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Monday 21<sup>st</sup> 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

<b>v1 Updated by Arup to Record Arup View of Progress at 13 Dec 2011</b>
<b>v2 Updated by Arup to Record Arup View of Progress at 19 Dec 2011</b>
<b>v3 Updated by Arup to Record Arup View of Progress at 19 Dec 2011 and Summary Sheet Added plus</b>
<b>typographical corrections made</b>
<b>v4 Updated following meeting with NR on 22 Dec 2011 - showing ORR first reaction at</b>
<b>v5 Updated by Arup on 5 Jan 2012 following review of documents provided on 22 Dec 2011</b>
<b>v6 Updated by Arup at end Feb 2012 - incomplete issued to NR for info on 29 Feb 2012 @</b>
<b>v7.2 Updated by Arup on 1st March 2012 - Summary completed</b>
<b>v8.0 Updated by Arup on 19th March 2012</b>
<b>v8.1 Updated by Arup on 22nd March 2012</b>
<b>v8.2 Updated by Arup on 18th April 2012</b>
<b>v8.3 Updated by Arup on 18th April 2012 following meeting with NR</b>
<b>v9.2 Issue Updated by Arup to new Format to record progress post April 2012 - closed Recommendations deleted and Interim Milestones added by NR.</b>

### **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	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 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					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 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 Completed			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	

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	<p>Under Development and Consultation</p> <p>Scope of new critical rec covers 6no. Recs (R8.16,8.19, 8.20, 8.21,8.22 &amp; 8.23)</p> <p>S&amp;I report and programme being prepared now, and meeting set up between Richard Frost and Alastair Jackson to conclude remit.</p>				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					

Office of Rail Regulation and  
Network Rail

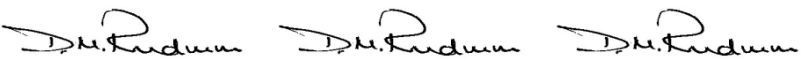
**Part A Reporter Mandate AO/019:  
Independent Review and  
Assurance of Network Rail  
Buildings & Civil's  
Transformation Programme**  
Annual Progress Report 2011/12

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# Document Verification

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**Issue Document Verification with Document**
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## Appendices

### Appendix A

Mandate AO/019

#### A1 Mandate AO/019

### Appendix B

ORR Letter dated 23 November 2011 with Baseline Programme Recommendations Tracker

#### B1 ORR Letter dated 23 November 2012



## 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
DfT	Department for Transport
IIP	Initial Industry Plan 2011
NR	Network Rail
ORR	Office of Rail Regulation
SBP	Strategic Business Plan

# 1 Executive Summary

- 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** This Report has been produced to provide an opinion on Network Rail's progress with their BCAM Transformation Programme in the period from its inception to the end of March 2012.
- 1.1.6** It is of particular note that NR have been very open and transparent with their progress under the BCAM Transformation Programme and have fully supported the progressive assurance approach.
- 1.1.7** 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.
- 1.1.8** Since December 2011, we have seen significant progress by NR towards implementing improvements to the way that they will manage their Civil Structures, specifically
- Development of AM Targets
  - Risk based approach to Asset Policy
  - Lifecycle modelling and linkage to Policies
  - Consideration of Planned Preventative Maintenance
  - Workbank development and prioritisation
  - Overall AM 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.

- 1.1.9** Our assessment of progress as at the 31<sup>st</sup> March 2012 is that of the 77 recommendations
- Overall Progress 88% complete (based on recommendations due at end March)
  - 59 Recommendations have been closed (out of 76 due at end March 2012)
- 1.1.10** There are 18 key recommendations still to be addressed and significant work is still associated with this. However, based on our limited review of NR's programme, their forward plans appear to indicate that the BCAM Programme will be capable of closing these key remaining recommendations in the timescales proposed by NR providing key risks are appropriately managed.
- 1.1.11** In November 2011, NR devolved the day-to-day running of Britain's railway infrastructure to 10 strategic routes<sup>1</sup>. 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 has significantly impacted on progress with the BCAM Transformation and will continue to do so to a greater or lesser extent.
- 1.1.12** It will be important to continue the engagement between the BCAM Programme Team and the Routes. It is suggested that (if not done so already) a formal stakeholder engagement and business change / transition plan should be prepared by NR 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. This is the area of most significant risk in terms of the overall programme.
- 1.1.13** This is our final report produced after review and discussion with ORR and NR for upload to the ORR website.

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<sup>1</sup> <http://www.networkrail.co.uk/devolution.aspx>

## 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** This Report has been produced to provide an opinion on Network Rail's progress with their Buildings & Civils Asset Management (BCAM) Transformation Programme in the period from its inception to the end of March 2012.
- 2.1.3** It has been prepared by Arup in relation to our role as Part A Independent Reporter and specifically under our remit to provide an Independent Review and Assurance role of the NR BCAM Transformation Programme (Mandate AO/019 ) – see Appendix A.
- 2.1.4** At the time of writing the BCAM Transformation Programme is ongoing and is planned to be substantially complete by the end of 2012. As part of Mandate AO/019 a further Progress / Summary Report will be prepared in December 2012.
- 2.1.5** This is our final report produced after review and discussion with ORR and NR for upload to the ORR website.

### 2.2 Acknowledgement

- 2.2.1** The Independent Reporter Team would like to thank both NR and ORR staff for their assistance with this assurance activity, for providing documents as requested and explaining progress and future plans.

## 3 Context, Scope and Approach

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

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

**3.1.6** Our Final Report from the Mandate AO/007 Structures Review made 77 key recommendations based on the findings and observations.

**3.1.7** A listing of the 77 recommendations is included as part of the ORR letter in Appendix B. We assigned each recommendation with an indicative priority based on our view of its importance to asset management of Civil Structures.

## 3.2 Mandate AO/019 BCAM Programme Assurance

**3.2.1** The overall intent of Mandate AO/019 is for the Independent Reporter to provide robust constructive review and assurance<sup>2</sup> 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.

**3.2.2** 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 is not to provide assurance to the wider B&C CP5 activity which has subsequently been added into the BCAM Transformation Programme – see later.

**3.2.3** 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.

**3.2.4** Our assurance activities and detailed views are set out in a series of regular (typically monthly) Progress Notes and assessments that have been provided to both NR and ORR. This report provides a summary overview of progress during the whole year of the programme.

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<sup>2</sup> 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 BCAM Transformation Programme

**4.1.1** As noted above, the Mandate AO/007 Structures Review made 77 key recommendations based on the findings and observations. Based around these, 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).

**4.1.2** The NR Terms of Reference (Ref 3) 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<sup>3</sup>.”*

**4.1.3** To provide overall governance, NR have 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.

**4.1.4** The BCAM Programme Board has met on a monthly basis, and Arup have attended as an ‘observer’ on behalf of ORR. NR has provided full copies of the Programme Board material to both Arup and ORR.

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<sup>3</sup> Source: Asset Management Improvement Plan (AMIP), Network Rail

## 5 Progress Assessment

### 5.1 Baseline Plan

**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 B) and noted that this would be used as a 'baseline' for progress evaluation.

**5.1.4** As noted above, in the Mandate AO/007 Structures Review Report dated March 2011 (Ref 1) each of the 77 recommendations was assigned a 'priority'. For our assurance work we have adopted a similar approach allocating a priority to each recommendation from '0' as highest priority to '4' as lowest priority.

**5.1.5** Figure 5.1, tabulates the NR planned dates for closure of against priority.

Priority	Number of Recommendations				
	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
<b>Total</b>	<b>26</b>	<b>29</b>	<b>21</b>	<b>1</b>	<b>77</b>

**Figure 5.1 Tripartite Recommendations vs Priority & Date for Closure**



## 5.2 Progress Assessment

**5.2.1** 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.

**5.2.2** 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).

**5.2.3** Throughout the BCAM Transformation Programme we have regularly met with NR and ORR to discuss and assess progress. This has been reported to both NR and ORR on a Monthly basis.

**5.2.4** 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.

**5.2.5** 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’. Accordingly 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.

### Specific Progress at End March 2012

**5.2.6** Our assessment of progress as at the 31<sup>st</sup> March 2012 is summarised below. This indicates that of the 77 recommendations

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

## Summary Sheet

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

Overall Progress @ 31/03/2012						
Priority	Number of Recommendations Due to be Closed @ 31st March 2012	Number of Recommendations				Total No. Recommendations (to completion)
		0-30% Progress	31%- 50% Progress	51% - 99% Progress	100% Complete	
0	6			2	4	6
1	26	2	6	2	16	26
2	25	2	2	1	21	26
3	8		1		7	8
4	11				11	11
<b>Total</b>	<b>76</b>	<b>4</b>	<b>9</b>	<b>5</b>	<b>59</b>	<b>77</b>

**Figure 5.2 - Assessed Progress at 31 March 2012 (based on Arup 'Programme Recommendations Tracker' v8.3)**

## 6 Forward Plan

- 6.1.1** In February 2012, NR indicated that 67 (out of the 77 recommendations) were likely to be closed-out by the end of March 2012 but that 10 recommendations (which NR refer to as the ‘Ruby Recommendations’) would require additional time to close. NR provided proposed revised dates for closure of these 10 recommendations – see Figure 6.1. At the time of writing we understand that NR and ORR have yet to agree these revised dates.
- 6.1.2** On 18th April 2012, NR presented a draft forward plan for closure of the key remaining recommendations (NR ‘Ruby’ Recommendations). Three separate Gantt charts were presented namely:
- Structures
  - Geotechnics
  - Central Transformation
- 6.1.3** Accompanying ‘Scope and Implementation Report’ sheets for each of these elements of the overall BCAM Programme were also tabled.
- 6.1.4** At the time of writing, NR are finalising their forward plan and ‘Scope and Implementation Report’ sheets. This is due to be issued w/c 23<sup>rd</sup> April 2012. This will form the basis for our ongoing progressive assurance.
- 6.1.5** A summary of the proposed closure dates for the remaining key recommendations is shown in Figure 6.1.

REC	DETAIL	OWNER	NEW DATE
	<b>Tolerable Risk</b> (Definition of Tolerable Risk)	Tolerable Risk	31-Aug-12
	<b>Targets</b> (Clearly defined success criteria for asset stewardship)	Structures (+ Geotech)	31-Aug-12
	<b>Lifecycle Planning</b> (More specific asset groups)	Structures (+ Geotech)	31-Aug-12
	<b>Unconstrained Workbank</b> (Develop workbank & process)	Structures (+ Geotech, Process dependency)	31-Dec-12
	<b>Modelling</b> (Business Rules for Asset Investment Planning Tool)	Structures (+ Geotech)	31-Jul-12
	<b>RAMPS</b> (Quantify gap between current & desired performance)	Structures (+ Geotech)	30-Sep-12
	<b>Asset Management Process</b> (Combined 'to be' processes)	Process (+ Systems)	31-Dec-12
	<b>Asset Information</b> (Enhanced SCMI scores)	Structures (+ Data)	30-Jun-12
	<b>Data</b> (Further inventory & condition data)	Data (Structures Dependency)	30-Oct-12
	<b>Resource</b> (Benchmarking levels of resource)	People (Benchmarking Dependency)	30-Sep-12

Figure 6.1 - NR Proposed Programme for 10 no. 'Ruby' Recommendations

## 7 Comment

### 7.1 Overall Context

**7.1.1** 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 BCAM Transformation Programme.

#### Devolution

**7.1.2** In November 2011, NR devolved the day-to-day running of Britain's railway infrastructure to 10 strategic routes<sup>4</sup>. 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

**7.1.3** In December 2011, the BCAM Transformation Programme was combined with the CP5 programme and accountability for delivery of CP5 for Buildings & Civils transferred from a central team to the respective Heads of Asset Management for Structures, Geotechnics and Buildings (Ref 5).

### 7.2 Comment and Opinion

**7.2.1** It is of particular note that NR have been very open and transparent with their progress under the BCAM Transformation Programme and have fully supported the progressive assurance approach.

**7.2.2** 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.

**7.2.3** 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 has significantly impacted on progress with the BCAM Transformation and will continue to do so to a greater or lesser extent.

**7.2.4** Specifically Devolution has increased the requirement within NR for internal communication and stakeholder management between the BCAM Programme and the Routes, it has also placed additional staff resource pressures on the BCAM programme team.

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<sup>4</sup> <http://www.networkrail.co.uk/devolution.aspx>

**7.2.5** Since December 2011, we have seen significant progress by NR towards implementing improvements to the way that they will manage their Civil Structures, specifically

- Development of AM Targets
- Risk based approach to Asset Policy
- Lifecycle modelling and linkage to Policies
- Consideration of Planned Preventative Maintenance
- Workbank development and prioritisation
- Overall AM 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.

**7.2.6** As noted above there are 18 key recommendations still to be addressed and significant work is still associated with this. However, based on our limited review of NR's programme, their forward plans appear to indicate that the BCAM Programme will be capable of closing these key remaining recommendations in the timescales proposed by NR providing key risks are appropriately managed.

**7.2.7** It will be important to continue the engagement between the BCAM Programme Team and the Routes. 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. This is the area of most significant risk in terms of the overall programme.

## 8 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.

## Appendix A

Mandate AO/019



## A1 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<sup>5</sup> of the NR B&C 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 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

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<sup>5</sup> 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.

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)

## 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 31<sup>st</sup> 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 15<sup>th</sup> 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).  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.  The Independent Reporter will issue Draft B report to both ORR and NR.  All three parties will meet to discuss the report and agree its contents and recommendations as far as possible  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  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  ORR will publish the report on their website  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

ORR Letter dated 23 November  
2011 with Baseline Programme  
Recommendations Tracker



## **B1      ORR Letter dated 23 November 2012**

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

**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.

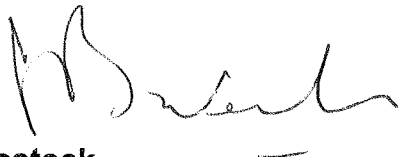
I am aware that an unplanned change in project management staff at the end of August resulted in some loss of momentum and an appropriate review and reprogramming was subsequently undertaken by the replacement project management lead. Whilst you are continuing to manage anticipated risks to the programme, 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: • Do Minimum • Managed Deterioration • Lowest Initial Cost • Lowest Whole Life Cost • Enhancement • Heritage Structures 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 baseline 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: a) Adopting a GIS based asset information system in the future to facilitate map based access to asset data; b) Including a facility for incorporating data from imaging and remote sensing techniques to provide improved qualitative and quantitative techniques; c) Including a facility for incorporating instrumentation / monitoring data; and 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	