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North West Electrification – Programme Management Review

Independent Reporter (Part C) Mandate CN018 Part 1
Office of Rail Regulation

Report Summary
13 July 2012

Report Summary

Introduction

In July 2009, Network Rail was requested by the Department for Transport (DfT) to undertake a desktop study of Liverpool to Manchester overhead line electrification, as part of the development of the Network Route Utilisation Strategy (RUS): Electrification Strategy. In July 2009, the DfT published 'Britain's Transport Infrastructure: Rail Electrification', confirming government support for a programme of electrification incorporating Great Western Main Line and Liverpool to Manchester. The target date set by the DfT for implementation of Liverpool to Manchester electrification is 2013.

In October 2009, the DfT requested a further desktop study, of the 'Lancashire Triangle', Deal Street to Euxton Junctions (Manchester to Preston) Huyton to Wigan and Preston to Blackpool. This led to an announcement by the DfT in December 2009 of support for electrification of the Lancashire Triangle. Network Rail then developed a North West Electrification (NWE) programme split into a number of phases to deliver these works, as illustrated in Figure 1.
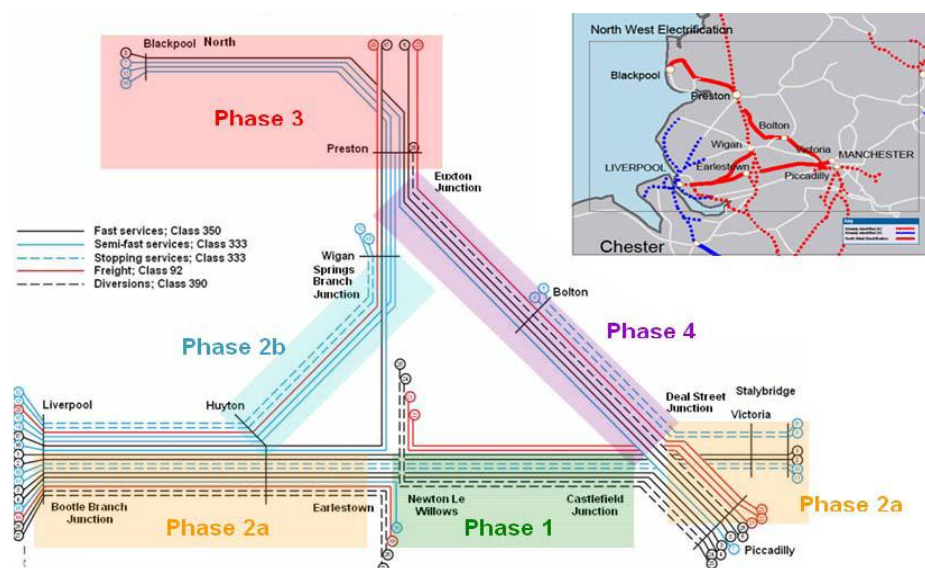

Figure 1 – North West Electrification (NWE) Programme Phases

The NWE Programme outputs are to enable electric train services for both of the December 2013 and December 2016 timetables. To enable this, the scope of the NWE Programme is being expanded to include gauge clearance, stabling and depot works.

Context for this review

The projects to deliver the timetable improvements between 2013 and 2016 are not funded through the Periodic Review (PR08) and therefore the eligibility to add the costs to the Regulatory Asset Base (RAB) must be assessed in accordance with the Office of Rail Regulation's (ORR's) Investment Framework.

Following previous Independent Reporter reviews CN/012 and CN/016, the ORR has incrementally approved additions to the RAB for delivery of Phase 1 works, development of Phases 2 to 4 and for delivery of Advance Works for Phases 1 to 3. Figure 1 illustrates the scope of the different Phases.

The ORR is now seeking to give RAB approval in principle for the remaining works (projects) required to enable the 2016 timetable improvement and therefore requires assurance that the required projects are being managed effectively as a 'portfolio of projects', including:

- NWE programme phases 2, 3 and 4

- systems integration activity

- rolling stock clearance works and ancillary works (e.g. stabling, depots, platform lengthening)

- Trans Pennine West electrification.

The purpose of this mandate, reference CN/018 Part 1, is to provide high level assurance that Network Rail are developing the 'portfolio of projects' into an integrated programme with effective programme management arrangements, by assessing the following aspects:

- programme management approach

- programme delivery

- programme governance

- programme controls.

Our approach

Our review methodology was evidence based i.e. Network Rail were requested to provide documentation as evidence of their programme management arrangements. Interviews were held by our team with key personnel from Network Rail to understand the programme context, to clarify documentation received and to allow other relevant evidence or information to be provided.

Following the interviews and after reviewing the documentation provided, the review team presented initial findings and recommendations to ORR and Network Rail. A draft report was then produced for review and comment by Network Rail, ORR and DfT. A final version of the report was issued on 3 July and this Report Summary is a stand-alone precise of that final report.

We would like to thank the Network Rail team for their full co-operation during this review; for providing documentation in a timely manner and for their openness during interviews and the reporting process.

Programme management context

Before presenting the findings and recommendations of the review, it is worthwhile to reflect on the context and need for a programme management approach for the 'portfolio of projects'. Generically, programme management is a value-added activity that provides a structured framework around individual delivery projects to:

- help manage ambiguity and uncertainty inherent in the external environment

- co-ordinate common project activities and resources more efficiently at the programme-level

- integrate and manage dependencies across inter-related projects.
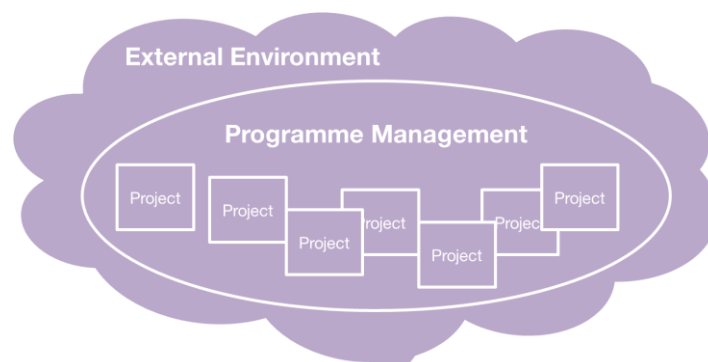
This concept is illustrated in Figure 2 below.

Figure 2 – Programme management concept

In the context of the NWE 'portfolio of projects', there are a number of uncertainties in the external environment, including:

- what rolling stock will be cascaded to the region and when

- what are the final and intermediate service patterns to be run; what mix of diesel and electric trains

- what configurations of rolling stock will be used e.g. two, three, or four cars

These lead to uncertainties in defining the scope of works for various projects, for example in the:

- overhead power system requirements

- requirements to extend platform

- requirements for rolling stock depots and stabling

We also recognised that programme management of the 'portfolio of projects' needed to operate at several levels, as illustrated in Figure 3 below. The main purpose of Level 0 programme management is to manage the uncertainty in the external environment and to provide a clear interface to project delivery. Whereas, the main purpose of Level 1 programme management is to manage project delivery in a way that is efficient and effective. Network Rail found the distinction helpful because it reflected the difference between their Programme Sponsorship and Delivery functions.

Level 0 – rail service improvements
e.g. Manchester Airport to Scotland
Desired Benefits, Service Operations, Infrastructure Configuration

Level 1 - programme delivery portfolios
e.g. NWE, Northern Hub, TPE
Economies of Scale and Scope, Synergy, Efficient Delivery, Learning

Level 2 - project delivery
e.g. Phase 1, Phase 2a, etc.
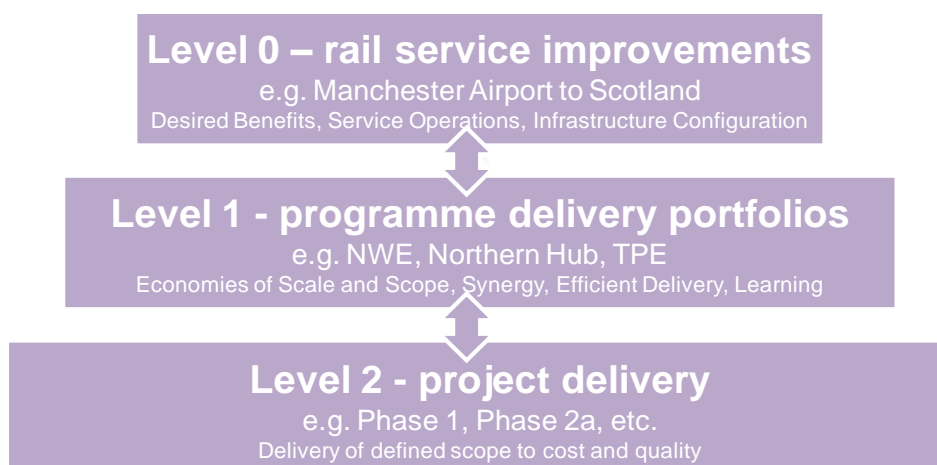Delivery of defined scope to cost and quality

Figure 3 – Three level programme management structure

The review findings and recommendations refer to the three levels (0 to 2) to aid clarity.

So the programme management of this 'portfolio of projects' has the following attributes:

- there are major uncertainties and unknown external factors to manage

- there is a need for programme management at several levels (0 and 1), each with different objectives

Findings

The findings of the review are summarised in Tables 1 to 4 below for each of the four aspects contained in the CN/018 mandate. The following is the key to the Tables:

- Column 1, the criteria being considered; each aspect is further broken down into a number of separate criteria

- Column 2, indicates whether the Reporter found <u>some</u> evidence for this criteria or acknowledged Network Rail work in progress ('Tick' = evidence found and 'X' = no evidence found)

- Column 3, qualifies column 2; it contains specific examples of missing evidence or an observation on the evidence ('blank' = no qualification on evidence found)

Programme Management Approach Criteria	Evidence Found	Qualification
Clarity of context and objectives	X	• Level 0 objectives not articulated • Programme Management plan does not exist
Infrastructure requirements development	✓	• formal management of uncertainty using strategic risk register not in place • Higher level scenario analysis required by DFT
Systems integration team	✓	• Level 0 programme management processes do not exist • current team mainly systems engineers; does team have right competence for Level 0 programme management
Systems integration processes/techniques	✓	• Systems Integration work scope and priorities are not determined by the programme schedule needs
Interface management	✓	• None
Project development	✓	• Phase 3 to 5, journey time improvements, depots, sidings, platforms are still to be developed
Whole life cost	✓	• further consideration needed of electrification on wider maintenance approach e.g. bridges
High level Programme	X	• Level 0 programme schedule identifying decision points, funding timescales does not exist
Programme organisation	✓	• None
Stakeholder management	✓	• None

Table 1: Assessment of programme management approach

Programme Delivery Criteria	Evidence Found	Qualification
Commercial & procurement strategy	✓	• approach to NEW phases 3 to 5 is not yet defined
Managing scarce resources	✓	• planning is undertaken at Level 1 but not Level 0
Learning & Innovation	✓	• assessment of high output works train for NWE has not been completed
Testing/commissioning and handover	X	• there is no programme level strategy • the ORR Safety Inspectorate concerns have not been fully addressed

Table 2: Assessment of programme delivery

Programme Governance Criteria	Evidence Found	Qualification
Governance forums	✓	• Network Rail proposal for revised governance has not yet implemented
Funding	✓	• there is no overall funding plan • there is no approved funding for Level 0 programme and SI management, proposal being prepared
Business case & benefits realisation	✓	• assumptions are not formally documented when funding is approved
Project governance & delegation of authority	✓	• there is no Network Rail corporate procedure for programme level governance e.g. GRIP is project level
Other Network Rail central governance	✓	• None

Table 3: Assessment of programme governance

Programme Controls Criteria	Evidence Found	Gaps
Project Level controls	✓	• Fixed price controls in place from Phase 1. Phase 2 is a target price contract and target price controls are not in place
Schedules	✓	• Schedules are not cost loaded and therefore would not support Earned Value progress analysis
Risk management	✓	• there is no programme Level 0 and 1 risk management
Cost management	✓	• the published Anticipated Final Cost (AFC) does not cover all the scope; it only includes scope that has been developed
HSQE	✓	• None
Change Control	✓	• Phase 1 is fixed price and change control is in place. Phase 2 is a target price contract and change control administration for this is not in place.
Reporting	✓	• there is no programme Level 0 and 1 reporting evidence

Table 4: Assessment of programme controls

Conclusions

The 'portfolio of projects' has grown over the last 12 months and now constitutes a programme of significant size and complexity. Our main conclusion from this review is that the Network Rail programme level arrangements are not yet sufficient to provide effective programme management and governance for a programme of this scale and complexity.

We acknowledge that Network Rail has recognised the significant inter-relationships between NWE Programme and the Northern Hub and has taken steps to manage them as a larger more complex programme; establishing a systems integration team and unified formal governance structure. However, these measures are not yet complete or fully operating and a detailed road map with timescales that identifies all the required improvements to the programme level arrangements does not exist.

Recommendations

We have made 16 recommendations to Network Rail / ORR for further development of the programme management arrangements for the North West Electrification 'portfolio of projects'.

Programme management approach

1. Network Rail should develop a Programme Management Plan (PMP) which sets out the scope, context, objectives and structure for the 'portfolio of projects'.

2. Network Rail, at a corporate level, should consider developing generic 'programme-level guidance' for managing emerging, complex programmes like the North of England projects.

3. Network Rail should expand the current NWE programme schedule to include all future funding approvals required from the DfT to ensure packages of work can commence at the right time to allow for efficient delivery. This schedule should include funding for all North of England projects.

4. Network Rail should develop outline cost estimates (or ranges of cost) for elements of work that are not yet developed but are known to be required (rolling stock clearance, stabling, platform lengthening etc.), in order to provide awareness and visibility of an overall programme AFC.

5. Network Rail should build on the existing System Integration team remit and review the team resourcing in order to form a (Level 0) programme integration team for the North of England projects. This team should be capable of performing analysis/ decision support and managing programme Level 0 scope, cost, schedule and risk.

6. Network Rail should develop an integrated programme schedule for Level 0, including all activities (governance, funding plan, system integration, procurement) required and in order to highlight the various interdependencies including:

   – all activities required to run a coherent electrified service; by allocating notional time periods to deliver projects where elements of scope to yet to be determined (rolling stock clearance, stabling, platform lengthening etc)

   – key decision points where confirmation of requirements and scope can be made and hence scope can be released / de-risked

   – key milestones for the delivery of new organisational capabilities at each of the three programme management levels.

Programme delivery

7. Network Rail should consider the benefits of the High-Output Train for OLE activities to determine whether significant efficiency improvements are feasible. We understand that Network Rail has been working on this assessment but it is not yet complete and no evidence was presented as part of the review.

8. Network Rail should plan, prioritise and proceed to undertake system integration activities for the entire Northern of England projects to gain assurance that Phases 3 /4 and Trans Pennine West will support the different train service scenarios and that all required packages of work are defined in a timely manner to enable them to be delivered efficiently.

9. Network Rail should review the timing of and approach to procurement activities to maximise the procurement leverage in delivering the remaining phases of the programme.

10. Network Rail should work closely with the ORR Safety Directorate to review and resolve any residual concerns regarding commissioning, bringing into use and maintenance of the Series 2 OLE. Network Rail need to demonstrate to the ORR that they have provided the designers with the appropriate level of detail about the future maintenance requirements, including information about how much time is available to maintain the asset / route / entire structure. Network Rail further need to confirm that they have procured a safe design that does not require work to be done on or near live conductors in order to maintain the asset as a whole in a safe condition.

11. Network Rail should develop and implement a detailed road map with timescales identifying the improvements required to its programme level management arrangements.

Programme governance

12. Network Rail's Lead Development Manager has proposed and agreed new unified governance arrangements. These should be implemented as soon as possible, in order to provide clear and common oversight and decision making for the North of England projects.

13. Network Rail should formally baseline and change control the suites of system integration documents associated with each train service scenario (see Figure 4) and to gain formal endorsement from the DfT for the assumptions underlying these scenarios.
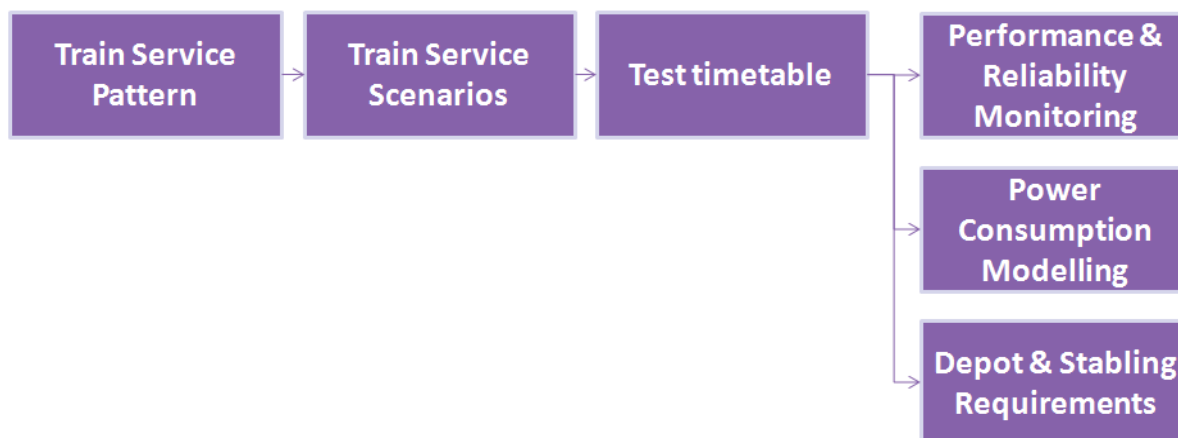
Figure 4 – Suite of system integration documents to baseline for a scenario

14. We recommend that assumptions and agreements between the DfT and Network Rail are formally recorded at the point at which funding for specific projects are approved, in order to manage expectations over potential future cost variations.

15. Network Rail should conduct an exercise to retrospectively review Phase 1 and Phase 2(a and b) to ensure the planned scope is consistent with all the different train service scenarios. Any inconsistencies should be highlighted to the DfT and resolutions agreed i.e. either change the scope or accept the risk.

Programme controls

16. As funding is approved for further phases of the NWE programme, Network Rail should progressively develop and implement programme controls commensurate with £500m target cost programme. This includes enhancing the current Level 2 project controls and developing controls for both programme Levels 1 and 0, including a strategic risk register.