

A Report for
Office of Rail Regulation
from
Asset Management Consulting
Limited (AMCL)

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HS1 Cost Review
Appendix to ARUP Report

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AMENDMENT HISTORY		
Version	Sections	Amendment Details
1.0	All	Initial release
1.1	All	Order change in sections 3 & 4. Other minor amendments to address comments.
1.2	All	Minor wording amendments based on ORR feedback
1.3	All	Incorporation of HS1 feedback

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Executive Summary

The ORR asked Arup for 'a short report which reviews High Speed 1 (HS1) costs, identifies any gaps and assesses whether the work done by HS1 is reasonable'. As a supplement to the Arup review, AMCL was asked to review the (draft) HS1 Asset Management Strategy and policies to provide an opinion on whether the strategy/policies are "not unreasonable" as a basis for establishing charges for the first control period. This report details the results of that review.

The scope of this report is therefore focused on a high-level policy, strategy and planning review of the HS1 Asset Management documents utilising the internationally established AMCL Asset Management Excellence Model™ (AMEM) methodology. Due to the timing and high-level nature of the review, it was not possible to include all relevant HS1 documentation and those documents that were reviewed were in draft format only. It is also acknowledged that certain procedures not reflected in the top level documentation reviewed may exist within other formal procedures or documentation.

In summary, the review has identified that the Asset Management Strategy documents do not yet cover the full range of Asset Management activities being undertaken on HS1, and the benefits that can be delivered through better integration of these Asset Management activities are not reflected.

There are also some specific omissions from the strategy that give cause for concern, including: no record of an evaluation of unit costs for maintenance; no defined strategy for managing critical contractors/suppliers; and no clear indication that competence and licensing (especially with respect to safety critical work) is being managed effectively.

It is recommended that a comprehensive review should be undertaken of the final HS1 Asset Management Systems and their application on CTRL prior to the charges being set for the next control period, to ensure that the infrastructure and assets are being managed effectively.

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1 Introduction

The Railways Infrastructure (Access and Management) Regulations 2005 were amended in May 2009 to give the Office of Rail Regulation (ORR) additional responsibilities concerning the economic regulation of High Speed 1, (the rail line and infrastructure between London St. Pancras and the Channel Tunnel), starting in October 2009.

In response to this, the ORR asked Arup for '*a short report which reviews High Speed 1 (HS1) costs, identifies any gaps and assesses whether the work done by HS1 is reasonable*'. As a supplement to the Arup review¹, AMCL was asked to undertake a high-level review of HS1's Asset Management Strategy² and NR (CTRL)'s associated Asset Maintenance Strategy³ and provide an opinion on whether the strategy/policies are "not unreasonable" as a basis for establishing charges for the first control period.

The scope of this report is therefore focused on a high-level policy, strategy and planning review of the HS1 Asset Management documents utilising the internationally established AMCL Asset Management Excellence Model™ (AMEM) methodology. Due to the timing and high-level nature of the review, it was not possible to include all relevant HS1 documentation and those documents that were reviewed were in draft format only. It is also acknowledged that certain procedures not reflected in the top level documentation reviewed may exist within other formal procedures or documentation.

This document is intended as a supplement to the Arup review report¹, and should therefore be read in conjunction with that report.

¹ Arup report, ORR HS1 Cost Review, Version: Draft August 2009.

² The High Speed 1 Asset Management Strategy, August 2009, v0.20.

³ The NR (CTRL) High Speed 1 Asset Management Strategy, September 2008. NOTE: We were briefed to consider this document as equivalent to an 'Asset Management Plan'.

2 Methodology

AMCL has undertaken a review of the HS1 Asset Management Strategy documents referenced in Section 1 (which contain Asset Management 'policy', 'strategy' and 'plan' elements). In support of this review, AMCL was also provided with a presentation overview of the HS1 Asset Management Annual Statement (AMAS) content.

The review of these documents does not constitute a review of HS1's full Asset Management System as this would require a more comprehensive and detailed analysis to be undertaken. However, it does provide a review of whether the content and scope of these documents incorporates all of the appropriate elements of international good practice.

In order to undertake this evaluation, the AMCL Asset Management Excellence Model™ (AMEM) assessment tool was utilised. The AMEM tool provides a framework to assess an organisation's capabilities against best practice Asset Management criteria, using a maturity assessment methodology developed in a cross section of industries over the last 12 years. The output of an AMEM assessment allows an organisation to compare themselves against peers within their own industry and against world best practice across all industries.

The AMEM review ensures a consistent and comprehensive structured review of the Asset Management Strategy, Policy and Plan against international best practice. AMEM also incorporates the elements of policy, strategy and planning requirements from the BSI standard PAS 55.

The findings of this high-level policy, strategy and planning best practice review are described in Section 3.

3 Findings

3.1 Introduction

The AMEM review of the Asset Management Strategy documents detailed in Section 1 covers the full range of criteria that would make up a best practice Asset Management System, including the requirements of PAS 55, with the review limited to those elements that would be expected to be documented in Asset Management policy, strategy and planning documents.

As a result, the following areas have been considered:

- **Asset Management Strategy and Planning.** This area contains Policy & Strategy, Demand Analysis, Strategic Planning, and Asset Management Plans.
- **Whole-Life Cost Justification.** This area contains OpEx Evaluation, CapEx Evaluation, and Asset Costing & Accounting.
- **Asset Lifecycle Management.** Asset Creation, Systems Engineering, Maintenance Delivery, Resource & Possession Management, Incident Response, Asset Rationalisation & Disposal.
- **Asset Knowledge Management.** Asset Knowledge Standards, Asset Information Systems, and Asset Data & Knowledge.
- **Asset Management Capability.** Contractor & Supplier Management, Organisational Structure & Culture, and Individual Competence & Behaviour.
- **Asset Management Review & Improvement.** Risk Assessment & Management, Sustainable Development, Weather & Climate Change, and Review & Audit.

It should be noted that this review has been limited to the documents outlined in Section 1, and as a result, some of the review comments may be as a result of elements of Asset Management policy, strategy and planning on HS1 being documented elsewhere and not made available for this review.

It should also be noted that any reference in this report to good practice within the strategy documents does not in any way indicate that AMCL has seen evidence that such good practice

is being applied on HS1, only that it detailed in the strategy documents. AMCL has not been remitted to undertake a full AMEM review of the entire HS1 Asset Management system, and such a review would include looking for evidence of the appropriate implementation, application and integration of the Asset Management strategy.

The following sections provide a summary of the results of the AMEM review for each of the AMEM criteria areas outlined above.

3.2 Asset Management Strategy and Planning

The HS1 Asset Management policy and strategy are under development, with the main documents presented for this review currently in draft status. Most of the elements of strategy and planning would seem to be being addressed; however, the HS1 strategy document should ideally refer to the skills of the management team to ensure their suitability in developing the policy and strategy.

Aspects of demand analysis are in development within the Asset Management Strategy (AMS) and document until the end of 2009. However, future demand analyses should be addressed within this document, including a traffic level user requirement specification, which can then be used as an input to gap analysis activities to establish the requirements for meeting future demand.

There is only limited evidence of strategic planning processes, and no reference is made to undertaking a criticality analysis. As a result, there appears to be no framework in place to provide guidance on determining work volumes based on criticality. Within this framework, failure modes could be identified and, despite the infancy of the infrastructure, used as drivers for change or used as the basis for future analysis and development.

The NR(CTRL) HS1 Asset Management Strategy is broadly aligned with the HS1 Asset Management Strategy, although there are evident opportunities to further enhance it. Links should be maintained with strategic planning processes in relation to operational capacity, performance and condition requirements, and the AMP should demonstrate that maintenance, renewal and enhancement activities are optimised and are capable of delivering future capacity requirements for service and performance. This also applies to resources such as people, access and plant.

3.3 Whole-Life Cost Justification

Elements of whole life cost justification within the AMS are present; however, no reference has been made to any determination of the risk associated with asset hazards (such as a loss and consequence analysis) for different systems and assets. Risk categories could also be employed to determine different requirements for similar assets used in different environments.

There appears to be no process in place to determine unit costs for maintenance, renewal or enhancement activities. As a result, it is difficult to know if standard unit costs are used in all Asset Management processes across the organisation. Without an assessment of unit costs, either in monetary or resource terms, it is unlikely that these will have been benchmarked in efficiency terms against comparable good practices.

3.4 Asset Lifecycle Management

There appear to be processes in place and in development to address the issues associated with asset creation. The strategy addresses project initiation through to planning and gaining CapEx approval and subsequent monitoring of expenditure with a commitment to continuous improvement processes.

HS1's strategy document addresses systems engineering robustly, incorporating the RAMS concept in all design. However there is no reference to system requirements specification documentation and how these are apportioned throughout the system to ensure optimum fulfilment of RAMS requirements.

Management of incidents is not well documented in the Asset Management Strategy. Further information is required in a number of areas including: preparedness and availability of response teams, efficient access to site, diagnosis of incidents, managing mitigation options appropriately, handing back the site to normal use, the capture of data to determine consequences (both safety and performance), etc. Reference should also be made to investigating the causes of incidents and undertaking post incident evaluation to identify improvement options and revise strategies and contingency plans.

3.5 Asset Knowledge Management

Standards appear to be addressed at a very high level but there are a number of areas where there are no references to standards, such as: defect definition, failure definition, performance management and asset utilisation. Standards are generally expected in these areas to address failure modes and root cause of failures and determine the consequences of those failures.

It appears that most of the systems associated with asset information have been developed successfully, however, there are a number of opportunities to improve; notably the omission of any reference to business continuity plans. In addition, areas such as demand forecasting, asset deterioration models and subsequent condition monitoring would be expected to be further developed.

HS1 would benefit from a clear and concise Asset Data Plan that specifies the level of availability and quality of plans, diagrams and population of asset information systems expected by the business. This should extend to other criteria such as operational work, geospatial data, spares and materials, asset utilisation, risk data and condition monitoring data, etc. This would ensure confidence in management information decisions and also allow information to be analysed effectively by key stakeholders.

3.6 Asset Management Capability

There appears to be no explicit policy and strategy regarding the management of contractors and suppliers to ensure that procurement requirements are prioritised and approved in a systematic way. Contracts should address the value, quality, volume and costs expected by the organisation and ensure those contracts are managed effectively and to the required standard. Given the bespoke nature of some of the critical systems (such as signalling) and the consequent reliance on key contractors, this would seem to be an extremely high-risk area.

The AMS would benefit from a section detailing the specific roles and responsibilities of the Asset Management teams with statements of objectives and standards of work expected.

The strategy document suggests that competence management is under development, with HS1 planning to develop a matrix of individual competence and skills utilising an annual appraisal process to determine gaps and monitor progress. Areas not currently addressed include risks associated with human factors, definition of activity competence requirements,

assessment processes, and availability of staff and licensing and certification arrangements. Given the status of HS1 and the number of staff engaged in safety-critical work, it would be expected that there would be significantly more information relating to how the competence, licensing and certification of staff is managed.

3.7 Asset Management Review & Improvement

The strategy document suggests that HS1 governs its risk management activities effectively, and strives to deliver a railway that is safer than the remainder of the national railway network.

Apart from the HS1 policy statement, there is no mention of how sustainable development will be achieved in the plan or strategy documentation. Some environment management processes are identified but no direction is provided to encourage the business and its suppliers on incentives to adopt a sustainable approach in areas of waste management, staff well being, and social responsibilities. There are also no elements of Weather and Climate Change addressed within the HS1 AMS.

The strategy suggests that HS1 seeks to benchmark itself against other train operators, and there is an opportunity for HS1 to seek to benchmark more comprehensively against other rail administrations and asset intensive industries across all areas of Asset Management.

4 Conclusions

At the highest level, some of the omissions in the strategy documents would appear to be due to a scope for the NR(CTRL) Asset Management Strategy being limited to an 'Asset Maintenance Plan' rather than the 'Asset Management Plan' that would align more clearly with the HS1 Asset Management Strategy. The review has identified that the Asset Management Strategy documents do not yet cover the full range of Asset Management activities being undertaken on HS1, and the benefits that can be delivered through better integration of these Asset Management activities are not reflected.

There is no indication that unit costs, either in monetary or resource terms, have been assessed, and no process for this has been defined or referenced within the documents. This makes it unlikely that these will have been benchmarked in efficiency terms against comparable good practices.

There are only high-level references to a limited number of standards, and there are some important areas such as defect and incident management that do not appear to be covered in the documents. However, this may just be as a result of the scope of the documents being 'Asset Maintenance' rather than 'Asset Management', and these areas may be addressed in other documents we have not seen.

Given the bespoke nature of some of the critical systems (such as signalling) and the consequent reliance on key contractors, the documents make no reference to an explicit policy and strategy regarding the systematic management of these resources. This would seem to be an extremely high-risk area.

There was no clear indication in the documents as to how the competence, licensing and certification of staff is managed, particularly with respect to those undertaking safety-critical work. This does not necessarily mean that these activities are not currently being undertaken correctly, but if they are, they would be expected to be referenced in these documents.

5 Recommendations

It is recommended that the following additional activities are undertaken prior to charges being set for the next control period.

A comprehensive review should be undertaken of the final HS1 Asset Management systems and their application on CTRL, to ensure that the infrastructure and assets are being managed effectively. This review should focus in particular on the areas of concern identified in this report and as concluded in Section 4.