

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

## ***Programme Recommendation Tracker***

### **DRAFT**

Version 2.0 Baseline Document for Tracking

20/11/2011

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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	

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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	

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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	

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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	

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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	