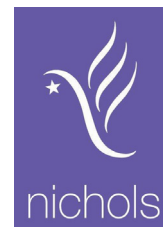


CP5 Enhancements
Independent Assurance of
Sir Peter Hendy Review

Final Report Summary
30 November 2015



Summary

Introduction

The Nichols Independent Assurance Report is for the Control Period 5 (CP5) Enhancement re-planning activity (the re-plan) being undertaken by Network Rail to meet the requirements for external assurance in the Secretary of State's Terms of Reference to Sir Peter Hendy, the Chair of Network Rail.

Network Rail's assurance strategy is to have 'three lines of defence'; the first line of assurance is the normal reporting lines of the project team, the 2nd line of assurance is peer review by experienced people within Network Rail but outside of the normal reporting lines and the 3rd line assurance is independent review by a third party, for example Nichols.

This is the Final Report for our 3rd line assurance activity covering inputs to the CP5 re-plan that were complete and made available by Network Rail to Nichols by the end of Wednesday 18 November 2015. Any information that was not completed by that date has not been subject to our assurance activity and we have stated where this is the case in this report.

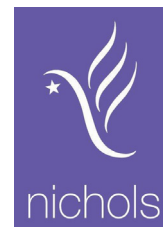
Work Phases

Our assurance activity has been undertaken progressively, or 'along the way', as the re-plan has been developed and our work was split into two Phases:

Phase 1 – (from end of July to start of September 2015) to assess the current status of deliverability of the CP5 enhancements projects, as published in the Network Rail June 2015 Enhancement Delivery Plan.

Phase 2 – (from end September to 18 November) to:

1. Undertake assessments of three major programmes; Great Western Electrification, Midland Main-line Electrification and Trans-Pennine Electrification.



2. Provide 'progressive assurance' of various inputs to the re-plan i.e. the revised Enhancement Delivery Plan. Our assurance activity covered the following inputs to the re-plan:
 - a. assessments of robustness of schedule information for a sample of projects
 - b. assessments of robustness of cost information for a sample of projects
 - c. assessment of the robustness of adjustments made to the CP5 portfolio cost plan.

Acknowledgment

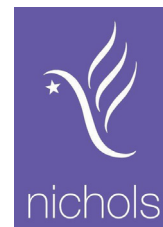
We would like to acknowledge the openness and support provided to our review from all the Network Rail project teams; we received helpful briefings, were provided access to project information and the teams were receptive to our feedback. Network Rail's internal assurance arrangements were seeking to understand a realistic view of the status of each project and were very open to our independent views and feedback.

Enhancement Improvement Programme

Network Rail has an extensive Enhancement Improvement Programme to implement covering activities and processes that are completely material to the planning of an enhancement projects portfolio. Our independent assurance therefore was often examining in detail activities and processes that are known to need improvements which Network Rail are planning through their Enhancement Improvement Programme. We have tried to strike a balance in this report between assessing the re-plan against industry 'best practice' whilst taking into account the progressive implementation of Enhancement Improvement Programme.

Robustness of project forecast dates and costs

The Terms of Reference for the re-plan requires Network Rail to input robust project data on forecast costs and schedule dates. The recognised method of measuring robustness is to forecast the likely probability for a project milestone date being achieved or project cost being exceeded. For example, an 80% probability that a cost will not be exceeded or that a milestone date will be achieved is referred to as 'P80' and is the level that Network Rail has assumed is the benchmark for the re-plan. A P80 value for a project cost comes from an experienced application of a P80 development process using high quality and stable inputs from a robust plan. Throughout our report we refer to P80 as a reference benchmark for robustness.



What is a robust plan?

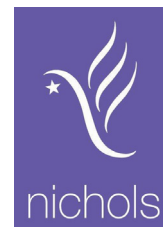
Robust forecasts of project milestone dates and costs are underpinned by comprehensive plans that take account of risks and uncertainties. During Phase 1 of assurance we reviewed a sample of projects in the CP5 enhancement portfolio to consider whether they were deliverable by assessing the scale of risk and uncertainty impacting on them. We checked whether the projects costs and schedules took account of these uncertainties. The uncertainties we assessed included whether:

1. The customer requirements and project outputs were defined and stable
2. The project had a good definition of what it had to deliver i.e. its scope
3. The project included novel elements, including new systems
4. The project had any major challenges with obtaining consents
5. The project had any risks with its suppliers who would deliver the project
6. The project could be affected by a shortage of key skilled resources
7. The project had well defined and stable plans for undertaking the work on the operational railway through having agreed access plans
8. The project was dependent on other projects
9. The project could be affected by approvals necessary to bring into operation

We assessed Network Rail's approach to managing all the projects as an overall portfolio, for example, to enable conflict in critical key resources to be identified and managed. We used the Office of Government and Commerce (OGC) RAG assessment criteria to provide a summary of our assessment of the current status.

Our conclusions from Phase 1 of our assurance

The purpose of Phase 1 of assurance was to assess the current status of deliverability of the CP5 enhancements projects, as published in the Network Rail June 2015 Enhancement Delivery Plan and to identify improvements that could be made in the revised CP5 Enhancement Delivery Plan (the re-plan). Our conclusion from our Phase 1 assessment of the existing plans was:



“We have undertaken independent 3rd line assurance of over 30 projects and the CP5 portfolio level plan and our summary conclusion is that the Deliverability Reviews undertaken by Network Rail’s Infrastructure Projects as 2nd line assurance provide a good start point for the CP5 re-plan; the risks/uncertainties are understood, however more work is needed to improve the robustness of project schedule and cost data, identify consistent uncertainty ranges along with addressing gaps in the portfolio plan in the areas of QSRA/QCRA and cost profiling.”

Milestone dates in the revised CP5 Enhancement Delivery Plan

Moving forward to Phase 2 of our assurance work we reviewed a sample of 29 projects that are still scheduled to complete in CP5 in the revised Enhancement Delivery Plan. Only four of the 29 projects had sufficient evidence to underpin a P80 level of confidence in their milestone dates.

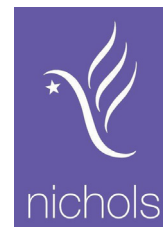
This re-planning exercise has taken place at a point in time where many of the projects require more work to achieve the required level of stability and quality of inputs. In addition the Network Rail Enhancement Improvement Programme includes elements that will improve quality of inputs over time, which in turn, will impact the understanding of P80 schedule development. As a consequence, the project milestone dates in the revised Enhancement Delivery Plan should not be regarded as being at a P80 level of confidence.

Network Rail has approached this uncertainty by stating a series of assumptions in the Enhancement Delivery Plan, which means that the proposed dates are conditional on those assumptions being met and will need to be revised if they are not.

Project costs in the revised CP5 Enhancement Delivery Plan

We reviewed a sample of 14 projects that are scheduled to complete in CP5 with milestones that are unchanged in the revised Enhancement Delivery Plan. Only five of those projects had sufficient evidence to underpin a P80 level of confidence in their Anticipated Final Cost (AFC). The sample of projects had an overall total AFC of approximately £7.3bn and the five projects comprised a total AFC of approximately £1.4bn.

This re-planning exercise has taken place at a point in time where many of the projects require more work to achieve the required level of stability and quality of inputs. In addition the Network Rail Enhancement Improvement Programme includes elements that will improve quality of inputs over time, which in turn, will impact the understanding of P80 cost development. As a consequence, the project cost information feeding into the re-planning should not be regarded as being true P80 values but is the best approximation



available at this time. The steps in the process used to generate a P80 level of contingency from project inputs is sound and in line with what we would expect.

The project P80 cost information feeding into the CP5 enhancement cost plan is therefore likely to be understated and we recommend that is taken into account in the contingencies arising from the CP5 Portfolio Cost Adjustments.

For projects where there is both renewal and enhancement funding, we were not able to validate the split between the two sources of funding. However, we understand that any shortfall in a project's overall cost has been included in the enhancement funding requirement.

CP5 Portfolio Cost Plan

The project cost information is collected and aggregated together into a CP5 Portfolio Cost Plan. A number of adjustments have then been applied to the Portfolio Cost Plan yielding a net overall effect. The quality of the evidence underpinning these adjustments is variable and specifying one figure for the net effect is not consistent with the level of accuracy associated with the methods used to estimate the adjustments.

Several of the reductions assumed in the portfolio cost adjustments are over stated and that P80 costs across the portfolio are generally under stated. We recommend that a range is used to express the uncertainty associated with estimating the overall net effect.

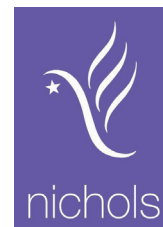
CP5 portfolio cost expenditure profile

The finalised cost expenditure profile was not available by 18 November and so we did not assure it.

Major Programmes

As part of our Phase 2 assurance we reviewed three major programmes to assess their current status with regards to their impact on the CP5 re-planning.

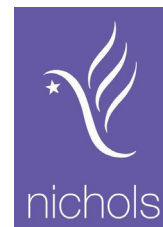
We undertook a two-day assessment of the Great Western Electrification programme towards the end of October. The project team have re-planned the programme with revised completion dates for the electrification of each section of the route. The project team acknowledged that planning is still work in progress and as such the project schedule and cost forecasts are not at P80. The programme is 'complex' and includes 'novelty' in the system being designed and implemented and the original plan was to use a



novel 'high output' construction method. The term 'complex' is as used in the HM Treasury "Improving Infrastructure Delivery: Project Initiation Routemap (handbook), which provides a method to assess programme complexity and sets out the capabilities required to manage complex programmes. Successful projects are typically delivered by project teams and suppliers doing what they have done before, using proven standards and technology. Network Rail has strengthened their project team with some of its most experienced and competent delivery personnel and it is our view that they understand the issues that need to be addressed. Our current state assessment was 'Amber / Red' for this programme due to the scale of known issues to address and the residual uncertainty associated with implementing a new standard of electrification system. We expect that after the first route section is electrified and put into service, a stable and robust plan for the remainder can be confirmed.

The Midland Mainline Electrification programme was re-started at the end of September and we undertook an assessment of the current status towards the end of October. The project team are re-planning the programme against the revised completion dates for London to Corby and Kettering to Sheffield and will need to complete their re-mobilisation plan before a P80 quality schedule and cost is available. As a consequence, our current state assessment was 'Amber' for the sections from Bedford to Corby and Kettering to Sheffield. The project team highlighted that there are 7 complex areas in the section between Kettering and Sheffield that will need a specific focus during their planning, however this programme has much less novelty than Great Western Electrification Programme. The most notable uncertainty on the scope of work and plan was for the upgrade of the existing electrification from London to Bedford, which our current state assessment was 'Red'.

The Trans-Pennine Electrification programme was re-started at the end of September and we undertook a one-day assessment of the current status at the end of September. The project team have started re-planning the programme against the revised completion dates for Stalybridge to Leeds and Leeds to York, however this is still at an early stage. Our current state assessment was 'Amber / Red' for this programme against a forecast date of March 2020 due to the scale of uncertainty associated with not having yet defined what infrastructure projects are required to achieve the required improvements in journey time and capacity.



Conclusions from Phase 2 of our assurance

Many of the findings from our Deliverability Reviews have been factored into the CP5 re-plan, which should lead to an improved level of certainty of delivery of projects in the revised CP5 Enhancements Plan. For example, a number of the Regulated Milestones have been re-scheduled to more achievable dates.

We highlighted in our Phase 1 Interim Report that more work was required on QSRA/QCRA to provide evidence of robustness and confidence in the project schedules and costs. Adjustments to project costs have been made to align project contingencies to the outputs of QCRA activity, so project costs in the CP5 re-plan are now more robust. However they still should not generally be regarded as being at P80 level of confidence or robustness, as this will take time to achieve as part of Network Rail's Enhancements Improvement Programme. As a consequence it is probable that some project schedules and costs will still be exceeded.

The project costs have been aggregated into an overall portfolio cost plan for CP5. Network Rail has made a number of adjustments (additions and reductions) to the overall CP5 portfolio cost plan, including a contingency allowance to allow for project costs not being at a P80 level of robustness. Not all of the adjustments have a sound evidence basis and therefore our view is that the net effect of these adjustments has a range of uncertainty of several hundred million pounds. Network Rail will need to monitor and actively manage the CP5 cost expenditure profile to deal with this uncertainty by accelerating or slowing down projects or programmes.

Several major programmes will require more detailed planning before their schedules and costs are robust; this includes Midland Main-line and Trans-Pennine Electrification programmes which were recently un-paused and their timings adjusted. It will take time to fully assess the impact of these programmes on other projects in the CP5 portfolio and the overall portfolio cost plan for CP5. For example, developing joint delivery plans to make efficient use of disruptive access to the operating railway.

