Enhancements Improvement Programme

Network Rail

Executive Summary

The Enhancement Improvement Programme is a key part of Network Rail's response to the series of challenges, unforeseen cost increases and delays in the development and delivery of our major projects that we have faced in CP5.

Network Rail's Board recognised these difficulties in January 2015 and established a special sub-committee – the Major Projects Delivery Committee (MPDC) – to review the way we develop and deliver projects and identify the key factors that had contributed to the situation.

Since the beginning of the year, the MPDC has investigated the main processes across the industry involved in defining, costing, approving and delivering major projects and has identified areas where key improvements are needed. The Enhancement Improvement Programme is the product of this work and, over the next two years, will significantly strengthen the rail industry's ability to successfully deliver major projects.

Network Rail is committed to leading this work but it is an industry-wide programme that needs the active support and cooperation of the Department for Transport and other funders, Office of Rail and Road, train operators and our supply chain to succeed.

In order to succeed, the EIP needs to improve the planning, management and delivery of enhancements but also embed a new and different cultural approach to how we work with others in our industry so that there is more formality, more rigour and more transparency than ever before.

The key improvements that EIP will deliver are:

- We will put safety first by designing safety considerations in from the start of a project

- We are putting in place a clear and strong governance model that enables industry integration, joint decision-making and clearly defines roles and responsibilities

- We are introducing the need for two separate key decision points in the life of a project: the decision to develop and the final investment decision to deliver it.

- We will develop a set of clienting principles to make sure that accountabilities in the project lifecycle are clear and that a strong, capable sponsor acts as the guiding mind and leader for the life of the project.

- We are improving the reliability of our cost estimates and establishing a way of quantifying the risk and uncertainty surrounding them

- We are introducing more formality, rigour and transparency around the gateway process that governs how projects progress through their different stages.

- We are improving the delivery capability and capacity of Network Rail and our supply chain.

- We are improving portfolio governance and our ability to see the bigger picture across all projects and programmes

Context

The portfolio of projects in Control Period 5 (CP5) is greater in scale and complexity than any undertaken by the rail industry in the modern era. It includes vast electrification projects that are the first of their kind to be built in Britain. It is a plan born of the collective ambition of an industry that had delivered huge project successes in CP4 and a Government that rightly recognised the vital role that investment in infrastructure plays in driving economic growth.

Unlike CP4, over half of projects were at a very early stage of development when they were committed to – with correspondingly uncertain cost estimates and delivery timescales. A cost adjustment mechanism was put in place to accommodate this uncertainty, whereby the regulator would review the revised cost of projects once they had reached development maturity and allow Network Rail to borrow more if projects still represented value for money and were agreed by funders. The reclassification of Network Rail to the public sector and the introduction of a fixed-ceiling loan agreement with the Department for Transport meant that there was no clear way of dealing with a situation in which the overall efficient cost of the portfolio of projects increased.

Network Rail and the industry subsequently faced a series of challenges, unforeseen cost increases and delays in the development and delivery of our major projects due for delivery in CP5. These challenges were particularly acute for those large 'first-of-a-kind' electrification projects which were inserted late in the periodic review process and at an early stage of development when CP5 began.

In January 2015, recognising these difficulties, Network Rail's Board established a special sub-committee – the Major Projects Delivery Committee (MPDC) – to review the way we develop and deliver projects and identify the factors inherent in the way that we work that had contributed to the situation.

Later in the year, the Secretary of State for Transport also commissioned the Bowe Review to consider the wider lessons that should be learned from the enhancements planning process. The work of the MPDC and the Enhancements Improvement Programme seeks to complement, rather than duplicate, this work and has benefitted from engagement with the Bowe Review team.

Since the beginning of the year, the MPDC has investigated the main processes across the industry involved in defining, costing, approving and delivering major projects and has identified areas where key improvements are needed. Some improvement initiatives were already underway within Network Rail but these have now been pulled together within the EIP which will, over the next two years, significantly strengthen the rail industry's ability to successfully deliver major projects.

Network Rail is committed to leading this work but it is critical to its success that it is more than just a Network Rail programme. It needs the active support and cooperation of the Department for Transport and other funders, Office of Rail and Road, train operators and our supply chain. To that end, we are engaging with all these parties in putting this programme together to ensure that mutual dependencies and interfaces with their work are included.

Most importantly, we must be clear that this programme is about more than introducing new working practices. The main challenge for the EIP is to improve the planning, management and delivery of enhancements but also embed a new and different cultural approach to how we work with others in our industry so that there is more formality, more rigour and more transparency than ever before.

Developing projects

The life of a project starts long before anything is built.

In order to produce reliable cost and timescale estimates for complex projects and deliver them on time and on budget they need thorough planning and development.

This begins with our long term planning process, which does far more than just predict future demand for rail and plan for it. The long term planning process is based on the assumption that rail should support economic growth, for example by connecting residential areas to labour markets. We recognise that this sometimes might require entirely new services and a new approach to creating capacity.

For that reason we carry out a range of planning work that assesses future demand over a longer period and looks at what the rail services should look like to best serve different rail markets – long-distance, inter-urban or commuter. This tells us what, in an unconstrained world, the railway would look like to best support economic growth.

From that ideal scenario we then work backwards, looking at individual rail routes and what it is possible to deliver on the rail network as it currently exists. This includes prioritising existing capacity available on the network. Then we look at the gaps between the 'ideal' and what we have today and we try to find ways to address those gaps.

This means that the beginning of a project is simply the identification of a need for an intervention or improvement of some kind, for example, an increase in capacity on a key commuter line. This is what we mean by the early stages of a project – we know what the output needs to be but we haven't yet undertaken the work needed to establish the best value for money way of delivering it.

It is at this point that the first key decision in a project life cycle needs to be made – the decision to invest in and develop the project.

Once this development work is complete, we will have identified the best value way of taking a project forward. It is only at this stage that a 'project', as most people understand it, is born. It is only now that a mature cost estimate and schedule for delivery can be established.

For that reason we believe that the final investment decision taken by funders to commit and invest in a project should only happen at this stage, once development is complete.

From this point, we then undertake a detailed design of the project before our project teams begin work to deliver it on the ground.

What do we mean by portfolios, programmes and project?

When we refer to the portfolio we mean the whole package of enhancement work that we are delivering within CP5.

Programmes are larger schemes of work to improve the railway that might have a number of constituent projects within them. For example a capacity enhancement programme may include a resignalling project, a platform lengthening project and a new piece of track. There are also individual projects that don't fall within a programme.

What will the Enhancements Improvement Programme do?

We will put safety first by designing safety considerations in from the start of a project

This underscores our day-to-day to commitment to putting safety first and at the heart of everything we do.

Historically, when we change our infrastructure, safety is something that might only have started to be considered in the design stage of a project.

In future, we will introduce measures to consider safety from the earliest stages of a project so that information about improvements to safety can be factored into the decisions about how we deliver our projects.

This is why we are developing a strategy and policy for hazard and risk prevention through engineering and design.

A priority within this will be to promote the development of risk profiling so that everyone can understand the risk associated with a particular asset or physical location. This will enable all decision makers to take decisions with knowledge of the predicted safety impact of change.

We are putting in place a clear and strong governance model that enables industry integration, joint decision-making and clearly defines roles and responsibilities

Network Rail works closely with the Department for Transport (DfT), Transport Scotland, Welsh Government and other funders and the Office of Rail and Road (ORR) to plan and deliver enhancements and upgrades to the rail network. There are significant interdependencies between the organisations with each body responsible for different aspects of what is needed to successfully plan and deliver railway upgrade projects. This means everyone needs to work together seamlessly.

In the past there has been a lack of clarity over roles and responsibilities between organisations and this has caused uncertainty over which party does what and how to achieve the best possible end result. We can also do more to better manage change in our projects and develop stronger controls around the related financial decisions in order to manage expectations around cost and delivery schedules. ``

In CP5, many decisions to fund projects were taken whilst projects were immature and without adequate understanding of the risk and uncertainty for cost or delivery that this entails. Detailed decisions about project scope have been taken informally 'on the ground' without enough consideration of what impact this will have on schedule and cost of the project or overall affordability of the total portfolio.

Usually these changes were made for good reasons but in the more financially constrained environment we operate in today, the impact of those kinds of decisions needs to be fully understood before they are taken. It is not simply a question of whether a change represents value for money or is the right thing to do. There is the overriding question of whether it is affordable.

To address these issues, we are putting in place robust new governance that builds on the current tripartite governance between DfT, ORR and Network Rail. This will clarify accountabilities and introduce new processes to ensure there is a single, integrated way of governing the entire enhancement portfolio and formally managing change.

It will also address the need for programme planning to be integrated across the industry to best manage the interdependencies between timetable, rolling stock, franchises and infrastructure needs. This governance will also put in place more formal oversight for all participants at three levels: project, programme and portfolio.

The new governance model will increase the rigour and formality in the way that decisions are made on funding projects and we will introduce new key decision points for every project.

We will develop a set of clienting principles to make sure that accountabilities in the project lifecycle are clear and that a strong, capable sponsor acts as the guiding mind and leader for the life of the project

Just as it is important to define accountabilities between different organisations within the industry, it is important to define clear accountabilities within Network Rail for all those involved in delivering projects. Clienting principles establish clear accountabilities between the sponsor, routes, group strategy and our infrastructure projects.

A particularly key role in projects is that of the sponsor. Sponsors have a crucial leadership role as the guiding mind of a project from its early development stages through to project delivery. The capability of a sponsor is one of the most important factors in the success of a project.

The role of sponsors includes understanding the client's needs, translating this into a remit that a project team can deliver, establishing value for money, affordability and deliverability and overseeing the inevitable trade-offs needed during planning and delivery. They provide leadership to all participants and stakeholders involved in a project and also have the responsibility for identifying and managing key risks and uncertainties.

Given these vital responsibilities the sponsor should be the most influential person in any project but this has not always been the case.

To ensure these clienting principles can be successfully rolled out we are improving the capability and strength of our team of project sponsors. This includes formal development programmes, master-classes and forums for shared learning so that the sponsorship team can better share knowledge within the group as well as taking from best practice outside Network Rail and the rail sector. For high potential staff we're ensuring a solid career path where individuals can develop deep skills and repeated experiences in sponsor roles of increasing scale and complexity.

We are improving the reliability of our cost estimates and establishing a way of quantifying the risk and uncertainty surrounding them

Understanding uncertainty and producing robust cost estimates are vital prerequisites of good decision-making.

Understanding the level of uncertainty surrounding a project cost is essential, particularly when a project is in early development.

To illustrate why this is significant it is useful to understand that at this stage we may only know what the high level objective is but we will not have narrowed down the best value for money option of delivering it: e.g. we know that we want to increase capacity on a line by 5 % but it isn't yet clear whether longer trains, different rolling stock, timetable changes or infrastructure improvements represent the best value for money way of achieving this.

Given the very different delivery options available it is extremely difficult at this stage to produce an accurate or useful cost estimate.

By the end of project development, a single option for delivery will have been identified and at this point cost estimates are significantly more reliable and informative for funders to help them establish the affordability, value for money and relative priority of a project when it is competing with others to be funded.

For some projects, such as those that are unique or first-of-a-kind (e.g. major Victorian station renovation or, recently, electrification), there will continue to be a higher level of uncertainty surrounding a forecast. This is because there isn't the historical experience and/or benchmarking data from similar previous work that can inform an estimate.

Despite this, our early estimates for CP5 were not as robust as they should have been. While our process for estimating was sound, there were inconsistencies in adherence to the process, primarily due to the fact that our in-house team of estimators was far too small and needed to be supplemented with consultants who were not as familiar with the process.

A lack of integration between IT platforms also comprised our internal ability to carry out peer reviews, validation and benchmarking. These factors meant that we underestimated the costs, both in terms of project scope – what needed to be done – and the method of delivery – how they needed to be done.

Given the uncertainty surrounding early estimates, it would also have been better to have expressed costs as a range rather than a single figure, which inferred an inappropriate sense of confidence.

To ensure that we can improve the quality of our estimates and the way in which we quantify uncertainty, we are developing a comprehensive programme to improve the capacity and capability of Network Rail's in-house estimating team. We are doing this by building a significantly strengthened team of estimators, integrated IT platforms and new controls and governance around the assurance and sign-off of estimates. We are also developing a standard method of estimating and quantifying uncertainty that is based on the actual cost of comparable projects in the past relative to their original estimates.

We are introducing more formality, rigour and transparency around the gateway process that governs how projects progress through their different stages

Sound project management requires a framework that controls the process of a project through key stages from early development to delivery. A common tool used to control major infrastructures projects across different sectors are gateway reviews that make sure a project has completed one stage and that it is ready to move on to the next. Within Network Rail we use a gateway review framework which has eight stages.

In the past, inadequate adherence to this process, incomplete work in a particular project stage and insufficient checking at gateway reviews has led to some projects progressing to the next stage when they should not have been allowed to. This resulted in complications in later stages of project delivery.

We are addressing this in two ways:

First, we are strengthening our gateway assurance processes to check that projects are only progressing when the last stage is complete.

Second, we are introducing new independent peer reviews of projects for key gateway reviews on key projects and always prior to the final investment decision by funders.

This will both provide greater assurance and also enable different teams within the business to better learn from each other's experience.

We are improving the delivery capability and capacity of Network Rail and our supply chain

The successful delivery of enhancements depends both on the capacity and capability of Network Rail and our supply chain.

It also depends on our ability to manage the key dependencies within a project. By dependencies, we mean the factors outside of our direct control that have a significant impact on our ability to deliver a project successfully. Good examples of these include planning consents and third party consents.

We recognise that in the past the way we have gone about securing third party consents has not been as good as it could have been and that this has caused delays and increased cost to projects. This has particularly affected programmes where numerous consents are required and where, as a result of our work covering a significant geographical area, we have been required to work with a number of different local authorities.

In order to improve our own capacity and capability we have created a new project services organisation within our Infrastructure Projectsdivision to provide a better level of support to projects and programmes. We are also developing a new workforce plan that focuses on more structured and effective recruitment and the development and retention of key project staff. This work includes looking at how we could deploy project staff more flexibly in future, to ensure we get the maximum benefit from the capability we have within the organisation.

To improve the way in which we work with contractors, we are putting a plan in place that better measures the performance of our suppliers so that we can more consistently and transparently identify and retain high performing contractors whilst seeking to improve or avoid poorcontractors.

To improve the way we manage consents, we are setting up a consents forum that will establish a centralised register of consents and a standard set of mitigations. We will also be improving our stakeholder communications around consents to ensure that appropriate communication is carried out with local elected bodies and communities before consents are sought.

Improve portfolio governance and our ability to see the bigger picture across all projects and programmes

It is important to tightly control individual project scopes, costs and programmes but it is equally important to understand and manage all the projects and programmes as a whole or portfolio. This is because some issues can only be managed at portfolio level – such as the allocation of scarce resources, the constraints of supply chains and overall budgeting and funding.

The ability to see this accurate bigger picture depends on sound project and programme information being provided on a consistent basis, as well as the ability to aggregate and understand the information at a portfolio level.

Given the steady increase over past control periods in terms of the volume of work we do to improve and grow the railway, we have not been as good as we should have been at increasing the quality of portfolio reporting to provide insight into how we are performing.

We were good at analysing past experience and learning from it but we were not set up to look forward as effectively in order to judge where our performance was diverting from our plan and there might be a need to address any early issues before they escalated.

We have now completely changed the way that we report enhancements and have put a robust process in places for providing transparent and consistent information about individual programmes and projects to inform the current status of the overall portfolio in terms of affordability, deliverability and the management of other key risks and issues.

We will also manage the portfolio of projects in tranches so that funders can see both which individual projects are at which stage of development and the overall maturity of the portfolio. This will also help to guide projects through the two key decision points to develop and deliver them, based on their level of maturity.