



Office of Rail Regulation

Independent Reporter (Part C)

Part C Reporter Mandate CN011

Delivery plan power supply assessment: review of
Thameslink work scope and allocation

Executive Summary



Executive summary

Introduction

In October 2010, the Independent Reporter (Part C) (Nichols) (the Reporter) carried out a review to establish whether the power supply works proposed by Network Rail for the Thameslink Programme (TLP) Key Output 2 (KO2) are justified and are appropriately allocated to the project.

KO2 is to provide an improved train service of up to 24 train paths per hour between St Pancras International and Blackfriars Stations. Part of the scope of works of KO2 entails electrification and plant provision to the AC and DC traction power supplies, North and South of Farringdon Station respectively.

Background

The scope of works associated with the KO2 power upgrade was initially determined and baselined at the time of the original Thameslink 2000 proposals. The scope of works identified at that time provided the basis of the traction power requirements identified in Functional Specification 6.0 and the Programme Cost Plan C. Between 2000 and 2007, the TLP KO2 scope was placed on hold until it was given the go-ahead by Government in July 2007. In 2007, the TLP scope and cost estimate were baselined and became the supporting documents to the protocol between Network Rail and the DfT for the delivery of TLP. The output of the baseline exercise was contained within the Programme Cost Plan C, and Functional Specification 6.0. However, the traction power work scope was not updated at Final Determination 2008 (FD08) for CP4¹, hence the budgets for traction power have potentially been understated.

The traction power scope of works comprises proposals to upgrade the AC sections to the North between King's Cross and Peterborough and, in the South, the sections of Thameslink routes in Kent and Sussex, which are served by DC traction power.

Approach

In undertaking the review, we conducted interviews with the Network Rail staff responsible for delivery of the traction power upgrade required as part of TLP in KO2 and the associated interface programme teams. Interviews were undertaken with staff from the Department for Transport (DfT) in its role as client for TLP. In addition to the interviews, documents relating to the TLP traction power upgrade were made available by Network Rail for review.

¹ Determination of Network Rail's outputs and funding for 2009-14, October 2008, Office of Rail Regulation. Paragraph 9.60 – 'The HLOS states that "The Programme, which will be managed by the DfT is at an advanced stage of preparation and cost estimates have been subject to close scrutiny." DfT confirmed to us that it considers Network Rail's cost estimate of £2.70bn in CP4 to be efficient.'

Analysis

Due to the tight timescales for delivering the review, the scope of our analysis was limited to an assessment of the traction power requirements in the AC and DC sections by interviewing Network Rail's traction power engineers and a review of the available scope documents. Our assessment did not include a verification of proposed AC and DC technical solutions. Our review examined the interface projects with TLP, the technical scope proposed for the AC and DC sections, and the principles by which power supply scope and cost is allocated between projects.

AC in the North

In the North, the main interface with TLP is the proposal to upgrade the East Coast Main Line (ECML) AC traction power system between King's Cross and Doncaster/Leeds for the Intercity Express Programme (IEP). This project is currently progressing through GRIP Stage 3 and is scheduled for completion by January 2015. The ECML Upgrade Team will be responsible for delivering the TLP AC traction power requirements. The only viable technical solution to address the ECML and TLP KO2 power requirements is to convert the existing 25kV 'classic' electrification system to a 25kV 'autotransformer' solution. This solution provides an efficient high voltage electrification system and provides for future headroom capacity.

The costs for the TLP upgrade works associated with the AC section can be accommodated within the current budget provision for TLP AC upgrade works.

We found that the principles in the CP4 Delivery Plan² regarding sharing of scope and funding allocation between IEP/ECML and TLP have not been consistently applied and understood between the ECML and TLP Teams at different development stages. The TLP Team confirmed it will fund the element of the upgrade required to deliver KO2 (that is Coreys Mill to Welwyn Garden City). We understand that there is a potential under provision in funding on the IEP/ECML programme for AC upgrade works in CP4. At a meeting on 26 October 2010, DfT (as client for IEP and TLP) confirmed to us that it had clarified to Network Rail (at a meeting on 9 June 2010 responded to by Network Rail in a letter to DfT of 8 July 2010) that the DfT-funded TLP would only fund the cost of the AC traction power upgrade works associated with power upgrades required by Thameslink KO2. However, the current scope of AC works proposed by Network Rail for TLP (that is, Coreys Mill to Welwyn Garden City) may be reduced from that discussed in their letter of 8 July 2010, and Network Rail should clarify this.

² 'Network Rail CP4 Delivery Plan 2010 Enhancement programme: statement of scope, outputs and milestones' (the CP4 Delivery Plan) September 2010 update.

DC in the South

The DC network to the South of Farringdon Station through Kent and Sussex areas is constrained in terms of available traction power headroom. The significant DC electrification interface project with TLP is the Power Supply Enhancement (PSE) Project. The scope of the PSE Project is to deliver traction power upgrades on routes in the southern region to support the train lengthening programme to meet the HLOS capacity metrics. TLP assumes that 12-car capability and the 2013 timetable will be provided by the PSE Project on the South Croydon to East Grinstead route on the assumption that the new Thameslink trains are of similar characteristics to the 4kA, Class 377 12-car trains.

The TLP DC scope of works is based on a recent 'desk top' study that has assumed a 7% increase in traction load in the Thameslink KO2 timetable. The costs at October 2010 for the upgrade works associated with the DC section are currently estimated by Network Rail to be over the budget provision. However, there is an opportunity for the estimated costs to be reduced as the technical solution is better scoped and appropriately allocated to schemes on this part of the network, and the risk and contingency provisions are refined.

Findings

The key findings are that:

- the technical solutions for AC North and DC South appear appropriate given their development stages but may have been understated at FD08
- the technical solution for AC North appears to be within budget for the TLP work scope requirements (that is Coreys Mill to Welwyn Garden City)
- the principles regarding sharing of scope and funding allocation between IEP/ECML and TLP have not been consistently applied between ECML and TLP at different development stages
- the technical solution for DC South is currently over the budget allocation, however, it is possible there is scope to reduce costs as a technical solution and risk and contingency provision are refined
- there is the potential for an under provision in funding within the IEP/ECML budget for AC upgrade South of St Neots in CP4
- the potential under provision in funding in the IEP/ECML budget for the AC upgrade only became apparent when TLP confirmed that its budget provision was to cover only AC upgrade works directly in support of TLP on the section between St Neots and King's Cross (that is Coreys Mill to Welwyn Garden City)

- DfT (as client for TLP and IEP) confirmed it had clarified to Network Rail at a meeting on 9 June 2010, that TLP will fund only AC traction upgrade works directly related to the scope of TLP KO2
- the current scope of AC upgrade works to be funded by TLP may be a reduction in scope from that recorded by Network Rail in their letter to DfT of 8 July 2010, which followed the meeting on 9 June 2010, and Network Rail should clarify this
- the PSE Project will deliver the DC power upgrade in the section between East Grinstead and South Croydon to meet the December 2013 timetable.

Principal recommendations

We recommend that:

- Network Rail should as a matter of priority implement the recommendations of the two previous Nichols Reporter reviews (reports dated 5 August 2009 and 26 June 2010) on developing a national traction power strategy covering ownership and allocation of power capacity
- based on the current position, Network Rail should consider the following principles for the sharing of scope and allocation of funding for AC traction power interface projects:
 - Network Rail should deliver the optimum traction power solution that meets its longer term traction power objectives for the route for existing and future requirements
 - TLP's funding contribution should be based on the power requirements to deliver the Thameslink KO2 service
 - IEP/ECML and other interface projects should contribute the funding to deliver their traction power requirements over that funded by TLP to meet its power requirements
- the ECML/IEP programmes should verify that there is adequate scope and budget provision in CP4 for any traction power works South of St Neots not provided by TLP
- with respect to the DC South power upgrade, Network Rail should seek to minimise costs by challenging the traction power scope and its allocation to TLP; and, then, seek efficiencies by adopting a more integrated approach in project planning, delivery and procurement with all the schemes on this part of the network.



The Nichols Group 6

16 New Burlington Place 6

London W1S 2HX 6

Tel: 020 7292 7000 6

Fax: 020 7292 5200 6

e-mail: info@nichols.uk.com 6

www.nicholsgroup.co.uk 6

