

Assurance related to Network Rail's
enhancement improvement plan
(December 2016 to May 2017)



Final Report
30 June 2017



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Summary

Introduction

In 2015 the Office of Rail and Road (ORR)'s identified systemic weaknesses in Network Rail's handling of its enhancement programme. ORR notified Network Rail on 16 October 2015 that it had determined Network Rail was in breach of licence condition 1. In response to this notification, Network Rail committed to an Enhancements Improvement Plan (EIP)¹ that focused on company-wide actions to improve its processes, systems culture and capability.

The Independent Reporter (the Reporter) is appointed by the ORR to undertake independent reviews. This is a report from a review undertaken by the Reporter of Network Rail's progress, between December 2016 to end of April 2017, on parts of Network Rail's EIP.

ORR requires assurance that the EIP is being progressed, and is seeking evidence of improvements in Network Rail's business as usual activities to confirm that the new processes and capabilities have addressed the systemic weaknesses.

Acknowledgment

We would like to acknowledge the support and cooperation from Network Rail and ORR whilst undertaking this review.

Measuring progress

A key principle behind ORR monitoring of EIP improvements is that Network Rail would transition to become 'self-assuring', requiring less independent assurance by ORR and its Reporters. In this report we have used a 'Four Steps' progress measure to indicate how far Network Rail has progressed towards self-assurance of its various EIP improvements:

¹ Rail Industry Enhancement Improvement Programme – Summary, Version 9, October 2015; Network Rail.



1. Network Rail reports that the improved processes described in the EIP plan (i.e. the outputs of EIP work streams) have been completed and implemented across Network Rail.
2. Network Rail reports that its own independent assurance arrangements (independent of operational management) for EIP processes have been embedded in 'business as usual'. This internal assurance is referred to as second line assurance.
3. The Reporter reviews the outputs of Steps 1 and 2 for suitability and effectiveness and makes recommendations to address any shortcomings.
4. The Reporter confirms that recommendations made have been completed by Network Rail and identifies any on-going independent assurance requirements. In this report we refer to independent assurance by ORR or the Reporter as third line assurance.

Monitoring objectives

In the EIP submitted by Network Rail to ORR in October 2015 there were seven work streams. The Reporter's objectives for this review were to consider Network Rail's progress against a sub-set of specific improvements within four EIP work streams:

- Work stream 1 (WS1) – Clienting and governing the enhancement portfolio
- Work stream 3 (WS3) – Enterprise Risk and Value Management (ER&VM) Framework
- Work stream 4 (WS4) – Project governance and stage gate assurance
- Work stream 5 (WS5) – Project and portfolio monitoring

We have used the Four Steps progress measure to report on the status of each work stream. Our review activities have varied according to the current status of the work stream; we either undertook Step 3 if Network Rail had notified completion of Steps 1 and 2 or we undertook Step 4 to check whether recommendations raised by the Reporter previously had been completed.



Summary of Network Rail's progress

Table 1 below contains a summary progress status as at the end of April 2017 for the areas within the Reporter's remit. Progress is shown by reference to the Four Steps progress measure described previously, whereby green signifies a step has been completed and amber requires actions to be completed to agreed timescales.

EIP Work stream	Step 1 – has NR implemented EIP processes?	Step 2 – has NR embedded second-line assurance?	Step 3 – has the Reporter reviewed Steps 1 and 2?	Step 4 – has NR addressed Recommendations from Step 3?
1. Clienting and governing ²				
– Governance and Terms of Reference (TORs)	Yes	No	Yes, in this monitoring period	No, in a future monitoring period
– Enhancement portfolio management & reporting	Yes			
– Change control	Yes			
– Lifecycle and process	In progress	No	No	No, dependent on previous steps being completed
3. Enterprise Risk and Value Management (ER&VM), Project Risk and Value Management (R&V)	Yes	Yes, apart from full Risk and Value assurance framework	Yes, in this monitoring period	No, in a future monitoring period
4. Project governance and stage gate assurance – peer review process	Yes	Yes	Yes	Yes, in this monitoring period
5. Network Rail Infrastructure Projects (IP) delivery portfolio and project monitoring				
– IP standard reporting suite	In progress	No	No	No, dependent on previous steps being completed

Table 1: Summary of progress status at end of April 2017

² Source is Network Rail's, Clienting & Governing the Enhancements Portfolio The implementation plan - April 2016 version 2



Recommendations

Table 3 lists our 16 recommendations, across the four work streams. The first number in the recommendation reference indicates the work stream. To assist Network Rail in prioritising their actions against recommendations, we have allocated a priority rating to our recommendations as defined in Table 2 below. There are eight critical, five secondary and three advisory recommendations.

More detail on the findings of our review and the basis of the recommendations is contained in the main body of this report.

Priority	Description
Critical	Recommendations that require immediate action to resolve as there is potential for high impact on the successful achievement of improvement outcomes.
Secondary	Recommendations that are less urgent than critical as their potential impact is less, but require action in an agreed timescale as the issue could still impact the successful achievement of improvement outcomes.
Advisory	Recommendations that are desirable changes to make, which should be undertaken when making other changes to the same deliverable(s).

Table 2: Recommendations prioritisation categories

No.	Recommendation	Priority
1.1	Enhancement portfolio management and reporting: Successful management of the portfolio funding forecast depends on having realistic and current estimates of the three portfolio adjustment factors: (i) undervalued P80 risk (ii) value engineering savings (iii) over-programming adjustments. Network Rail does not have second line assurance in place for work stream 1. We recommend that Network Rail implement an internal independent checking process for the portfolio adjustment factors.	Critical
1.2	Lifecycle and process: Network Rail should agree a current plan with ORR to complete development and implementation of changes to internal processes. This plan should be based on current knowledge of the scope of changes required and envisaged complexity of internal implementation e.g. updating clienting guidelines; sponsor handbooks; 'GRIP for Programmes'; and other procedural documents to reflect the new arrangements.	Critical



No.	Recommendation	Priority
1.3	Second line assurance: Undertake an internal independent check of the operation and compliance of the change control process and joint governance framework. More details of this recommendation are included later in this report.	Secondary
1.4	CN031 recommendations follow-up: Undertake a further assessment of a sample of major programmes to determine whether improvements have been effectively embedded.	Critical
3.1	QSRA and QCRA guidance: Provide clear guidance on how models need to be set up and guidance on interpreting Quantitative Schedule Risk Assessment (QSRA) and Quantitative Cost Risk Assessment (QCRA) outputs to indicate confidence and robustness.	Critical
3.2	Modelling for non-standard projects: Outline the approach to determining the level of uncertainty for non-standard or novel CP6 projects, notably in early GRIP stages, and when quantitative schedule and cost risk analysis is undertaken for such projects. This could consider the approach used on comparator programmes.	Critical
3.3	GRIP3 requirement: Revise ER&VM Framework documents to mandate QSRA and QCRA analysis at GRIP 3, unless otherwise agreed by funders, and update the Cost Risk Management Work Instruction accordingly.	Critical
3.4	Deliverability assessment: Include guidance in the ER&VM Framework on action required at the end of each Deliverability Assessment cycle (for example, QSRA/QCRA updates) as a standard business-planning requirement.	Critical
3.5	Deliverability assessment of options: Update the ER&VM Framework to confirm that deliverability analysis is included in option comparison ahead of single option selection, including in appropriate circumstances, QSRA modelling of options.	Secondary
3.6	Key assumptions: Update the Assumptions Management Work Instruction to require that all key assumptions are re-classified into scope, risks or verified assumptions before the end of GRIP 3 and associated cost estimate.	Secondary
3.7	Modelling capability: Given timescale for CP6 development and investment decision-making, assess and address gaps in capability to undertake QCRA and QSRA within Route clients, as well as IP centre and IP regions.	Advisory
3.8	Contingency provisions: Develop a range of likely 'contingency provisions' for early stage CP6 projects. These could be higher or lower depending on the project context, degree of risk and learning from past delivery and cost outturns.	Advisory



No.	Recommendation	Priority
3.9	Framework assurance: Complete the Risk and Value Assurance Framework to cover process compliance and quality of QSRA and QCRA outputs.	Critical
3.10	ECAM: The ECAM process is no longer used for England and Wales projects. However, it is still used for projects in Scotland. The ER&VM documentation should be changed to reflect that ECAM is not a second line assurance process.	Secondary
4.1	Peer Review: Review and improve Team Leaders guidance and Quality Assurance (QA) checking of peer review reports to improve the quality and consistency of the peer review reports.	Advisory
5.1	Business Intelligence (BI) tool implementation: We propose to assess in a future period of monitoring: Earned Value Phase 2 and Scorecards; and conduct a full review of the BI tool post implementation.	Secondary

Table 3: Summary table of recommendations



Introduction

Background

In 2013 Network Rail committed to deliver a challenging £13bn enhancements portfolio to improve performance and capacity on Britain's railways, in its current funding period (Control Period) between 2014-2019. In November 2014, ORR raised concerns about project deliverability, cost increases and slow progress with development of a draft improvement plan. After a significant number of milestones were missed and on-going slow progress in Network Rail finalising an improvement plan, ORR launched an investigation in March 2015 to determine if Network Rail was in breach of its licence regarding the management and delivery of enhancement projects.

ORR's investigation found systemic weaknesses in Network Rail's handling of its enhancement programme including: poor processes for setting initial project requirements; no defined framework for managing complex programmes; a lack of portfolio management capability; and low productivity. Together these issues have resulted in significant underestimates of project timescales, and have impacted on operational performance and costs.

In response to ORR's investigation, Network Rail worked to identify and address its weaknesses through the development of an EIP. The purpose of the plan is to drive improvements in the way Network Rail manages its relationships with project sponsors, ensures safety is considered at a design stage, and reforms how costs and risks are estimated, alongside changes in project governance, deliverability assessment and monitoring. In October 2015, Network Rail formally submitted its final EIP to ORR.

ORR concluded that Network Rail was in breach of its network licence with regards to its planning and delivery of enhancements in October 2015. However, it also considered that Network Rail was taking reasonable steps to regain compliance, through the EIP and other committed improvements. Therefore, ORR stated it will be holding Network Rail to account through close monitoring of these commitments and will intervene should evidence come to light that Network Rail was not taking all reasonable steps to deliver them.



The Reporter's mandate

This report has been produced under the Reporter mandate reference L2Ni003, which is part of ORR's monitoring of Network Rail's improvements to the development and delivery of enhancements. The overall mandate spans from July 2016 to the end of Control Period 5 in March 2019. It has been divided into two parts comprising: Part 1 – a planning phase 'Develop the review plan' and Part 2 - an execution phase 'Execute the review plan'. Part 1 was completed in August 2016. Figure 1 below illustrates the structure of the overall mandate.

Part 2 of the mandate is further divided into a number of discrete monitoring periods, with period 1 (this report) spanning from December 2016 to May 2017. The intention of breaking the mandate into shorter monitoring periods is to focus each period's monitoring on discrete objectives. Objectives for the next period are agreed at the end of the current period. For example, the objectives for the next period have been agreed based on the outputs from period 1 monitoring and the period 1 objectives were agreed at the end of Part 1 of the mandate. This approach enables monitoring objectives to be tailored on an on-going basis to current areas of concern for ORR.

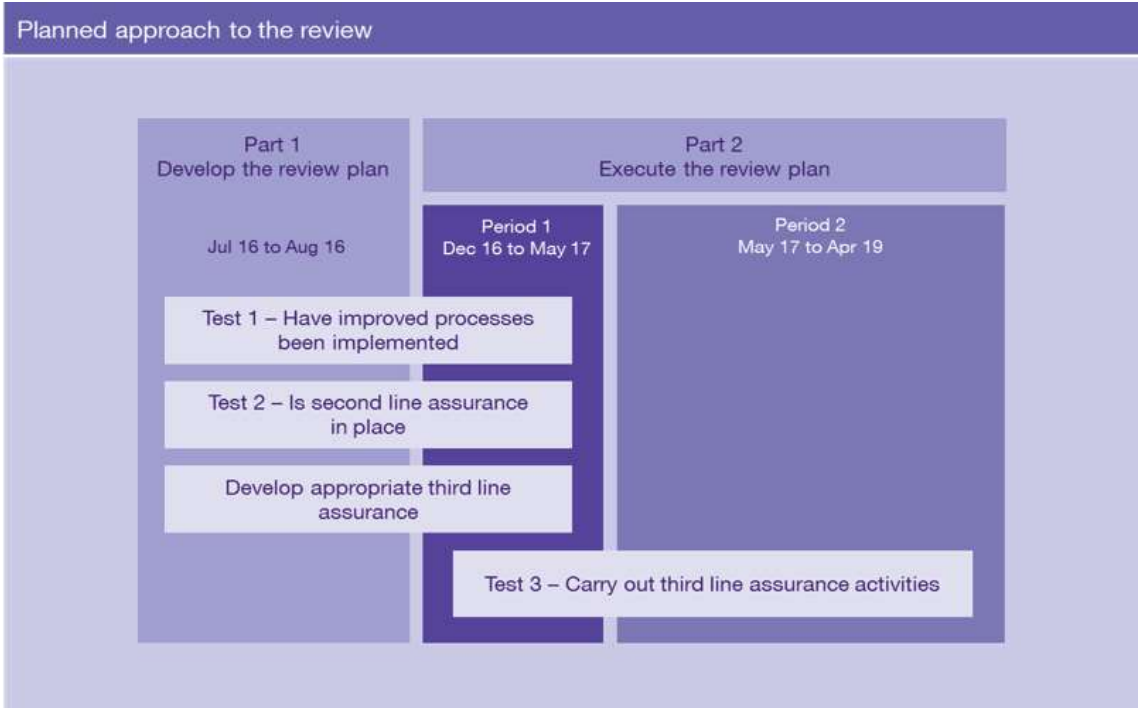


Figure 1: The structure of the Reporter mandate split into monitoring periods

Report structure

Each of the four work streams are now presented in detail each in a separate section following.



EIP work stream 1 – Clienting and governing the enhancement portfolio

Review scope

The scope of work stream 1 was described in the EIP work stream summary submitted by Network Rail to ORR in October 2015. The work stream was then developed after a period of planning into an implementation plan (v2) dated April 2016.

The scope of our review of work stream 1 comprised two parts:

1. A review of status of completion and implementation of outputs defined in the April 2016 implementation plan. We undertook Step 3 where it was possible:
 - **Governance and Terms of Reference**, building on a Memorandum of Understanding (MoU)³ agreed by Network Rail and the Department for Transport (DfT). The Terms of Reference cover joint governance for Route Programme Boards for major programmes, an Enhancement Portfolio Board and Network Rail internal delivery boards.
 - **Enhancement portfolio management & reporting**, monthly monitoring and management of the overall funding requirement and outputs for the Control Period 5 (CP5) enhancement portfolio against a baseline established during the 'Hendy Review' in 2015.
 - **Change control**, underpinning the discipline, rigor and control required for successful portfolio management is coordinated management of change at a project, programme and portfolio level.
 - **Lifecycle and process**, including roles and accountabilities for all entities, including clients and sponsors, involved in enhancements planning, funding and delivery. A high-level decisions process

³ An equivalent MoU is being developed between Network Rail and Transport Scotland. This was not agreed with Transport for Scotland at the time of the review.



framework, which accommodates touch-points with other industry processes. Specific Network Rail internal process improvements to drive consistency, for example, in 'pre-GRIP'⁴ stages and to align internal processes to the broader industry changes proposed.

2. A review of the outputs from this work stream to check whether the revised processes address recommendations from a previous Reporter review; "CN031 – Assurance for major programmes of complex timetable changes".

The April 2016 plan also included an Integrated Assurance Framework. We did not review this output as it was already subject to discussion and review between Network Rail, DfT, ORR and other government bodies.

Part 1 – Review of progress of work stream 1 outputs

Governance and Terms of Reference

High-level roles were agreed with the DfT in the MoU between DfT and Network Rail on rail enhancements. This outlines a positive commitment from all parties to improve ways of working. The MoU demonstrates that the two parties are now more closely aligned. Working material that accompanied the MoU defined respective roles and accountabilities in more detail.

A governance framework supports the MoU. This framework includes: revised terms of reference for governance forums and various presentations that describe the reasons for the change; high level descriptions of key roles and accountabilities within the enhancements lifecycle; and principles on ways of working. It describes joint governance arrangements that are now in place, including new Route Programme Boards for major programmes and agreed terms of reference for Network Rail Portfolio and Delivery Programme Boards.

The governance framework should ensure effective assurance of major programmes. We have not reviewed the implementation of these terms of reference within the major programmes.

The objectives of the framework (implied in the MoU) are to ensure improved management information, early identification of problems and their resolution and to ensure joint responsibility for continuous improvement, value for money and efficiency. This forms the basis of a robust management assurance regime. In addition, the MoU sets out its expectations for an assurance regime of the governance groups and a commitment to an internal audit of these arrangements after six months.

⁴ Network Rail "Governance for Railway Investment Projects".



An equivalent MoU is being progressed between Network Rail and Transport Scotland, likewise between Network Rail and Transport Wales. These had not yet been agreed at the time of our review.

Enhancement portfolio management and reporting

The primary purpose of governance is to manage the enhancement portfolio outputs and funding baseline. Management is of on-going affordability and funding of the enhancement portfolio compared with the baseline created during the 'Hendy Review'. It includes change control processing, allocation of contingency funds and portfolio adjustments. Joint governance is through the monthly 'Enhancements Portfolio Board', which DfT, Network Rail and ORR attend.

The governance process for the portfolio is a form of assurance in its own right. Management assurance of the governance structure is achieved through discharge of Board remits, by maintaining high engagement from meeting attendees, and by continuous review and challenge of portfolio performance to ensure CP5 total outturn is delivered within the Hendy baseline.

Our previous report identified two recommendations which we have followed-up in this review:

1. Clarify the criteria against which decisions are made and cost issues are resolved.
2. Clarify the management of contingency funds, particularly with regard to uncertainty of outturn CP5 spend with current contingency sums held.

Regarding the first recommendation DfT is the funder and the allocation of portfolio funds is ultimately at their discretion. The accountability to make 'strategic portfolio decisions' is defined in the roles and accountabilities allocated to DfT. It is defined as deciding priorities and selecting choices to meet enhancement requirements. Network Rail provides information to inform DfT's decisions at the route programme level and also through its reporting to the monthly portfolio board. This recommendation can now be closed.

The second recommendation refers to three portfolio funding adjustment factors and how the funding requirement relates to the cash position. We reviewed the latest Financial Reporting pack that is produced by Network Rail for input to the monthly enhancement portfolio board with DfT. The three funding adjustment factors are reported in that pack are referred to as:

1. 'Impact of undervalued P80 & using CAM'. This is a portfolio contingency fund and the reports indicate in the current forecast that some of contingency has been drawn down since the Hendy baseline.



2. 'Value engineering'. This factor is now the responsibility of the Infrastructure Projects Engineering Director. The forecast reduction (savings) to the funding requirement has increased in the latest forecast compared with the Hendy baseline.
3. 'Over-programming adjustment'. The forecast reduction to the funding requirement has reduced in the latest forecast compared with the Hendy baseline.

The concern with the original recommendation was that if the forecasts for the portfolio adjustment factors were not realistic then the funding requirement and cash profile would be exceeded towards the back end of the control period. This is still a real concern and the accuracy of the adjustment factors is still important to the successful management of the portfolio funding and cash profile. There is currently no independent checking of the accuracy of these forecasts.

Change control

A revised change control process was introduced in July 2016 as part of the deliverables for work stream 1. This change control process appears robust. Change control is governed and assured by the Enhancements Portfolio Board. The Board decides whether to change scope and manages any funding impact of the change. The process includes a change template and approval mechanism, covering Network Rail roles and responsibilities and how change is approved. Changes are approved first at Route Programme Board level before going to the Portfolio Board for approval. We were provided with ample evidence to demonstrate that the change control process is being used.

There is no formalised second line assurance process to confirm compliance and effectiveness of the change control process. Currently management obtain assurance that the process is being adhered to by the governance framework that surrounds it. For example, sponsors have effectively flagged instances when the process has not been followed.

There is inevitably a time lag between projects identifying a potential change and the change being approved and funding agreed. To ensure internal delivery management have an informed view on potential changes, project managers adjust their anticipated final cost (AFC) to highlight this, even though changes are not authorised via change control. The AFC is compared to the baseline and any variances are challenged through internal programme and portfolio governance forums first to resolve it.

A previous report under this mandate in August 2016, recommended a "review the operation of the change control process, particularly reviewing interdependencies between projects and funding sources". Interdependencies between deferred projects are described in the change control form. These are reviewed at the Enhancements Portfolio Board as part of the change approval process. This recommendation can now be closed.



Lifecycle and process

This element of the plan is still work in progress and Network Rail has not completed Step 1. Network Rail produced an 'Investment Decision Framework' (IDF), which is described in the deliverable "The enhancement lifecycle, key roles and joint decision points" dated March 2016. This framework appears to cover the full lifecycle of making good investment decisions from strategy and opportunity through to delivery and operation. The framework also includes further definition of accountabilities between DfT and Network Rail following from the MoU.

However, the re-alignment of multiple internal processes to the externally agreed principles in the framework is at an early stage. Network Rail has highlighted to the Reporter the complexity and scale of this impact, which will influence how long it takes to implement and embed. The activities involved in the re-alignment of internal processes are understood to include:

- Network Rail authorisation and approvals at decision points. This was initiated in January 2017 with some early development of the approach and approval to proceed provided in March at Network Rail's internal authorisation meeting (the MPDC). The Finance Director is the executive sponsor for this work and it is seen as a critical piece in implementing the new framework. In due course this will also need to align to investment regulations.
- Early stage estimating. A remit for this work was formalised in April 2017. The next step is to produce a plan and more detailed approach that can be reported against.
- IDF integration with GRIP. When the IDF was presented to MPDC in December 2016, it was acknowledged that changes to 'GRIP for Programmes' and 'GRIP for Projects' might be required to reflect the new approach to enhancements. As at April 2017 the plan was to agree how to approach this by June 2017.
- Detailed description of IDF milestone 'decision to develop'. This will describe the milestone and deliverables that Network Rail will produce to be ready make this decision. This is all pre-GRIP activity and describes work that sits inside the Network Rail System Operator function.
- Other ongoing tactical initiatives. These initiatives are usually driven by operational needs as Network Rail tries to implement the IDF. An example is how Network Rail align the Final Investment Decision (which is made jointly with the funder) with their internal Investment Regulation processes. Network Rail continues to talk to other funders as well as DfT to get the approach aligned; Transport Scotland and Transport for the North are two examples.



Conclusions

Network Rail has made good progress embedding improved processes for governance and Terms of Reference, enhancement portfolio management and change control. For 'Lifecycle and Process' the understanding of the complexity and extent of internal changes required has evolved since the Phase 2 plan in April 2016. Some of this impact relates to enhancements now being agreed and funded outside the periodic review.

There are currently no specific second line assurance arrangements to monitor embedment of the outputs of work stream 1. Our recommendations from Part 1 of our review of work stream 1 are described in Table 4 below.

No.	Observation	Recommendation	Priority
1.1	<p>Enhancement portfolio management and reporting: Successful management of portfolio funding relies on having realistic and current estimates of the three portfolio adjustment factors: (i) undervalued P80 risk (ii) value engineering savings (iii) over-programming adjustments.</p> <p>Network Rail does not have second line assurance in place for work stream 1 to validate these factors.</p>	We recommend that Network Rail implement an internal independent checking process for the portfolio adjustment factors.	Critical
1.2	<p>Lifecycle and process: Internal processes have not yet been developed/updated to align with the principles of the 'Investment Decision Framework'.</p> <p>This includes updating Network Rail's clienting guidelines, sponsor handbooks, 'GRIP for Programmes' and other procedural documents to reflect the new arrangements.</p>	Network Rail should agree a plan with ORR to complete development and implementation (Steps 1 and 2) of the lifecycle and process activity thread, based on current knowledge of the scope of changes required and any complexity of internal implementation.	Critical



No.	Observation	Recommendation	Priority
1.3	<p>Second line assurance: Network Rail does not have second line assurance in place for work stream 1 to confirm compliance and quality assure the operation of change control and the joint governance framework.</p>	<p>Network Rail should implement independent checking of the change control process and the operation of the joint governance framework.</p> <p>To include independent checking of samples of approved changes and assess whether these have followed the process. For example, reviewing if documentation has been completed, the case for change is clearly set out, the impacts on the portfolio have been assessed, minutes of governance groups that indicate robust discussion and challenge, and confirmation of approval by authorised signatories.</p> <p>To check the operation of the joint governance framework would confirm that the objectives of the MoU are being achieved, including whether:</p> <ul style="list-style-type: none"> • There is robust challenge of data at management and programme boards • Problems are identified early and resolved at management and programme boards • There is evidence of joint responsibility for continuous improvement, value for money and efficiency • Terms of reference for the governance forum are being adhered to • Governance and decision-making forums are running as intended • Any actions arising from the internal audit of the MoU have been addressed 	Secondary

Table 4: Recommendations from Part 1 of our review of work stream 1



Part 2 – Review of work stream 1 outputs against previous recommendations

This review considered whether the outputs from work stream 1 address the recommendations from the previous Reporter review “CN031, Assurance of Major Programmes” completed in July 2015. The results of this reconciliation as described below in Table 5.

CN031 recommendation	Reconciliation to EIP work streams
<p>CN031-1: A programme process for managing Route upgrades should be defined and implemented building on ‘GRIP for Programmes’ covering:</p> <ul style="list-style-type: none"> • Roles and responsibilities of industry partners • Guidance document for a Network Rail industry programme process • Implementation plan incorporating training and development of Network Rail teams and to build awareness across Network Rail and stakeholders 	<p>Similar deliverables are included in work stream 1 (WS1):</p> <ul style="list-style-type: none"> • MoU with the DfT sets out roles and accountabilities and joint governance arrangements • A revised programme process is currently being developed with industry • Once the new process is in place, Network Rail internal processes will need to be aligned to the broader industry changes proposed
<p>CN031-2: Examples of good practice from across the programmes should be used to develop guidance notes on programme controls for the industry wide programme process and templates to improve consistency between programmes.</p>	<p>This is not covered by the deliverables for WS1. However, a Network Rail ‘executive mandate’ has been issued to support the re-introduction of programme controls as a core capability within the business. A ‘Blueprint’ setting out how this capability will be developed is currently being established.</p>
<p>CN031-3: Output requirements should be re-confirmed with the DfT and Transport Scotland. Further work should be undertaken to improve the effectiveness of the change control process at the Industry Programme Level.</p>	<p>A change control process is included in the deliverables for WS1; a revised change control process has been agreed with the DfT.</p> <p>An exercise was undertaken to reconfirm outputs and delivery milestones for CP5 with the DfT at the time of the Hendy review. This resulted in revised Enhancements Delivery Plan (EDP) entries for CP5.</p> <p>We have not re-reviewed the major programmes to confirm whether the output requirements of the major programmes have been confirmed.</p>



CN031 recommendation	Reconciliation to EIP work streams
CN031-4: Guidance should be developed for System Integration (SI) at both industry and Network Rail level.	The roles and accountabilities document that supports the MoU states that DfT is accountable for system integration. Although DfT can discharge this by instructing Network Rail to perform the role e.g. for the Great Western Modernisation Programme.
CN031-5: The process of developing the Industry Train Service Specification through Industry Planning Groups should be reviewed, and controls strengthened to ensure decisions are not made without first assessing the affordability, feasibility and impact on infrastructure.	Similar deliverables are included in WS1. Implementing a revised change control process and governance framework around major programmes has strengthened internal controls.

Table 5: Reconciliation of CN031 recommendations to outputs from work stream 1

Conclusions and recommendations

Our conclusion is that three recommendations of the CN031 review are not fully addressed by outputs of work stream 1. These recommendations are programme controls (CN031-2), system integration (CN031-4) and confirmation of output requirements (CN031-3).

As a consequence of these recommendations not being fully addressed by outputs of work stream 1 the ORR has requested that the Reporter undertakes a separate independent review of current practices on a sample of major programmes to check whether improvements have been implemented. This is described in the recommendation below in Table 6.

No.	Observation	Recommendation	Priority
1.4	It has not been possible to determine whether Network Rail has effectively embedded improvements in its enhancements programmes to address concerns raised in CN031 on the management of major industry programmes to deliver timetable changes.	Undertake a separate assessment of major programmes to determine whether improvements have been effectively embedded within them.	Critical

Table 6: Recommendation from Part 2 of our review of work stream 1



EIP work stream 3 – Enterprise Risk and Value Management Framework

Review scope

The Enterprise Risk & Value Management (ER&VM) Framework is the only part of EIP work stream 3 within our review scope. Our particular area of focus was on Quantitative Cost Risk Assessment (QCRA) and Quantitative Schedule Risk Assessment (QSRA). The Reporter review of the Hendy re-plan made recommendations to improve the quality of quantitative cost and schedule risk assessment.

The scope of our review of work stream 3 comprised two parts:

1. A Step 3 review of the ER&VM Framework following Network Rail completion of Steps 1 and 2
2. To follow-up on progress completing recommendations made in a previous review on portfolio risk management

Part 1 – Review of the Enterprise Risk & Value Management Framework

Introduction

An ER&VM Framework will enable Network Rail to build its capability to achieve repeatable and reliable risk and value management of its programmes and projects. We undertook a full review of the revised processes in the ER&VM Framework during this period of monitoring.

In 2015/16 Network Rail established an ER&VM Framework to:

- Ensure consistency in Risk and Value management.



- Create a hierarchical approach across four 'Enterprise Risk' categories: Strategic, Project, Operational, and Financial⁵.
- Ensure that value is created and protected through the proactive, prioritised and efficient management of risk all levels within Network Rail Infrastructure Projects.
- Include the Risk and Value Management Process, Organisation, Hierarchy, Enterprise Risk Categories, Governance and Infrastructure and Risk and Value Management Culture in the framework.

Conclusions and recommendations

The ER&VM Framework comprises processes, procedures, guidance, training and maturity modelling that represents a foundation from which Network Rail can build its capability to achieve repeatable and reliable risk and value management.

We have made eight recommendations, described in Table 7 below, for improvements to the ER&VM Framework documents; four critical, two secondary and two advisory.

The most important of these relate to the need for investment decisions taken at the end of GRIP 3 to be underpinned by high quality QSRA and QCRA. While this is included in the ER&VM Framework, the obligations placed on project teams in this regard need to be made clearer and plans and capability to perform this analysis is in place, together with robust assurance of its application.

No.	Observation	Recommendation	Priority
3.1	The framework does not contain authoritative guidance on how to produce a QSRA and QCRA outputs of an acceptable quality.	Set out clear guidance on how models are required to be set up and guidance on interpreting QSRA and QCRA outputs to indicate confidence and robustness of these.	Critical
3.2	Good schedule modelling via Crystal Planning software as an approach to developing more consistent and robust project schedules and routine, repeatable work items aligned to the rail method of measurement.	Outline the approach to determining the level of uncertainty for non-standard or novel CP6 projects, notably in early GRIP stages, and when quantitative schedule and cost risk analysis is undertaken for such projects. This could consider the approach used on comparator programmes.	Critical

⁵ P3M3 Programme, Project Output Endorsement & Handover Report, IP Enterprise Risk & Value Management Framework (Phase 1), 23 January 2017, p.2.



No.	Observation	Recommendation	Priority
3.3	The Toolkit states that QSRA and QCRA are 'normally' undertaken at the end of GRIP 3 whereas the GRIP Product Matrix states that they are a strict requirement. The Cost Risk Management Work Instruction permits the use of semi-quantitative analysis. Funders are likely to require a range of estimates (e.g. P50, P80) to illustrate cost certainty and inform investment decision-making.	Revise ER&VM Framework documents to mandate QSRA and QCRA analysis at GRIP 3, unless otherwise agreed by funders (and update the Cost Risk Management Work Instruction accordingly).	Critical
3.4	The ER&VM Framework does not contain guidance on how individual projects and programmes should use the Portfolio Deliverability Assessment as an input to QSRA and QCRA analysis.	Include guidance in the ER&VM Framework on action required at the end of each Deliverability Assessment cycle (e.g. QSRA/QCRA updates) as a standard business-planning requirement.	Critical
3.5	Network Rail has commenced progressive assurance of CP6 Deliverability at Route and National level. At project and programme level, it undertakes QSRA at GRIP 3; so considers schedule deliverability on only one option. Others may have different methods of delivery so QSRA may be needed to assess deliverability/risk to inform investment decision-making.	Update the ER&VM Framework to confirm that deliverability analysis is included in option comparison ahead of single option selection, including in appropriate circumstances, QSRA modelling of options.	Secondary
3.6	The Assumptions Management Work Instruction permits potentially significant assumptions to remain 'untreated' until GRIP 4 so cost and schedule implications may not be fully understood at the time an investment decision is made at the end of GRIP 3.	Update the Assumptions Management Work Instruction to require that all key assumptions are re-classified into scope, risks or verified assumptions before the end of GRIP 3 and associated cost estimate.	Secondary



No.	Observation	Recommendation	Priority
3.7	Devolution of Network Rail's central planning functions mean Route management assumes greater accountability for CP6 enhancements, whereas Network Rail's capability to undertake this work largely reside in IP.	Given timescale for CP6 development and investment decision-making assess and address gaps in capability to undertake QCRA and QSRA within Route clients, as well as IP centre and IP Regions.	Advisory
3.8	There is an opportunity for Network Rail to refine its contingency provisions for early stage (GRIP 1 and 2) projects, rather than default application of standard Green Book Guidance.	Develop a range of likely 'contingency provisions' for early stage CP6 projects. These could be higher or lower depending on project context, degree of risk and learning from past delivery/cost outturns.	Advisory

Table 7: Recommendations for improvements to the ER&VM Framework

Assessment of Network Rail's second line assurance

Network Rail's ER&VM Framework activities are subject to the requirements of the Combined Assurance Framework (CAF) and a Risk and Value Assurance Framework. These frameworks, which remain under development, are intended to provide first and second line assurance.

The ER&VM procedure states that there is a feedback loop between assurance and the IP risk and value management team that promotes continuous improvements and provides assurance that "activities taken to deliver value and manage risks to stated business objectives are in place, are working and are sustainable." Network Rail states its approach to assurance is:

- First line assurance through review of information flowing from delivery teams, such as Period end metrics and reporting checks, Stage Gate reviews, Delivering Work Within Possessions (DWWP) oversight, and QCRA's and QSRA's.
- Second line assurance checks on this information, such as ECAM Reviews, Peer Reviews, peer sign off of ER&VM Products and Risk Management Working Groups.
- Third line of assurance through Independent Review and Audit.⁶

⁶ IP Risk & Value Management, R&VM Procedure, IP-ERVM-004, v1, 29/02/16, para. 9.3.3. Appendix D, Figure 11.



We sought to review Network Rail’s second line assurance of its ER&VM Framework. This part of the ‘Integrated Assurance Framework’ was not yet complete at the time of the review, although Network Rail is applying concerted effort to complete it. Our observations and recommendations in relation to second line assurance of the ER&VM Framework are described in Table 8 below.

No.	Observation	Recommendation	Priority
3.9	Network Rail has not yet developed or implemented a full Assurance Framework for products under the ER&VM Framework.	Complete the Risk and Value Assurance Framework to cover process compliance and quality of QSRA and QCRA outputs.	Critical
3.10	ECAM is referred to as providing second line assurance. The ECAM process is no longer used for England and Wales projects. It is still used for projects in Scotland. Overall though ECAM is no longer a viable second line assurance process.	The ER&VM documentation should be changed to reflect that ECAM is not a viable method of second line assurance.	Secondary

Table 8: Recommendations related to second line assurance of the ER&VM framework

Part 2 – Follow-up on recommendations on portfolio risk management

A previous Reporter review in August 2015 identified several key uncertainties that would benefit from a more coordinated strategy and approach at portfolio level and recommended that a portfolio level risk management process is established.

Network Rail has since prepared a Portfolio Risk Management and Contingency Management guidance document “for managing risk across the portfolio of works that Network Rail Infrastructure Projects (IP) is delivering and includes a proposal for how contingency should be applied and managed through the project life cycle.”⁷

⁷ Portfolio Risk Management and Contingency Management, 17 January 2017, Draft Version: 9.0, 13 May 2016.



We had planned to sample early stage projects to check whether this process had been successfully embedded. However projects using the new approach were not available for review at this stage of the review.

However, we observed the 'IP Executive Risk Management Review' chaired by the Head of Risk and Value Management and attended by principal risk and value managers from across Network Rail IP Regions and major programmes. The Reporter observed that risks were being considered and challenged constructively in order to identify the key risks for escalation and aggregation at portfolio level.

We consider the process developed so far to be robust, including governance via its Executive Risk Management Review Committee.



EIP work stream 4 – Project governance and stage gate assurance

Review scope

The 'Peer Review process' was an early output from work stream 4. The Reporter reviewed its embedment in business as usual during monitoring in Summer 2016. The Reporter made five recommendations related to monitoring the embedment of the Peer Review process within Network Rail.

The scope of this latest review was to follow-up on completion of the recommendations made previously, by checking:

1. Completion of a recommendation to have a Team Leader's best practice guidance document
2. Consistency and quality of execution of the Peer Review process
3. A sample of Peer Reviews for rigor in the completion of Peer Review actions
4. Completion of a recommendation to capture best practice discovered during Peer Reviews
5. The mapping of the Peer Review schedule against the priority programmes and EDP milestones

Status of recommendations completion

Recommendations from the previous Reporter review	Status update
Check completion of recommendation for a Team Leader's best practice guidance document.	'Guidance document' achieved via a 'Toolbox' of support products available on Network Rail SharePoint site. Action closed



Recommendations from the previous Reporter review	Status update
Check consistency and quality of execution of the Peer Review process.	Consistency in sample reviews assessed (Thameslink and Transpennine Route Upgrade). Suggest for consistency the link between Peer Review benefits, their purpose and report format is checked and adjusted. Peer Review training has a sound basis. Action closed
Check sample of Peer Reviews for rigor in the completion of Peer Review actions.	Sample reviewed demonstrates clear recording and monitoring of Peer Review recommendations to closeout. Action closed
Check completion of recommendation to capture best practice discovered during Peer Reviews.	Lessons learnt workshop was held in March 2017 to consider how best practice will be captured and disseminated. Peer Review report templates have been amended to prompt explicit capture of best practice that will enable easier dissemination. Action closed
Check mappings of the Peer Review forward schedule against the priority programmes and EDP milestones.	Snapshot check of 12-month look-ahead from December 2016 demonstrates compliance with prioritisation criteria, evidence of adjusting the timing of some reviews and adding others and of Network Rail foresight in relation to the capability and capacity for future reviews. Action closed

Table 9: Status of previous recommendations made for improvements to the Peer Review

Conclusions and recommendations

We confirm that all of five recommendations are now complete and can be closed. We make an additional recommendation described in Table 10 below.

No.	Observation	Recommendation	Priority
4.1	Peer Review Team Leaders must resolve how to align the stated purpose of the review, required report sections and a check on whether and how the output achieves the intended benefits. Sample Peer Review reports demonstrate some divergence from the prescribed report sections.	Peer Review: Review and improve Team Leaders guidance and QA checking of peer review reports to improve the quality and consistency of the peer review reports.	Advisory

Table 10: Additional recommendation for the peer review process



EIP work stream 5 – Project and delivery portfolio monitoring

Review scope

Network Rail reported that this work stream was complete in June 2016 via Line of Sight reporting, Earned Value Phase 2 and Scorecards. Our area of interest in this work stream comes from recognising the benefit of providing consistent project and programme information to governance forums.

Network Rail Infrastructure Projects has developed a standard reporting suite for CP5 projects to provide transparent project and programme information that is consistent across all levels of the organisation. This information is used in Network Rail governance of project delivery and to inform the Enhancements Portfolio Board of the current position on the forecast cost of projects and programmes within the overall CP5 portfolio.

The scope of our review of work stream 5 only covered a review of line of sight reporting using the standard reporting suite.

Conclusions and recommendations

'Line of sight' reporting has now been implemented. Project financial information in management reports is now system driven, as data is no longer manipulated in spreadsheets before reporting. Consistent information is being used at the Enhancements Portfolio Board, the Executive Committee and the Delivery Portfolio Board (IP's monthly review of performance).

However, Network Rail is aiming to automate project reporting further by introducing a Business Intelligence (BI) tool. This is currently in development, with the pilot stage followed by full implementation schedule to be completed by October 2017. BI is a web-based system to extract data (for example, from Oracle, Primavera, TRUST and Hyperion) into a 'clean environment'. Data is then used to create performance reports with the ability to drill into detail. The tool is being used to review performance at



Infrastructure Executive level. The intention is to introduce it to review performance at monthly 'Key Issues' meeting and by Asset Groups for Regional Directors within IP to review performance with their direct reports.

The BI tool has the potential to improve management of enhancements at all levels within Network Rail by providing the ability to easily access and present key information and improve early warning of problems and poor performance. For example, earned value and risk/contingency levels can be presented together to show if slower delivery is being caused by risk or vice versa; enabling more informed conversations and mitigating actions to be taken earlier.

Our recommendations for work stream 5 are described in Table 11 below.

No.	Observation	Recommendation	Priority
5.1	Network Rail reported this Work stream was complete in June 2016 as three elements – Line of Sight reporting, Earned Value Phase 2, and Scorecards. We have not reviewed the latter two elements.	We recommend that in future monitoring the Reporter assess the embedment of Earned Value Phase 2 and Scorecards; and conducts a full review of the Business Intelligence tool post implementation.	Secondary

Table 11: Recommendations from our review of work stream 5

