1 of Policy relates to this | 65% | 100% | 100% | |
| R6.36 | The prioritisation process is made more explicit and transparent to include level of service considerations | 16/02/12 | 2 | Aiming for end March deliverable - relates to R6.18 and Policy<br>Prioritisation tool that developed for the Structures Enhanced Spend seen - not yet implemented<br>To be Reviewed and developed with overall Process.<br>RAMP guidance being prepared *(Structures Policy CP5 - Paper title: Working Assumptions for the Initial Development of Structures RAMPs ) dated 30 Jan 2012 seen*<br><br>**Building and Civils Asset Managament Transformation Programme - Prioritisation of Work Items Guidelines v1.0 dated 16 March 2012 seen.**<br><br>**Ongoing work to be taken forward under R6.30 (AM Processes and Tools) and R5.2 Tolerable Risk - see NR letter BCAM-TP-0055 dated 30th March 2012.** | | 40% | 100% | |
| R8.1 | In our review we did not find clear NR guidance on workbank prioritisation / value management. It is recommended that formal guidance is developed by NR. | 30/03/12 | 2 | As R6.36 | | 40% | 100% | |
| R8.2 | There is an opportunity to develop an 'Asset Manual for Management of Civil Structures' to clearly link and present a line of sight, based on a process led basis to promote consistency and provide a clear base-line for future improvements. This would include a clear description of the connection between the processes at route level and the relevant standards | 30/03/12 | 3 | NR agree and preparing an on-line manual and engaging with Routes<br><br>Prototype software being tested | | 100% | 100% | |
| R8.3 | It is recommended that NR considers measures to reduce this perceived two-tier organisation | 30/03/12 | 4 | Devolution has happened since then. Report being produced to summarise 'As Is'<br>How the central good practice will be covered by the Routes<br>Draft to be issued end 1st week March - intention that Report will close out and then embedment will follow. Status of document ? Will link into overall Comms Strategy. Report not seen<br><br>**Summary note in NR Letter BCAM-TP-0059 dated 30th March 2012** | | 60% | 100% | |
| R8.4 | Based on a NR bridge stock of 35,127 bridges and a suggested assessment interval of 18 years, this would imply 1,951 bridge assessments are required per annum. We have reviewed the Building &Civils team meeting 'fat pack' for Period 07 (Ref 385) and this indicates that 287 bridge assessments are planned to be undertaken nationally by the CEFA contractor during the FY 2010/11. It is recommended that this apparent disparity is reviewed and that an explicit way forward is defined. It is our opinion that NR is not collecting sufficient asset measurement and condition data | 30/03/12 | 0 | Letter date 22 Feb 2012 Ref BCAM-TP-0040 refers.<br><br>Level 0 assessment process designed and briefed to ORR in May 2011 including initial 'triage' process.<br><br>Bridge Assessors being recruited to deliver Level 0 Assesments.<br><br>NR planning that all Bridges will have an assessment (Level 0 or Level 1) no older than 18 years by 31 March 2014.<br><br>Noted from discussion Arup / ORR that the period for implementing these alternative Bridge Assessments is yet to be agreed. | | 100% | 100% | |
| R8.5 | It is recommended that the resource level of route structures teams and level of funding available for assessments is reviewed and benchmarked against other Infrastructure organisations | 30/03/12 | 1 | Benchmarking team, looking at wider issues. Relationships being developed. Longer term than September 2012 ?<br>Statistical analysis and level of funding - only comes from longer term relationships.<br>NR will have some information. Comparing approaches and methodology - needs an inital view from NR. action NR to arrange meeting with Alastair Jackson and Nigel Ricketts and Richard Frost.<br><br>**Contents page of Final Report provided - report due 30th Sept 2012** | | 20% | 40% | |
| R8.6 | In our review we have not spent sufficient time with all routes to enable us to understand whether there are any clear differences in experience, qualifications and competence between Route Engineers and Managers in the various routes. It is recommended that this is investigated further. | 30/03/12 | 3 | Questionnaires out with Routes. Baseline being derived. This will allow competency gaps to be assessed.<br>High level data now - obvious gaps<br>Detailed competence work to follow.<br>Initally a Report to analyse high-level information . Longer term will feed into a training plan. Need to consider how it will be implemented by the Routes. Do you extend the Standards to include / mandate. 25% progress towards overall training plans.<br><br>**19/20 questionnaires returned - data being normalised - Project Darwin being undertaken to assess staff requirements for Structures - work ongoing as part of R8.5** | | 60% | 100% | |
| R8.7 | We also would note that care should be exercised by NR when moving from the current engineering judgement model to a process defined model to make sure that areas that require engineering judgement are maintained such that complex decisions are not over simplified | 16/02/12 | 1 | HR aspect to this recommendation - NR to consider<br><br>NR proposing Model Office with SME's - Model Office being used. | | 100% | 100% | |
| R8.8 | We would recommend that NR considers secondment of staff to the CEFA contractor to ensure that such knowledge and experience is built up by future staff | 30/03/12 | 2 | Secondment - not likely to work due to resource constraints ? Discussed.<br>Trying to find other ways of knowledge share. Sample view being sought. Then recommendations will follow.<br>NR to produce a working paper. Interviews finish in mid March.<br><br>Both Amey and NR agree good idea. Potentially secondment agreement<br><br>**Secondments to be deferred until September 2012 due to curremt volume of examinations work - work ongoing as part of R8.5** | | 30% | 100% | |
| R8.9 | We recommend that NR considers specific training courses for engineers maintaining different types of structure such as masonry arch structures and riveted and wrought iron bridges | 30/03/12 | 1 | Training for engineers maintaining structures. Variety of methodologies - from benchmarking partners.<br>Specific training on engineering understanding of structures. Behind programme - action NR to arrange meeting with Alastair Jackson and Nigel Ricketts and Richard Frost.<br><br>**Thomas Telford - 4 courses per Metallic and Masonry - planned start in May / June 2012** | | 10% | 100% | |
| R8.10 | Many of the inspectors we met are towards the end of their careers with little evidence of any succession planning. We recommend that NR consider training and recruitment of future inspectors with AMEY | 30/03/12 | 2 | Report to be available on Friday 2nd March<br>Discussions held with AMEY - NR have an understanding of 'demographic'. NR considering options.<br>NR to link to current concerns on Inspections and Assessments.<br><br>**NR letter BCAM-TP-0059 describes Amey Training Strategy - Amey Apprentice Programme** | | 80% | 100% | |
| R8.11 | There will be a need for significant input from the route teams to define both the 'as is' processes and the 'to be' processes | 29/11/11 | 1 | NR letter dated 21 Dec 2011 'ORR Recommendation 8.11' (1 page) seen with accompanying presentations on Transformation Programme, Vision Workshop Material and Attendance Records.<br><br>- NR Central Transformation Team clearly openly engaging with Routes in devloping Future Operating Model. | 100% | 100% | 100% | |
| R8.12 | It is recommended that NR consider the following specific aspects when scoping their requirements:<br>a) Adopting a GIS based asset information system in the future to facilitate map based access to asset data;<br>b) Including a facility for incorporating data from imaging and remote sensing techniques to provide improved qualitative and quantitative techniques;<br>c) Including a facility for incorporating instrumentation / monitoring data; and<br>d) Including use of handheld devices to record data in the field and transfer directly to the database. The handheld device would be able to upload historic asset information to support field inspections. | 16/02/12 | 1 | NR Letter dated 22 Feb 2012 - ORBIS considering | | 100% | 100% | |
| R8.13 | NR more explicitly define the critical elements of different types of Civil Structures and identify suitable sub-groups such as different types of arch bridges, overconsolidated clay cuttings etc. based on their differences in engineering behaviour. The use of FMEA and similar techniques should be considered by NR for this activity. | 09/12/11 | 1 | NR letter dated 21 Dec 2011 'ORR Recommendation 8.13' (1 page) seen.<br>As 6.1 above<br><br>FMEA undertaken from asset sub-group levels - gap to derived Nigel Ricketts work<br><br>**FMEA being developed down to Principal Load Bearing element level. - NR Letter BCAM-TP-0066 includes ongoing analysis - Work ongoing as part of R8.14, R6.33 and R6.1**<br><br>**What about Earthworks ?** | 65% | 75% | 100% | |
| R8.14 | NR then collate existing asset information for these critical elements of Civil Structures and jointly review and agree with ORR the need for further inventory and condition data for the effective management of each asset sub-group. This work should be treated as a project with a specific full-time resource allocated, and should draw on the experience on the experience of other organisations. | 09/12/11 | 1 | NR letter dated 21 Dec 2011 'ORR Recommendation 8.14 & 8.15' (1 page) seen.<br><br>- NR state that closure is outstanding.<br>- ADIP Programme commenced - unclear status wrt Civil Structures assets.<br><br>Waiting on data requirements - due now 30/10/12 | 20% | 20% | 20% | |
| R8.15 | Based on the outcome from the collation exercise, a specific asset knowledge gap filling project should be initiated to provide missing critical asset data. | 09/12/11 | 1 | NR letter dated 21 Dec 2011 'ORR Recommendation 8.14 & 8.15' (1 page) seen.<br><br>- NR state that closure is outstanding.<br>- ADIP Programme commenced - unclear status wrt Civil Structures assets.<br>Waiting on data requirements - due now 30/10/12<br><br>Requires 8.13 to be complete - due end March 2012 | 20% | 20% | 20% | |
| R8.16 | NR should then consider obtaining more frequent measurements of condition to support deterioration modelling. Better integration of examination and assessment processes may assist in this respect. | 16/02/12 | 3 | Additional data needed to assess deterioration - links to 8.19<br><br>NR have accepted recommendation and have stated their intent to implement a new Level Zero assessment tool and update following each Detailed Examination to reflect the asset condition. Intent is to measure section loss at each Detailed Examination to enable improvements to be made in the area of asset deterioration modelling.<br><br>Due to the examination backlog, NR have decided not to change the scope of the Detailed Examination regime at this point until the examination backlog has been recovered and stabilized. [Refer Mark Evans e-mail dated Wed 29/02/2012 18:53] - **no evidence of process / future instruction / progress seen.**<br><br>CEFA workstream being reviewed from April 2012 - NR to provide details - links to 8.13 which drives 8.14 and 8.16.<br><br>**NR to discuss / provide further clarification** | | 35% | 35% | RBE |
| R8.17 | From the figures supplied by Western it appears that this assessment work will not complete by 2014 and that the rate of completion of assessments is significantly less than required. The main issue is the cost of carrying out assessments which may find no or few capacity issues. There is an opportunity to develop a more focused, cost effective and more timely assessment regimes. | 16/02/12 | 2 | | | 100% | 100% | |

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|---|---|---|---|---|---|---|---|---|
| R8.18 | We have identified organisations such as LUL and TfL who report condition scores for the critical elements in addition to the average for the structure. In our opinion this provides a better indication of the variability of condition. It is recommended that NR consider adopting a similar approach | 16/02/12 | 1 | NR has considered LUL and TfL methodology of condition scoring for 'critical' elements. NR proposes to monitor and report both an average condition score and 'critical element score. The 'critical' element score under consideration will be a measure of the Principal Load Bearing Minor Elements which comprise:<br>• Longitudinal Main Beam / Girder (Exposed) (MGE)<br>• Longitudinal Main Beam / Girder (Inner) (MGI)<br>• Longitudinal Secondary Beam (LSI)<br>• Transverse Beam / Girder End (XGE)<br>• Transverse Beam / Girder Inner (XGI)<br>• Introduced Strengthening (INS)<br>• Decking (DCK)<br>• Barrel Arch (BAR)<br>• Face Rings / Voussoirs (FRV)<br>• Spandrel Wall (SPW)<br>NR is developing a tool for use in the Routes to provide greater visibility of SCMI data to assist in Portfolio Asset Management. [Mark Evans e-mail dated Wed 29/02/2012 18:59] - Issued a Briefing Pack from Richard Newell on 9/3/12 .<br><br>**Policy will show that PBLE is being considered - see R6.1 for ongoing work** | | 90% | 100% | |
| R8.19 | Opportunities also exist to derive more useful measures of condition by taking measurements from defined points for example, mid span, quarter points and ends so that a reliable framework of data can be built on which to assess trends. Measuring condition at known points would also assist over a period of time in linking condition information to assessed capacity data. Other attributes would need to be taken into account in such an assessment (age, material, exposure etc). It is recommended that NR review their examination requirements to consider this opportunity. | 16/02/12 | 1 | Additional data needed to assess deterioration - links to 8.16<br><br>Needs to link to FMEA work - see 8.13 FMEA above<br><br>Links to R8.14 for ongoing work<br><br>**NR to discuss / provide further clarification** | | 35% | 35% | RBE |
| R8.20 | There is an opportunity to derive further useful data for selected structures by relating SCMI scores to historic examination records | 30/03/12 | 1 | NR View is:<br>*Relating BCMI scores to historic examination records is not considered to add any value to the degradation relationship derived. The feasibility of translating historic examination records has been investigated and our initial view is that it should be disregarded for the following reasons:*<br>*• It is deemed there is sufficient BCMI data currently available to derive the degradation relationship from actual data alone.*<br>*• Pre BCMI examination reports do not contain sufficient information to score each component within each structure.*<br>*• In general, only relatively severe defects are recorded.*<br>*• Difficulties in translating free-text examiner comments into discrete alpha-numeric defect codes.*<br>*• Behavioural changes of the examiners: Previously the examiner tended to omit reference to relatively insignificant defects as they anticipated they would not be considered for remediation. Now, within BCMI, every observable defect is recorded.*<br>*• The activity of translating historic reports is extremely labour intensive.*<br>*However, further work comprising a sample study will be trialled to confirm or otherwise our initial view above.*<br>[ Mark Evans e-mail dated Wed 29/02/2012 19:15]<br><br>This is not about SCMI per se it is about understanding the long-term degradation of various types of structures based on historic records - **Arup believe that useful additional degradation information can be derived from historic examination data. Details of sample study required.**<br><br>**NR to discuss with Amey and others then arrange meeting to discuss / provide further clarification** | | 35% | 35% | RBE |
| R8.21 | A change to risk based examination intervals requires a thorough understanding of the condition, performance and risk level of each asset sub group. We have not seen any evidence related to these issues. In principle the adoption of Risk Based examination intervals provides a method of targeting examination effort in a more effective way. However in our opinion the implementation of Risk Based examination intervals requires further review by NR, because of the short comings in asset knowledge discussed elsewhere in this report. | 16/02/12 | 2 | NR have started to consider<br><br>**NR to discuss / provide further clarification** | | 20% | 20% | RBE |
| R8.22 | It is suggested that Risk Based examination intervals are explicitly considered in the lifecycle planning for each Sub-Group of Civil Assets | 30/03/12 | 2 | NR have commissioned an expert opinion on RBE . NR have started to consider. Issue not yet addressed. - see Report Sections below<br><br>*8.5.40 "…..we have yet to be convinced that extending examination intervals from the current industry accepted practice can be justified especially without some consideration of possible new and emerging failure modes.'*<br><br>*8.5.42 It is noted that the RSSB report (Ref 105) recommended that, in order to assess the feasibility of the risk based approach, a three phase plan should be implemented, namely:*<br>*a) data collection and analysis to substantiate the risk-based approach;*<br>*b) consultation with the industry to confirm the approach and consider its implications; and*<br>*c) trial runs of the applications of variable examination intervals.*<br><br>*8.5.43 We have not been provided with information to indicate that the first of these recommended steps have been undertaken by NR."*<br><br>**NR to discuss / provide further clarification** | | 35% | 35% | RBE |
| R8.23 | It is recommended that initially NR consider data collection and analysis to substantiate the risk-based approach as suggested by RSSB | 30/03/12 | 2 | Linked to R8.22<br><br>**NR to discuss / provide further clarification** | | 10% | 10% | RBE |
| R9.1 | It is recommended that civils specific guidance is included in the next issue of NR/L3/EBM/071 to explicitly define civils specific guidance | 30/03/12 | 4 | NR have considered - see Letter dated 22 Feb 2012 - new standard issued by NR - NR/L2/RSE/070 issue 2 Engineering Verification | | 100% | 100% | |
| R9.2 | There is potentially an opportunity for NR to link the engineering verification process maps more explicitly into the overall asset management of Civil Structures and to develop and implement a specific regime of audits / verification related to critical aspects of Civil Structures asset management. | 16/02/12 | 4 | NR to include in AM Process work - evidence to follow.<br><br>NR Draft Process Map for Asset Management seen [Jonathan Young e-mail dated Fri 02/03/2012 @ 10:15]<br><br>Includes reference to verification and independent review. | | 100% | 100% | |
| R9.3 | It is our view that there is an opportunity for more formal pooling of knowledge and experience between routes and which is not currently shared. This would be part of a formal continual improvement process | 30/03/12 | 3 | Knowledge Management system / AM Manual will address<br><br>NR to provide details | | 100% | 100% | |
| R9.4 | It is recommended that NR/ORR to establish a broadly based group to consider the longer term strategy for risk management of Civil Structures. This would include foresighting and similar to explore possible future risks | 30/06/12 | 2 | Draft Terms of Reference - under development.<br><br>Final ToR will be available w/c 5th March 2012 - initial meeting held 26th March 2012.<br><br>**NR letter BCAM-TP-0053 seen - with Terms of Reference for the Civil Structures Development Group. ORR to be invited to the group.** | | 20% | 100% | |
| R9.5 | We have not seen any explicit evidence of internal asset management performance benchmarking between operational routes. It is recommended that this is considered | 09/12/11 | 4 | NR letter dated 21 Dec 2011 "ORR Recommendation 9.5" (2 pages) and "Building and Operational Property - Internal Benchmarking Study Dec 2011 "Structures Asset Management - Cross Route Benchmarking Study - Phase 1 Report Dec 2011, "Earthworks Asset Management Cross Route Benchmarking Study - Phase 1 Report Dec 201" seen | 100% | 100% | 100% | |
| R9.6 | We have not seen any evidence of business process benchmarking in relation to NR Civil Structures AM. However, we understand that as part of the IT system definition, a business process mapping exercise is underway to identify the 'As Is' and 'To Be' processes before the IT project is commenced. This involves identifying potential best practice reference sites from both a process and systems perspective that NR could visit. | 09/12/11 | 2 | NR letter dated 21 Dec 2011 "ORR Recommendation 9.6" (2 pages) and "Building and Civils Asset Management Transformation Programme - Project 10 Benchmarking Study Business Processes Phase 1 Report Dec 2011 seen.<br><br>- NR Benchmarking Business Processes<br>- NR developing business process for future AM. Still work in progress. This work is very important as it os required to facilitate successful configuration and delivery of the AM IT System.<br><br>BCAM Process Maturity survey undertaken<br>Report due end March on cross-route benchmarking<br>Model office being implemented - see NR Model Office Report<br>Programme Board - Monday 27th Feb 2012 agreed to Model Office Implementation subject to minor amendments | 55% | 100% | 100% | |
| R9.7 | It is recommended that TSAG development opportunities are investigated by NR and that an active role is taken in developing and shaping such opportunities to support the asset management of Civil Structures. | 30/03/12 | 2 | Nigel Ricketts to confirm / explain how interacting<br><br>**NR letter BCAM-TP-0053 seen - with Terms of Reference for the Civil Structures Development Group. ORR to be invited to the group.** | | 80% | 100% | |
| R9.8 | It is recommended that a specific role of a Civil Structures Development Group would be to define future areas for research and development associated with Civil Structures and be a means of engagement with TSAG and other research groups | 30/03/12 | 2 | Nigel Ricketts developing ToR<br><br>**NR letter BCAM-TP-0053 seen - with Terms of Reference for the Civil Structures Development Group. ORR to be invited to the group.** | | 80% | 100% | |
| R9.9 | A more robust set of performance measures should be developed to support the effective management and stewardship of Civil Structures | 16/02/12 | 1 | Relates to R5.3<br><br>CEFA KPI's in place and being operated by NR - as more advanced<br>**Relates to Capita Symonds Report on Targets.**<br><br>**As R5.1 above - further / ongoing work in R5.3 - See NR BCAM Letter BCAM-TP-0051 dated 30th March 2012.** | | 80% | 100% | |
| R9.10 | Condition, Asset performance and risk data should be made available to ORR together with measures relating to the management of the Asset such as progress with examinations and assessments compared to the number of assets | 16/02/12 | 1 | Capita Symonds Report on Regulatory Targets 16 Feb 2012 is considering key aspects for KPIs'<br><br>E.g. L1.2 and L1.2 'Proposed number of vsiual and examinations …'<br><br>**Capita Symonds Report 'Civil Structures Asset Management Targets (Initial Report) dated 16 Feb 2012 (Issue 1.3) provided - further / ongoing work in R5.3 - See NR BCAM Letter BCAM-TP-0051 dated 30th March 2012.** | | 80% | 100% | |
| R9.11 | It is recommended that existing measures are maintained and run in parallel until confidence in the data quality of the new measures has been established (re: performance indicators) | 16/02/12 | 4 | NR agree with recommendation and agree to overlap for at least one Financial Year - (are the existing measures retained anyway ?) - how expensive to retain ? Retain to end CP4 ? Etc.<br><br>**NR have accepted this recommendation - NR letter BCAM-TP-0051 dated 30th March 2012 states *'conceptually parallel running would start in April 2013 with quarterly reviews. Full implemnentation will commence at the start of 2014 which coincides with the start of CP5'*** | | 80% | 100% | |
| R9.12 | There is also the opportunity to produce an overall annual State of Network Report for Civil Structures Assets which would complement the NR Annual Return and present the performance indicators | 16/02/12 | 2 | Capita Symonds Report on Regulatory Targets 16 Feb 2012 considers this. To complement the Annual Return.<br><br>Content of Annual Report to defined by NR.<br><br>**Capita Symonds Report 'Civil Structures Asset Management Targets (Initial Report) dated 16 Feb 2012 (Issue 1.3) provided - further / ongoing work in R5.3 - See NR BCAM Letter BCAM-TP-0051 dated 30th March 2012 - further / ongoing work in R5.3** | | 50% | 100% | |

Version 2.0 Baseline Document for Tracking

v8.3 Updated by Arup on 18th April 2012 following meeting with NR

| Rec No | Recommendation | Planned Recommendation Closure Date | Arup Assessed Priority | Arup Comments based on review of NR documents Friday 24th Feb - Wed 29th Feb 2012 | Progress % (Arup assessed at 4 /01/12) | Progress % (Arup assessed at 29/02/12) | Progress % (Arup assessed at 18/04/12) |
|---|---|---|---|---|---|---|---|
| R9.13 | We have found it challenging to understand how recommended improvements and current planned changes (AM Strategy, Building and Civils Improvement Plan, Transformation Plan etc.) all relate to each other and to the overall AM strategy. It is recommended these linkages are mapped so that it can be understood which aspects specifically impact on the management of Civil Structures | 30/11/11 | 2 | NR letter dated 21 Dec 2011 'ORR Recommendation 9.13' (1 page) seen with accompanying programme re-organisation information.<br><br>- NR have formally re-structured programme to link to SBP work. | 100% | 100% | 100% |
| R9.14 | It is recommended that NR subsequently develop a Civil Structures Asset Management Improvement Plan to build on the base-line defined in the Asset Manual for Management of Civil Structures and to set out the planned future developments on a time and cost constrained basis | 16/02/12 | 4 | Continuous Improvement - will be part of BCAM Knowledge Management system.<br><br>NR to populate with initial list of projects before end March<br><br>**BCAM Transformation Programme Project 3 'Process and Planning Hopper' dated 14 March 2012 seen** | | 75% | 100% |

# D2 Progress Assessment – 31st December 2012

Version 2.0 Baseline Document for Tracking | v16a Updated by Arup to Record progress @ 31 Dec 2012

| Rec No | Recommendation | Arup Assessed Priority | Arup Comments wrt 31 Dec 2012 |
|---|---|---|---|
| | | | |
| R5.2 | We consider that ORR with NR should develop a more explicit definition of tolerable risk levels for the management of Civil Structures. Such a definition would assist NR in their development and prioritisation of a workbank for Civil Structures on a risk basis. Ideally the tolerable risk levels would link directly back to a DfT HLOS Safety target. There is also an opportunity to link safety risk into the revised Civil Asset Intervention Policies currently being developed by NR. | 0 | 1. Comprehensive Report on Tolerable Risk produced by NR covering both Structures and Earthworks - 120828 Tolerability of Risk Overview Doc BCAM_TP_0098 v1_0 FINAL<br><br>2. Tolerable Risk and application of Route Criticality to Risk Based Asset Management discussed explicitly with ORR RSD (linkage to wider Route Criticality work) by NR. Discussion covered ALARP, BSL and BSO. NR view as to where Structures and Earthworks asset sub-groups sit at the moment stated. Discussion on earthworks held 1 Nov 2012 and structures meeting on 16th Nov 2012. Policy Section 6 expanded - additional information in tolerable risk paper - 4/5 pages + Policy v1 Draft (BCAM TP/0265) Dec 2012 issued to address points raised in RSD Meeting.<br><br>3. Clear linkage between risk and asset policies for Earthworks and to a slightly lesser extent for Structures.<br><br>4. Unclear how risk based approach will be applied in Tier 1 Model (CeCOST) for Structures - final modelling not seen. Linkage between risk, targets, unconstrained workbank and cost to be presented. To be addressed in CP5.<br><br>5. **Structures**: Linkage to priotitisation between items in unconstrained workbank discussed 25/09/12 wrt Policy v0.4; CP5 Policy - Issue 1 7th Dec 2012 provides much improved clarity also document "Additional Information to support Critical Recommendation 5.2 (Tolerable Risk)" and "Tolerable Risk and Structures Asset Policy 18 December 2012 slides" provided 20 Dec 2012 .<br><br>6. **Earthworks**: For BCAM NR to update Policy to remove direct linkage to BSL (as NR consider all Earthworks above BSL). Scotland Improvement Notice work - implications need to be considered for CP5 and how it would be applied. Wider question as to where is best to spend available CP5 funding - which assets are most deserving. NR have updated Policy and re-issued as CP5 Earthworks Policy Iteration.<br><br>Initial implementation of 'unconstrained' workbanks seen as part of SBP review - still under development and gradually being 'embedded' in the Route planning. Links to asset data and information - data required to inform Route planning and management of structures.<br><br>**Considered that this Recommendation has been therefore closed wrt BCAM.** |
| R5.3 | There is an opportunity to more clearly define the success criteria for the asset stewardship and management of Civil Structures (e.g. level of service objectives, relative weightings between criteria) between ORR and NR. These level of service criteria should be derived from and be consistent with the Strategic Goals and Objectives set for CP5 | 1 | 1. Good progress towards defining Targets / Goals for Structures and Earthworks.<br><br>2. Capability target more clearly articulated and generally Targets / Goals plus measures to be defined to allow implementation **(Structures)** - Updated section of Policy to be provided - with defined Goals - See CP5 Policy - Issue 1 7th Dec 2012 - Section 10 Target L - see also Targets report issue 2 BCAM-TP-0214<br><br>3. Linkage between Targets / Goals and unconstrained workbank to be demonstrated more clearly. **(Structures)** - Policy updated - see CP5 Policy - Issue 1 7th Dec 2012 provides much improved clarity - roll-out to Routes - ongoing.<br><br>4. Earthworks Policy v4 seen - Table 10-2 Earthworks measures and CP5 targets - PowerPack communicates targets to the Routes.<br><br>5. Route Specific Targets being developed by NR for Structures CP5 Policy - still an area for development - needs existing 'gap' to be defined - see later. Overall good progress with principles in Asset Policy.<br><br>**Considered that this Recommendation has been therefore closed.** |
| R6.1 | It is recommended that asset groups for lifecycle planning are made more specific. This will allow lifecycle plans to be developed at a Sub-Group level and the more effective management of assets | 1 | 1. Good progress for both Structures and Earthworks linking lifecycle considerations into planned interventions and defining specific asset groups.<br><br>- Ref Structures Asset Policy - Life Cycle Planning (Structures) BCAM/TP/0165 Issue 1 22 Nov 2012 / 7 Dec 2012 with defined asset groups.<br>- Ref Earthworks_Policy_2012_Update_Rev_05f_2012-11-16 DRAFT AS ISSUED Nov 2012.<br><br>2. Specific asset sub-groups finalised and linked to inventory data at sub-group level **[ Structures]** and linked to Policy on a Page see Arup Comments 25/09/12 on Policy v0.4 for detail;<br><br>- Major Structures have been removed from Policy on a Page - unique with own AM Plan - defining content at moment based on good practice (34 No.)<br><br>- Critical Structure - large viaducts / key intersection bridges - maintain rather than replace ( ~ 180 ?) - maintain to better condition - see Policy<br><br>Policy on Page re-issued 7 Dec - with updated interventions. (PoP_structures_071212 - BCAM-TP-0082)<br><br>3. **Earthworks** - SCAnNeR mODEL considers lifecycle planning and interventions<br><br>**Considered that this Recommendation has been therefore closed.** |

| Rec No | Recommendation | Arup Assessed Priority | Arup Comments wrt 31 Dec 2012 |
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| | | | |
| R6.8 | It is recommended that NR develops a formal explicit structures workbank of all work that is currently outstanding on a route independent of funding constraints / overall priorities and that this is made available and reviewed when funding levels are being set. | 1 | 1. Good progress at defining rules for 'unconstrained workbank'. Earthworks more explicitly defined using DST tool to inform workbank (PowerPack tool)<br><br>2. Still work in progress for Structures wrt exact implementation and how the unconstrained workbank is 'developed' and then prioritised - See notes of meeting 18 Oct 2012 for detail. Following documents ( indicatng implementation has started ) have been seen demistraing that 'tolerable risk' is starting to be used to define work items to go into the unconstrained workbank :<br><br>- Revised CARRS Guidance - rec'd 30 Nov 2012 and proposed audit process - BCAM-TP-0199<br>- Risk Narrative provided (BCAM TP/0265) - Tolerable Risk<br>- Structures Decision Support Tool DST ver1 for rec 6 8SN BCAM-TP-0130<br><br>NR note that the current procedure for raising and managing items into the constrained workbank is described in Document BCAM-TP-0199 (BCAM -TP-0165 Issue 1 Structures Asset Policy 22 Nov 2012 page 54 refers to Unconstrained Workbank and - CARRS Guidance - Procedure for raising and managing structures work items in CARRS - BCAM-TP-0199 Issue: 2 Date: 28th Nov 2012 seen)<br><br>3. Impact of proposed Policy Targets not yet evaluated - i.e. linkage between targets, current condition, unconstrained workbank 'need' and then 'budget' not yet made for **Structures** - outside BCAM - see CP5 / SBP Review. Briefing to LNW Route provided wrt application of BCAM.<br><br>4. **Earthworks** - Powerpack seen - being communicated to Routes - NR have provided unconstrained workbank document and PowerPack presentation, plus updated PowerPack tool.<br><br>**Considered that this Recommendation has been therefore closed.** |
| R6.11 | It is recommended that the development of these business rules and their implementation in to a medium / longterm asset investment planning tool should be independently reviewed in parallel with the development to ensure clarity of assumptions made in the planning. | 2 | 1. Good progress with Earthworks Scanner DST and Structures Tier 2 tools. Both to be subject to independent review (not yet undertaken due to programme delay in completing models). *[NR need to consider renewing asset options - e.g. Concrete vs Weathering Steel ...]* Review of fhese models underataken as part of IIP Review and SBP Progressive Assurance / SBP Review - not repeated here.<br><br>2. CeCOST Tier 1 Models not yet seen in detail for Structures or Earthworks so overall rules for medium / long term selection of investments not seen - therefore still unclear assumptions being made for how medium / long term asset investment planning - however evidence provided that these tools are / have been used in developing CP5 submission - SBP e.g. - CeCOST Summary added to Policy Section 8 in Issue 1 and Draft CeCOST Documents issued Nov 2012.<br><br>3. Earthworks rules being implemented in SCAnNeR and used for SBP- see SBP Reports.<br><br>**Considered that this Recommendation has been therefore closed.** |
| R6.17 | NR have 17,000 retaining walls. Based on limited discussions and our review of NR Standards we understand that retaining walls do not have an SCMI score from inspections or and that their capacity is not routinely assessed. It is recommended that a condition scoring system for retaining walls is initiated together with a formal capacity assessment. [R6.18]. Further work to understand the level of asset knowledge (inventory and condition etc.) and risks posed by of NR retaining walls is recommended. | 0 | 1. Draft Risk Based criticality framework developed - Risk Process and Instruction to Routes issued end Nov 2012 - BCAM TP 0248 - Closure of Critical Recommendation 6.17 Retaining Walls - issued 30 Nov 2012.<br><br>Instruction has gone to ADIP to collate existing information from Routes ...then if gaps ... includes OMNICOM / Aerial Photos - see Appendix C in BCAM TP 0248<br><br>Progress on RAIB Dryclough - is referenced ...<br><br>2. Practical implementation not yet started<br><br>3. Little evidence of improved inventory data for Retaining walls or planning for data capture seen.<br><br>4. Risk posed by retaining walls still unclear (1st pass assessment not yet undertaken).<br><br>5. NR to discuss with ORR RSD as part of Risk Based discussion.<br><br>However, NR have provided evidence that this recommendation has started to be implemented - document includes clear programme for implementation **considered that this Recommendation has been therefore closed.** |
| R6.22 | A key purpose of an AMP is to quantify any gap between current performance and the desired target performance. The current RAMP does not define a target performance for Civil Structures or current performance of Civil Structures on the route. This means that the RAMP is more of an inventory listing than a tool to direct future expenditure to achieve targets / outcomes. This is a key area for future development. | 2 | RAMP Templates and Guidance for Earthworks RAMPs and Structures RAMPs seen e.g.<br><br>- Structures RAMP User GuidanceRev 0.8 BCAM-TP-0121<br>- Structures Workbank (RAMP) Justification Document v1.0<br>- Proposed Geo RAMP template_v0.9_2012-12-19 BCAM-TP-0290<br><br>Plan is for Operating Routes to implement in future. Not yet implemented by the Routes.<br><br>BCAM Team have agreed that RAMPs would be popualted by the Routes before end CP4. See Mark Evans' e-mail dated 13 Dec 2012.<br><br>Unclear how BCAM intent will be reconciled with overall Asset Management System RAMPs [SBPT 3003] - assumed this will be addressed as part of the development of the CP5 Delivery Plan.<br><br>**Considered that this Recommendation has been therefore closed wrt BCAM.** |

| Rec No | Recommendation | Arup Assessed Priority | Arup Comments wrt 31 Dec 2012 |
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| R6.30 | NR should also consider combining the various individual separate processes and procedures as part of their 'to be' asset management process definition activity. | 1 | Good initial progress with 'plan-do-review' asset management process (March 2012).<br><br>NR updating process document (Draft of AM Manual provided) - next draft end Nov / early Dec 2012 - Updated draft - by 7th Dec 2012<br><br>NR have provided a copy of their "Asset Management Manual Structures and Earthworks and Drainage" BCAM-TP-0260 Issue: 0.2 Dated December 2012 - rec;d 7 Dec 2012.<br><br>This indicates NR have started to implement their AM Processes - AM Processes - 55% as-is now written also - work ongoing defining processes - will be defined in next draft AM Manual in 2013<br><br>Unclear how BCAM AM Manual fits with overall Asset Management System [SBPT 3003] - assumed this will be addressed as part of ongoing development.<br>**Considered that this Recommendation has been therefore closed wrt BCAM.** |
| R6.33 | Conditions score for bridges are enhanced to include both the overall SCMI score and a set of SCMI crit scores for critical elements | 1 | 1. SCMIcrit / PLBE tool provided to Routes.<br><br>2. Further clarity required wrt application to derive input to unconstrained workbank for Structures - NR have produced updated report - BCAM-TP-0262 V1.0 - R6.33<br><br>See also BCAM 'Targets and Funding Spreadsheet' issued 30 Nov 2012 showing how SCMI crit scores / PLBE values used to provide initial size of Structures workbank. Work continuing as part of SBP definition for CP5 / CP6. Noted that this is still work in progress - links to R8.14 and R8.15 below - data that is needed to effectively manage the asset and plan ahead.<br><br>**Considered that this Recommendation has been closed wrt BCAM.** |
| R8.5 | It is recommended that the resource level of route structures teams and level of funding available for assessments is reviewed and benchmarked against other Infrastructure organisations | 1 | Various meetings and documents provided e.g.<br><br>- Critical Services Resource Review (All Routes) NR/BCAM/P/004 Issue: Draft b 20 Sept 2012<br>- Critical Services Report v1.0 260612.doc BCAM –TP-0186 V1.0 26 June 2012<br>- Civils NOAMS Working Group1 (BCAM-TP-0226) Draft 31 Aug 2012<br>- People AM NO Presentation 310812 - FINAL UPDATED - - 27 Sept 2012<br>- Benchmarking with other Infrastructure Managers Draft b NR-BCAM-P-03 Draft C 13 Aug 2012<br>- Snapshot of Knowledge and Experience within Routes 130812 NR-BCAM-P-01 Issue 1.0 8 Aug 2012<br><br>J Halsall recommendation to Routes that they increase Resource by 75% seen - Civils NOAMS Working Group1 (BCAM-TP-0226) - Ref 5e.<br><br>Considered that this is adequate evidence of 'implementation'. Actual 'implementation' to be reviewed as part of overall 'monitoring' of embedment.<br><br>**Considered that this Recommendation has been therefore closed.** |
| R8.14 | NR then collate existing asset information for these critical elements of Civil Structures and jointly review and agree with ORR the need for further inventory and condition data for the effective management of each asset sub-group. This work should be treated as a project with a specific full-time resource allocated, and should draw on the experience on the experience of other organisations. | 1 | Intent of this Recommendation in March 2011 was for NR to collate a comprehensive set of asset information for all critical elements of Civil Structures identifying the information for effective management of each sub-group. The aim was that data would be collated or identified to allow future planning of the management of Civil Structures.<br><br>Scope was recognised by various NR documents e.g:<br><br>- BCAM Transformation Programme Product Description for Project 6 dated 22 Nov 2011<br>- BCAM Project Initiation Document - Project 6 - Asset Information - Objective stated as *'define and prioritise information requirements, cleanse existing data, collect missing data and establish governance required to maintain data integrity to agreed confidence levels'* - Budget of £6,046,670 allocated.<br><br>Meetings held with NR at various dates from 7 Sept 2011 onwards. Progress recorded as 32% (NR 3rd Oct 2012) 40% (NR Tier 1 Meeting 22nd Oct 2012) and 55% (30th Nov 2012) - Concern expressed about slow progress - see notes of meeting 18 Oct 2012, 31 Oct 2012, 16 Nov 2012, 23 Nov 2012, 30 Nov 2012, 10 Dec 2012, 17 Dec 2012.<br><br>Asset Data Improvement Programme underway. Unclear what impact this will have on Structures and Earthworks and linkage to gap filling to provide missing critical data<br><br>NR submitted BCAM-TP-0291 Issue 1.0 dated 8 Jan 2013 'Closure of Critical Recommendation8.14: A collation of existing Civils Structures Asset Information' presenting NR's collated list of existing structures asset information and NR's assessment of information gaps to be filled. Good first draft but:<br>- Unclear how information gaps highlighted in SBP (e.g. Underbridges requiring work and scope of work) will be addressed.<br>- Detailed listings not provided<br>- Unclear how data links to RAMPs, SBP requirements, Asset Policy etc.<br><br>**Still work in progress substantially complete (against letter of recommendation which was to have complete collated lists and to discuss / agree with ORR)** |

| Rec No | Recommendation | Arup Assessed Priority | Arup Comments wrt 31 Dec 2012 |
|---|---|---|---|
| | | | |
| R8.15 | Based on the outcome from the collation exercise, a specific asset knowledge gap filling project should be initiated to provide missing critical asset data. | 1 | Intent of this Recommendation in March 2011 was for NR to use their collated list of asset information required for the effective management of each sub-group of Civil Structures and then undertake 'gap filling' to allow future planning of the management of Civil Structures.<br><br>NR submitted BCAM-TP-0292 Issue 1.0 dated 8 Jan 2013 'Closure of Critical Recommendation 8.15: Civils Structures Asset Information Gap Filling Project' describing plan for information gaps to be filled. Noted that this Plan considers Bridges, Culverts, Retaining Walls, Tunnels, Footbridges and CERD Assets.<br><br>Plan seems to start in January 2013 and runs to end December 2013 - i.e. starts after 31st December 2012. Accordingly Recommendation cannot be considered to be closed wrt BCAM - progress with this strategic data collection unclear<br><br>**Still work in progress substantially complete (against letter of recommendation which was to initiate a gap filling project and start to provide missing critical asset data)** |
| R8.16 | NR should then consider obtaining more frequent measurements of condition to support deterioration modelling. Better integration of examination and assessment processes may assist in this respect. | 3 | BCAM TP 0286 Issue 1 Dated 14 Dec 2012 seen.<br><br>Outlines NR's aims for Marker Structures, Degradation Measurement, and review of Historic SCMI Data for determining degradation rate. Includes proposed population of assets that NR propose to use as Marker Structures (Appendix F).<br><br>Still to be started on site by Routes but selection of structures and plan indicates start of Implementation - **therefore Recommendation considered to be closed wrt BCAM.** |
| R8.19 | Opportunities also exist to derive more useful measures of condition by taking measurements from defined points for example, mid span, quarter points and ends so that a reliable framework of data can be built on which to assess trends. Measuring condition at known points would also assist over a period of time in linking condition information to assessed capacity data. Other attributes would need to be taken into account in such an assessment (age, material, exposure etc). It is recommended that NR review their examination requirements to consider this opportunity. | 1 | As R 8.16 above |
| R8.20 | There is an opportunity to derive further useful data for selected structures by relating SCMI scores to historic examination records | 1 | As R 8.16 above |
| R8.21 | A change to risk based examination intervals requires a thorough understanding of the condition, performance and risk level of each asset sub group. We have not seen any evidence related to these issues. In principle the adoption of Risk Based examination intervals provides a method of targeting examination effort in a more effective way. However in our opinion the implementation of Risk Based examination intervals requires further review by NR, because of the short comings in asset knowledge discussed elsewhere in this report. | 2 | 1. RBE - NR undertaking review -see Notes of Meeting 18 Oct 2012 - for detail and BCAM-TP--246 dated 20 Dec 2012 'Closure of Recommendations 8.21 and 8.23: Risk Based Examinations'<br><br>2. NR to explain overall process and provide evidence of application and robust management of civil structures.<br><br>3. Additional note issued Wed 7 Nov 2012 - reviewed by Arup and discussed with NR and ORR RSD at meeting on 16 Nov 2012.<br><br>In principle the adoption of Risk Based examination intervals provides a method of targeting examination effort in a more effective way. However we are still uncertain that NR have all the evidence required for the appropriate implementation of Risk Based Examination primarily because of the short comings in asset knowledge discussed elsewhere. Arup view remains that a change to risk based examination intervals requires a thorough understanding of the condition, performance and risk level of each asset sub group. We have seen limited objective evidence related to these issues.<br><br>We are also unclear how a 'risk based examination' approach will be applied to 'Major Structures' - and specifically the 'long list' of Major Structures.<br><br>Notwitstanding this it is noted that NR have reviewed this themeselves simce the recommendation was made and satisfied themseleves that the approach is suitable. It is also noted that wider discussions are ongoing between ORR and NR wrt Examinations and Assessments e.g. Level 1 Assessments. On this basis it is considered that NR have undertaken a further review and that the **Recommendation can be treated as closed.** |
| R8.22 | It is suggested that Risk Based examination intervals are explicitly considered in the lifecycle planning for each Sub-Group of Civil Assets | 2 | As R8.21 above |
| R8.23 | It is recommended that initially NR consider data collection and analysis to substantiate the risk-based approach as suggested by RSSB | 2 | As R 8.21 above |

# Appendix E

## Handover Report

| Revision | Date | Filename | | | |
|---|---|---|---|---|---|
| Final | 22 April 2013 | Description | Issue | | |
| | | | Prepared by | Checked by | Approved by |
| | | Name | Mark Rudrum | Mark Rudrum | Mark Rudrum |

## 1. Introduction

1.1. Arup have been appointed by the Office of Rail Regulation (ORR) and Network Rail (NR) as Independent Reporter to provide assurance as to the quality, accuracy and reliability of NR's data that is used to report performance to ORR, the Department for Transport (DfT) and the wider industry.

1.2. Specifically Arup have been appointed under Mandate AO/019 to provide assurance support in relation to Network Rail's Buildings & Civils Asset Management (BCAM) Transformation Programme.

1.3. It was agreed that a '3 stage' process would be assessed:

- Development
- Implementation
- Embedment

1.4. Assurance work to date in the period from 1st May 2011 to 31st December 2012 has concentrated on 'development' and 'implementation' (see below). The aim now is to potentially arrange assurance / audit activity later in 2013 to review progress towards 'embedment'.

1.5. This 'Handover Report' has been produced to facilitate planning by ORR and NR of that future assurance / audit activity including the next Reporter remit (if appropriate).

1.6. It is based on BCAM findings and feedback from the Route meetings undertaken as part of the SBP M&R Review (Mandate AO/030).

1.7. This report is based on material provided by NR up to the end of January 2013 – the planned closure date for Mandate 019 being 31st December 2012. It is noted that NR have provided some additional material after this date in relation to their future plans, however that material has not been considered here.

1.8. The report provides a concise summary of the key aspects that in our opinion still need to be addressed by NR in their ongoing BCAM Transformation Programme.

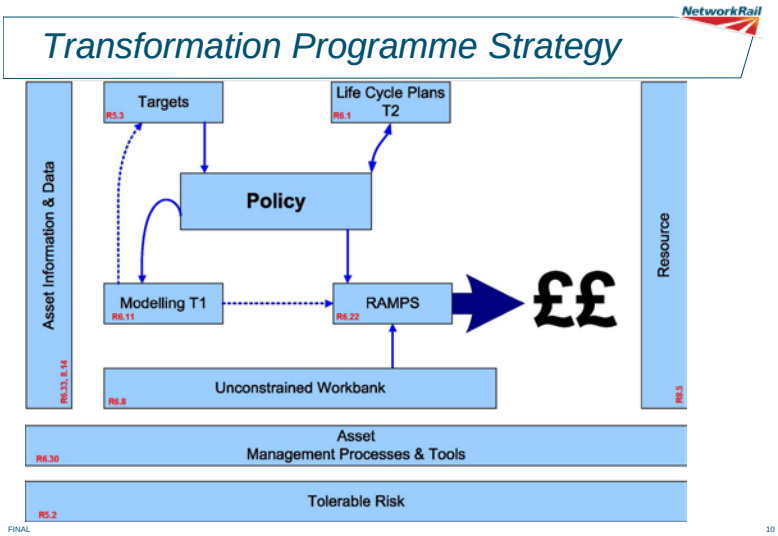
1.9. A separate Summary Report is being prepared which will be suitable for publication on the ORR website.

## 2. BCAM Transformation Progress

2.1. At the outset of the BCAM Transformation Programme (April 2011) the following definition of 'closure' for the 77no. Recommendations, was agreed namely

> *It has been agreed that 'close-out' would be taken as a point where there is evidence that change (arising from a recommendation) has started to be 'implemented' and introduced into NR operations. It has also been agreed that the 'embedment' of changes into the NR 'business as usual' operation would be subsequently audited by ORR as part of general ongoing progressive assurance activity (i.e. outside this Mandate).*
>
> *Fundamentally we are looking for the start of consistent implementation (generally at a Route level across several Routes) and specifically how the BCAM Transformation work has improved the 'business as usual' processes and ways of working*

2.2. On this basis, NR have 'closed out' the majority of the 77 recommendations as at January 2013. However, it is noted that the criteria was *'has started to be 'implemented''*. An assessment of overall progress can be judged by our detailed review of the SBP Submission (Arup 2013[1]).




## 3. BCAM Overall Planning and Direction

3.1. A copy of the NR BCAM 'embedment plan' tabled in November 2012 is appended in Annex A.

3.2. However, in the recent months we note that NR have ceased holding monthly BCAM Programme Board Meetings and we have 'lost sight' of their ongoing and planned work. This coincides with changes of key programme members and re-structuring within NR, specifically:

- we understand that the BCAM Sponsor and BCAM Programme Manager have changed .
- we are unclear who the replacement BCAM Sponsor / which part of the NR organisation is now sponsoring the ongoing work;

3.3. Accordingly, we are unsighted as to NR's current future plans for BCAM and we have not been able to reference our suggested audit / assurance topics against an existing NR plan.

[1] *Office of Rail Regulation and Network Rail Part A Reporter Mandate AO/030: PR13 Maintenance & Renewals Review Summary Report AO/030/01 Draft A | 22 March 2013*

## 4. Overall Assurance / Audit 'Topics'

We have listed below the key overall 'topics' we would consider should be reviewed in the next stage of assurance. This is not an exhaustive list.

Interface with Asset Management Improvement Plan

4.1. NR have published an overall Asset Management Improvement Plan. It is unclear how Building & Civils will interface and align with this overall AM development plan and milestones. It is suggested that this is an area for audit.

Interface with Overall Asset Management System

4.2. NR have published in their SBP an overall 'Asset Management System' document [SBPT3003]. This covers some of the same ground as documents prepared under the BCAM Transformation. . It is unclear how Building & Civils will interface and align with this overall AM process. It is suggested that this is an area for audit.

Interface with ORBIS

4.3. NR are embarking on a substantial information system development programme – ORBIS. It is unclear how Building & Civils will interface and align with this overall programme. It is suggested that this is an area for audit.

## 5. Specific Assurance / Audit 'Topics'

We have listed below the key 'topics' we would consider should be reviewed in the next stage of assurance (the '*10 Ruby Recommendations'* ) and then specific aspects that could be explored by an audit.

This is not an exhaustive list.

5.1. Risk

- *How has the risk based approach been applied in practice by the Routes ?*
- *How have risk based targets been applied ?*
- *How has cross-asset risk been considered in Route level decision making ?*
- *What evidence of a consistent approach across Routes ?*
- *How have any improvements arising from aspects such as 'Improvement Notices' been incorporated ?*

5.2. Targets

- *To what extent have the Routes applied the Targets set out in the December 2012 Asset Policy ?*
- *How do these link to the planned CP5 outputs ?*

- *How have 'trade-offs' between targets been considered by the Routes? (e.g. safety vs performance vs licence obligation)*
- *What evidence of a consistent approach across Routes ?*

5.3. Lifecycle Planning

- *To what extent are Routes using whole life cost principles set out in Policy on a Page and Tier 2 models ?*
- *How are Routes deciding selection of intervention types and timings ?*
- *What evidence of a consistent approach across Routes ?*

5.4. Unconstrained Workbank

- *To what extent have Routes developed unconstrained workbanks ?*
- *How has Asset Policy been applied in developing workbanks ?*
- *How have Routes identified a workbank for Bridges ?*
- *To what extent have volumes of bridge work been identified and costed ?*
- *How are Routes prioritising these workbanks ? (e.g. condition vs capability)*
- *To what extent are constrained workbanks aligned with overall Structures Policy ?*
- *How are 'baseline' CP5 volumes being derived at a Route level ?*

5.5. Modelling

- *To what extent have Routes used the central modelling to inform their decisions ? (e.g. CeCOST and other Tier 1 models)*
- *To what extent have Routes used other centrally provided models ? (e.g. prioritisation guidance )*

5.6. RAMPS

- *To what extent have Route Asset Management Plans been developed ?*
- *How do these align with the overall Asset Management System Documentation [SBPT3003] ?*
- *What evidence of a consistent approach across Routes ?*

5.7. Asset Management Process / Overall System Approach

- *To what extent has the BCAM Asset Management Process been developed ?*
- *To what extent are Roles and Responsibilities defined ?*
- *How has this been used to inform the development specification for CSAMS ?*
- *How is overall progress towards an Asset Management System being monitored ? (e.g. linkage to AMEM and Asset Management Improvement Plan).*

- *What review, assessment and re-planning process is in place to ensure targets will be achieved ?*
- *What evidence is their of internal assurance by NR ?*
- *What updates to the Asset Policies have been undertaken and how have these been implemented ?*
- *How have improvement notices been taken into account in Policy development ?*

5.8. Asset Information System

- *What asset system improvements have been implemented ?*
- *What is the progress with CSAMS ?*
- *To what extent have Routes been involved with CSAMS and developing the future process for the management of buildings and civils ?*

5.9. Data

- *To what extent have central data improvements been implemented ?*
- *What data improvements have been undertaken as a result of BCAM ?*
- *What evidence of a consistent approach across Routes ?*
- *Progress on inventory and condition data for all assets ?*

5.10. Resources

- *To what extent have Routes applied the BCAM guidance on technical resource levels ?*

# 6. Approach

6.1. It is suggested that a 'questionnaire' and 'audit' approach could be adopted similar to that undertaken as part of the SBP review[2]. The scope would be:

- Central Team BCAM / HAM
- All 10 Route RAM teams would be interviewed.
- Structures, Earthworks and Drainage

6.2. Out of scope

- Mining
- Buildings

6.3. 'Compliance' would be 'scored' on a 'green to red' scale (similar to SBP scale). A 'binary' 'pass or fail' would not be adopted.

6.4. Single audit 'tranche' undertaken in Summer 2013.

6.5. Audit team would comprise:

- Independent Reporter Lead Auditor accompanied by Technical Lead

6.6. Overall Activities

- Audit Check List and Questionnaire to be developed and agreed with ORR
- Questionnaire to be issued to Structures and Earthworks HAM's and RAM's
- Route Audits
- Reporting
- Draft A Report

6.7. It is envisaged that a three month period (time elapsed) should be assigned for the audit activity.

[2] See Mandate AO/030 Summary Report Draft A dated March 2013

**Annex A**

**NR Embedment Plan (November 2012)**

# BCAM Embedment Programme

16 Nov 2012

## Background / Context

- Network Rail has an Asset Management Strategy and organisation wide series of initiatives that seek to deliver excellence in asset management during CP5
- Network Rail measures its progress in asset management through an Asset Management Excellence Model (AMEM). The next review is due in Jan 2013 (reports April 2013)
- This tests the sufficiency of the asset management system, its embedment and integration across business functions at a national level
- We need to realise benefits from improvements to Policy and other aspects of the BCAM Programme by achieving embedment within the routes
- We will seek to achieve and measure the embedment whilst supporting wider goals of raising overall awareness and competency in asset management. We will seek to complement (rather than repeat) the wider asset management improvement work

## Goals of Embedment Programme

- To improve the level of understanding of asset management within the BCAM Route roles
- For the civils assets (structures and earthworks), to have Network Rail's AM Framework adopted and applied as "business as usual" including the supporting processes, tools and techniques
- To ensure the appropriate resources are in place at Centre and Routes to achieve this

## Objectives of Embedment Programme

- NR's Asset Management Policy and Strategy and their application to individual asset types are understood at a Route level
- To verify that the link between Policy and Strategy, the civils asset policies, the RAMPs and the route delivery plans are understood
- There is understanding of the line of sight to policy targets and measures at a Route level
- Intervention priorities to achieve targets and measures are understood, accepted and interpreted in the RAMPs and route delivery plans.
- Supporting asset management initiatives both specific to BCAM and more widely are understood, supported and are being implemented effectively
- Resource needs, competences and other improvement actions are identified and being addressed
- Centre and Route AM roles and responsibilities (as defined through the route devolution handbook) are fully understood

## Programme Approach (1)

- Prepare a communication plan to set out programme goals, objectives and who will be involved
- Develop an "embedment" evaluation framework aligned to objectives
- Take advantage of the current and upcoming AMEM work to establish maturity at Centre and selected Routes (reports in April 2013)
- Consult with the Routes over issues relating to embedment and undertake evaluation in accordance with framework

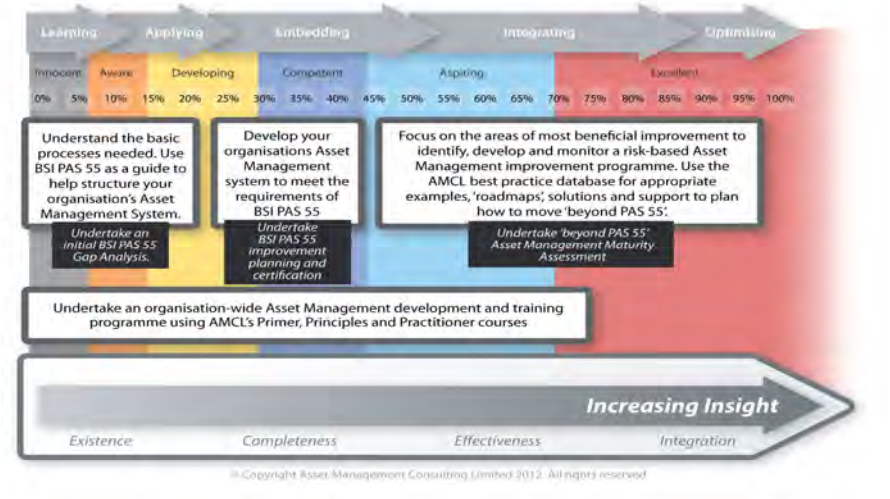
## Programme Approach (2)

- Understand the current position (gap analysis) and develop a BCAM Embedment Improvement Programme. Inputs to include:
  - Feedback from consultation with and assessment of Routes against evaluation framework
  - AMEM assessment methodology and findings from review
  - NR asset management framework including civils asset policies and RAMPS
  - NR asset management competency framework
  - Civils Asset Management Manual
  - AM roles and responsibilities from Devolution Handbook (RACI)

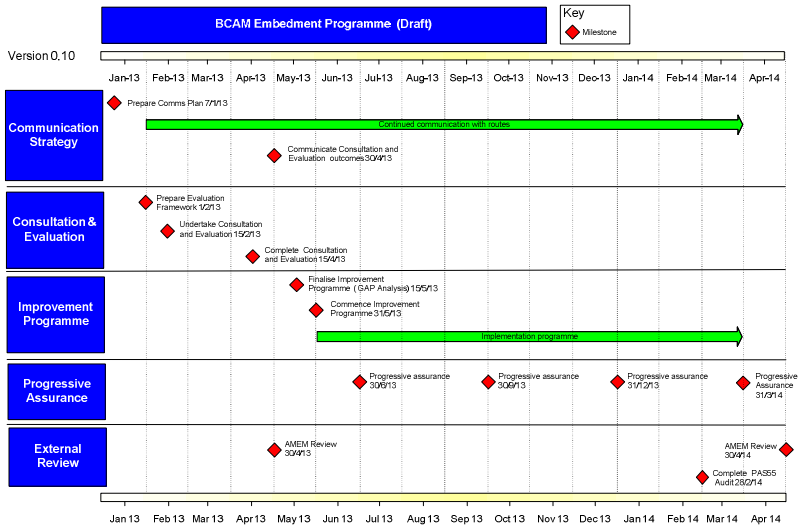
# Programme Approach (3)

- Establish and implement an Improvement Programme
- Carry out progressive assurance reviews in accordance with the Improvement Programme
- Adapt programme as needed to optimise attainment of goals and objectives
- Undertake independent AMEM & PAS 55 audit of AM system at Centre and Routes, to align with existing AMEM plan at exit of CP4 (April 2014)

## *Asset Management Excellence Model*



# Timeline




9

# Next Steps

- Seek funding and programme approval
- Liaise with Independent Reporter on details of approach, timing, training etc
- Determine programme sponsor – JH?
- Finalise governance arrangements