

The Rail Capital Investment Strategy

Plotting the next generation of rail investment in Scotland

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System Operator

Planning a better network for you

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Part A: Introduction

The Capital Investment Strategy has just celebrated its first birthday. The purpose of this paper is (1) to outline the context in which the CIS came about, (2) understand its implications in terms of how rail investment decisions are made in Scotland (using the East Kilbride Capacity Enhancement Project as an example) and (3) to consider the extent to which high-level (and sometimes quite abstract) processes like the CIS can support improved outcomes for rail users and the wider Scottish economy and society.

It is worth saying at the outset, firstly, that the paper is written from a private perspective rather than being Network Rail's "official" view. Secondly, the content relates to the *evidence requirements* the CIS requires to support investment decisions rather than on funding decisions themselves. These fall naturally within the remit of Scottish Ministers.

Part B: Rail enhancements prior to the Capital Investment Strategy

B.01 How we used to live: Enhancements and the Periodic Review process (2005-14)

B.01.01 How were enhancements funded?

Funding and specification decisions for the railway in Scotland were devolved to Scottish Ministers in the Railways Act (2005). Until September 2014, Network Rail was a private company, with the ability to issue own (albeit Government-backed) debt.

Under this arrangement, so long as the Office of Rail and Road agreed that Network Rail's renewals or enhancement expenditures had been incurred "efficiently", the additional debt the additional debt required to deliver enhancements could be added to the Regulatory Asset Base (RAB).

Under this arrangement, the Scottish Government paid for enhancements on a "pay as you go" basis through its Network Grant and its track access charges rather than as an upfront lump sum.

B.01.02 How were enhancements developed?

In Control Period 5 settlement (April 2014-March 2019), Network Rail in Scotland was allocated broadly 10% of overall Scottish enhancements through Ring Fenced Funds deliver tactical enhancements on the back of renewals. Network Rail was responsible for developing business cases for these, but they were relatively narrow in scope (mainly

focussed on the economic case) because their purpose was to demonstrate economic efficiency of the funds rather than meeting any broader objectives.

However, the other 90% of enhancements funding was tied to programmes promoted by the Scottish Government which was responsible for developing the business case for these schemes. When we consider schemes such as Borders, EGIP, Airdrie-Bathgate and the Rolling Programme of Electrification, the rail industry had relatively little input into the business cases for these schemes beyond advising on their cost and programme.

B.01.03 How well did this arrangement work?

The Periodic Review enhancements process had some distinct advantages. Firstly, Network Rail was able to manage changes to enhancement programmes relatively easily because it could reschedule its debt at minimal cost.

Secondly, the existence of the Ring-Fenced Funds enabled the industry to take advantage of the renewals programme in a reasonably (I would argue) proportionate and targeted way.

However, overall, the Periodic Review approach was not particularly transparent, firstly because the “RAB” mechanism was opaque to those not employed within regulation and, secondly, because the industry was not involved in developing the business case for 90% of rail schemes by value and had no real sight of them or influence on them.

B.02 Network Rail as an Arm’s Length Public Body (2014-present)

In September 2014 reclassified as a public sector organisation¹. Following this reclassification, it was agreed that Network Rail would be financed in future on a grant funding basis in the same way as Highways England is managed and, perhaps more pertinently, how British Rail had been financed prior to rail privatisation.

This is significant, because one of the criticisms of investment under British Rail was that it tended to have quite a short-term focus as a business. So, while significant investments were delivered in Scotland by BR (ECML electrification, Argyle Line reopening, introduction of Sprinter rolling stock), the risks on these projects had to be managed within BR’s annual budget and that sometimes had an impact on the level of services provided.

B.03 The CP5 Reviews

Another driver of change in how railway enhancements are developed and delivered is the problems relating to the England & Wales CP5 enhancements programme, especially Great Western Electrification.

¹ It was eventually designated as an Arm’s Length Public Body owned by HM Treasury but with this ownership vested in the Department for Transport

The reviews were clear of the requirement for a clearer demarcation of roles between the industry and its funders in terms of:

- What benefits enhancements would deliver;
- What enhancements could be delivered (and at what cost);
- Ensuring that the level of advice on cost and scope is consistent with the funding commitment being requested;
- That funding decisions should be driven by maturity of development rather than an artificial regulatory timetable; and
- Accountability of funders (democratic accountability) and the advisory role of industry (accountability for providing high quality independent advice)

Following the reviews following on from the GWEP episode², the DfT announced a Memorandum of Understanding with Network Rail for England and Wales. This specified that Network Rail should be responsible for developing business cases for rail enhancement projects rather than the Department for Transport, and that these business cases should follow the Five Case Business Case Model and progress through an investment “pipeline”.

Part C: The Capital Investment Strategy

C.01 Problem statement

The fundamental problem that the CIS has to address is how can investments be made which efficiently reflect the Scottish Government’s long-term strategic vision for the railway in Scotland in a world where in-year capital spending has to marry up with in-year budgeted capital spend.

C.02 Key features of the Capital Investment Strategy

The Capital Investment Strategy³ was published in February 2018 following the publication of the HLOS and SoFA in June 2017.

² Hendy, Bowe and Shaw

³ <https://www.transport.gov.scot/media/41836/rail-enhancements-and-capital-investment-strategy-15-march-2018.pdf>

It stated⁴ that future rail enhancement projects would will be prioritised according to the following criteria:

- the ability to derive maximum utility from the existing network through whole industry measures that can make best use of existing railway assets, fully exploiting timetable/service-based opportunities and rolling stock options
- the ability to derive maximum utility from the existing network from opportunities (such as asset renewals or timetable exercises), fully exploiting these to ensure maximum value for money
- efficient and affordable, targeted investment in our infrastructure, in the right location and at the right time centred around whole industry measures to unlock additional capacity on the network
- targeted investment to help reduce inequality and increase inclusive economic growth

The key features of the process for investing in rail enhancements are a three-stage “pre-pipeline” and “pipeline” business case-led process comprising Strategic Business Case, Outline Business Case and Full Business Case. The role of each business case is illustrated in Figure 1 below

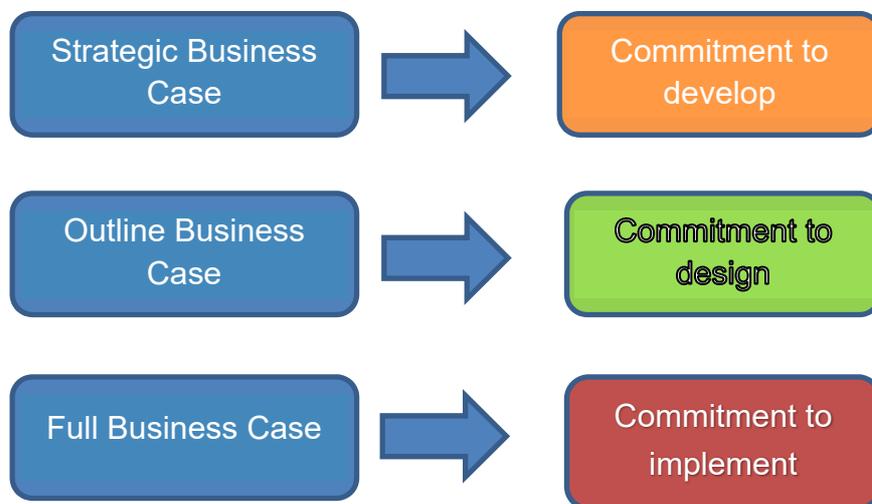


Figure 1: The business case process

⁴ Note that TS has a notional budget for rail enhancements even though this budget is potentially contestable from other parts of transport budget and other non-transport areas

C.03 The pipeline process

The pipeline process is necessary for two reasons: firstly, because of the need to avoid making decisions to proceed before project scope has reached maturity. Secondly, because under annual grant funding, there needs to be greater certainty around delivery costs and timescales than was necessary under the RAB regime.

C.04 Pre-pipeline projects

The initial five pre-pipeline projects under consideration are:

- Growing Lothian and the Borders;
- Edinburgh Waverley Western Approaches;
- East Kilbride Capacity Enhancements;
- 7 Cities: Perth to Glasgow; and
- Scotland East Scotland To England Connectivity

To a greater or lesser degree, all these projects emerged from the Scotland Route Study (SRS) ⁵ in 2016 and were based on capacity and connectivity deficits that had emerged when future policy aspirations were compared to the capability of the network in Scotland.

The connectivity conditional outputs drew heavily from the STPR, but it is important to note (a) that the SRS had a narrower remit than SBCs and (b) that way that the schemes have developed has not necessarily meant that there is a 1:1 mapping between them and the STPR projects.

C.05 Case Study: the East Kilbride Capacity Enhancements Programme SBC

The East Kilbride Rail Corridor connects Scotland's largest and sixth largest urban centres and is a particularly important commuting corridor into Glasgow. It is particularly heavily used during peak periods and has been highlighted in recent years as one of the most crowded rail routes in the country.

Rail passenger demand has grown by over 50% in the last ten years on the corridor and land use plans suggest the potential for significant future growth in the medium and longer terms if capacity on services can be enhanced. On-train capacity is constrained by the existing railway infrastructure, both in terms of train length and service frequency.

C.05.01 Application of STAG

⁵ <https://cdn.networkrail.co.uk/wp-content/uploads/2016/11/Scotland-Route-Study.pdf>

The most challenging part of the process for the project team (and for all our project teams) has been the pre-appraisal stage. The East Kilbride example is a relatively simple scheme in that it is (a) a fairly short, well-defined corridor (b) a fairly well-defined transport problem (on train crowding).

Given that the majority of the likely land use changes are likely to occur at the East Kilbride end of the route and that bus journey times were not competitive at this end of the line, it was agreed that a multi-modal appraisal would not be proportionate in this instance.

In terms of opportunities, the main opportunities related to the potential for growing the public transport market along the corridor by increasing service frequencies and improving end-to-end journey time reductions if the line is electrified.

Significant effort went into developing a single Transport Planning Objective for the project, which was:

“Under normal operating conditions⁶ enough seats are provided for passengers to sit down within 10 minutes of boarding⁷ in 2023 and across the subsequent 20 years.”

C.05.02 Option development

A whole-system approach was taken to the generation of options, consistent with the CIS investment hierarchy. This approach determined the enhancements to train services required to deliver the passenger capacity objective, from both a rolling stock and timetable perspective, and then determined the infrastructure enhancements that would be required to facilitate those train service enhancements.

The resulting options consist of a number of core elements, in varying combinations, which can be delivered as staged strategies. Those elements are:

- Increased on-train capacity through operation of higher-capacity and longer trains (facilitated by platform extensions)
- Increased train service frequency (facilitated by double tracking of the single-line section and in some cases electrification)
- Enhanced train performance, suitability (i.e. rolling stock appropriate for a commuter service in terms of seating layout and door location) and environmental characteristics (facilitated by electrification)

C.05.03 Modelling considerations

⁶ A typical weekday, with no significant perturbation or other events impacting on passenger demand for services

⁷ As defined in the ScotRail franchise, across the morning and evening peak two-hours

The modelling approach developed for this project reflected (1) the overall timescales agreed with Transport Scotland and (2) the specific requirements of the project. In particular, the nature of the project was such that relatively small timetabling changes were the primary timetabled output, moving from an uneven interval timetable to a clockface timetable.

This made the Strathclyde Regional Transport Model (SRTM) unsuitable for comparing options and the timetable-based MOIRA modelling methodology was deemed appropriate. The SRTM may become more useful when developing and comparing options at OBC where more information about car parking capacities and footfall at individual stations will be required.

In addition to demand modelling, a great deal of effort was put into understanding the cost structures of different potential strategies, in particular between electrification of the route and retaining diesel traction (whilst taking cognisance of emerging alternatives to these technologies) and example of which is illustrated in Figure 2 below.

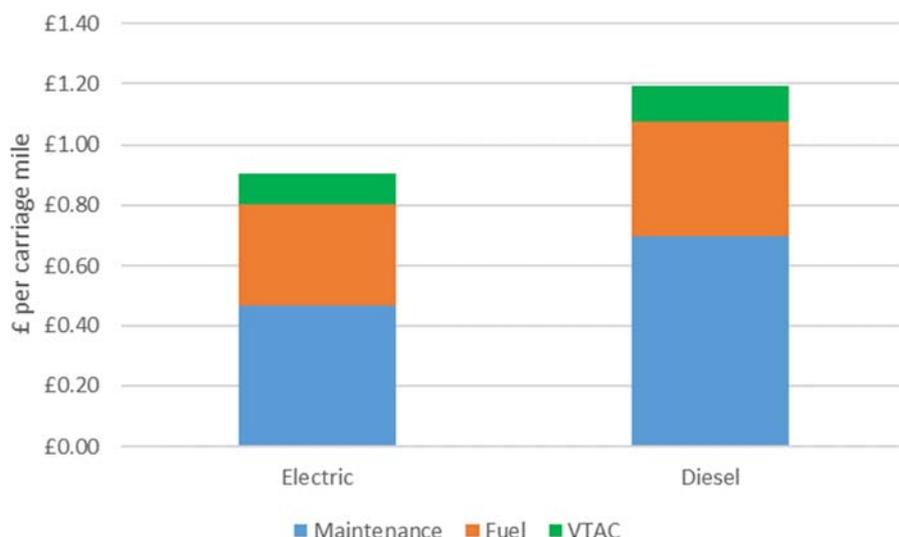


Figure 2: Electric and diesel variable costs per carriage mile

C.05.04 Outcome

The East Kilbride Capacity Enhancements Programme is first of business cases to have gone through the CIS process from start to finish, and its progression through to the enhancements pipeline was confirmed last week by the Cabinet Secretary.

Part D: What does the Capital Investment Strategy deliver for transport users?

Three other schemes are due to complete the process in the coming months, and the rest of the document is given over to my view on how the CIS could potentially support improved outcomes for rail users and the wider economy.

D.01 Embedding STAG principles in the development of rail enhancements

Without doubt, embedding STAG into the industry's thinking has been challenging because it brings with it a mindset which most people within the wider rail industry in Scotland (including within Transport Scotland) have not been exposed to in recent years: that is, to focus on the end rather than the means.

For our project sponsors the new process has been the first time many of them have had a line-of-sight of the ultimate rationale for their projects and this has increased the value that they believe they can add through their work: i.e. they believe that STAG is helping them develop better projects.

D.02 Improving the evidence base for rail enhancements

The Capital Investment Strategy is focussed, firstly, on ensuring that decisions to develop and deliver rail schemes are based on the best available evidence and, secondly, that investment decisions should not be made before projects have reached the level of maturity required for the evidence base to be high quality.

Improving the evidence base for projects means you have to be open to challenge and being open to challenge usually, in my experience, leads to better projects.

This "Team Scotland" culture of mutual challenge has led us to broaden the focus of our business cases from the economic case; it has also enabled us to challenge in areas such as demand modelling to ensure that a particular modelling strategy is to suit the problem at both a project and a portfolio level.

D.03 Putting the focus on end users

As transport professionals it is essential that we remember that passengers and freight customers don't use rail infrastructure enhancements: they use train services. It is therefore vital in early stage development, where train services will essentially be a list of

assumptions in a spreadsheet, that these plans are able to mature into actual timetabled train services, where suitable rolling stock has been identified and where the environment at stations along the route in question and the parking at stations have been thought about as a coherent public transport offering.

Where this is the case, it should minimise the disruption for passengers and ensure that it is clear to passengers what the disruption necessary to deliver this is for. The Capital Investment Strategy has the potential to deliver this because the industry has been involved it is accountable for what will be developed and delivered.

D.04 Programmes and corridors, not projects and locations

The Capital Investment Strategy provides a means to develop and deliver large programmes of work over medium to long term. All of the projects currently under development have a significant capital cost⁸, and may well be delivered over the next three control periods (i.e. up to 2034).

These programmes enable and require a coherent long-term vision for key rail corridors to develop and to evolve over time. Thus, while some elements of these programmes will proceed more rapidly through the business case process than others, and while the strategic and economic cases for the programme may evolve over time, they will be tied to a consistent vision of what the railway is for and what it can deliver.

This long-term, programme-based approach will again benefit rail users because it will mean that large projects can be delivered in a more controlled way minimising the risk of the timetabling problems that passengers have recently been exposed to and of projects being delivered which do not deliver what passengers and freight customers need.

D.05 Delivering a more efficient industry

Infrastructure schemes tend to take a long time to develop and delivery can be subject to significant risk (for instance, possessions being cancelled at short notice because of weather conditions etc). This is a significant risk in a grant funding world where underspends can be as problematic as overspends, because the larger the amount of work being delayed, the harder it is to bring another piece of work forward bridge the gap and prevent an underspend in one year and an overspend the next.

The later stages of the business case process, which highlight commercial and management project risks, mean that decision-makers are better sighted about the risks in an individual project and at a portfolio level. This should mean that (a) there should be fewer late deliveries of projects (b) the risk of grant funding leading to underspends followed

⁸ For example, the Seven Cities capital cost estimate is in excess of £1bn

by overspends is significantly reduced and (c) a more efficient and sustainable programme of enhancements being delivered than would otherwise be the case.

This is important for passengers and freight customers, because they tend to question the industry’s value-for-money⁹, and any industry where this happens is likely to be in trouble.

D.06 Supporting a broader economic and social role for the railway in Scotland

My experience of developing business cases to support the allocation of Network Rail’s Ring Fenced Funds was that the case for enhancing the railway could not be boiled down to a comparison of Benefit:Cost Ratios and Net Present Values because that is not the reason why governments invest in the railway: the case for the railway is wider than a simple compensation test.

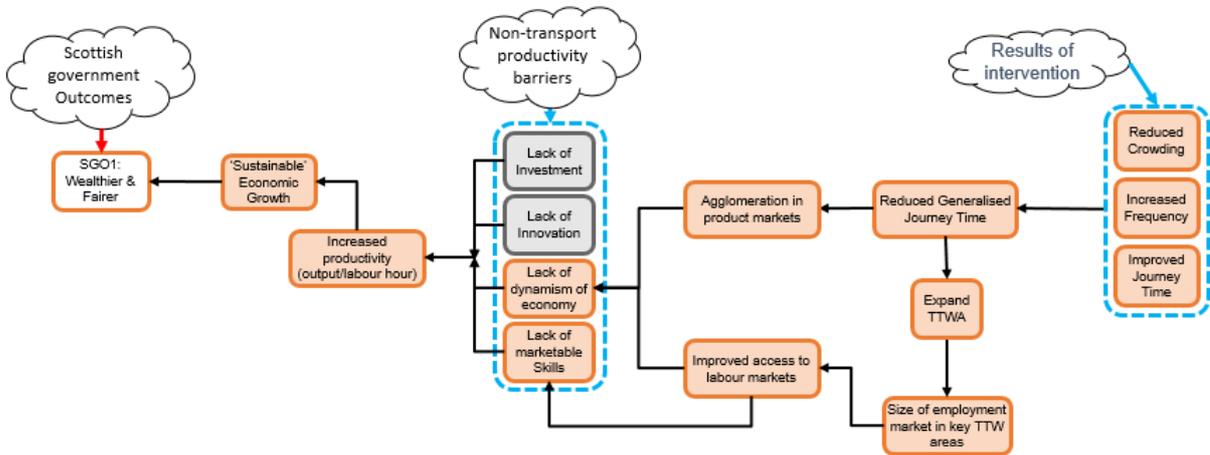


Figure 3: Logic chain of Wider Economic Impacts

Network Rail’s role of developing Strategic Business Cases for the pre-pipeline schemes has reinforced this, and has pushed the industry in Scotland to start thinking in terms of how transport more generally supports economic growth and social inclusion rather than focussing on narrow regulatory outputs or franchise commitments.

A key part of our development work has been to map out exactly how we believe the projects we are developing deliver against the Scottish Government’s objectives. This has not only helped our development teams focus on why they are working on a project; it also enables the industry to challenge when it believes rail outputs are not consistent with social and economic outcomes.

⁹ Transport Focus

Part E: Learning points

The Capital Investment Strategy is a new process, and `conclusive evidence on what it has delivered for Scotland will take some years to emerge.

Also, like all new processes, it will take time to bed down. Mistakes will be made, but the key issue for me is that “Team Scotland” (the collective term we use for Transport Scotland and the rail industry) needs to acknowledge and learn from these for the process to reach its potential. An Industry Steering Group has been set up to review this.

1. Introducing a fundamental change like the CIS at pace when there are a lot of competing claims on both the Scottish Government’s time (Brexit) and the industry’s time (delivering the CP5 enhancements programme) has been challenging for the industry and Transport Scotland. In order to address this challenge, a balance has had to be struck between the need to develop strong strategic and economic cases whilst ensuring that the supply chain is able to plan effectively. This flexibility (a “Team Scotland” approach) needs to be embedded in the process as it develops.
2. The industry has until now focussed on the need for a compelling economic case rather than on a broader strategic and economic case. The case for transport is always broader than the picture that cost-benefit analysis helps you paint and the industry needs to embrace this.
3. The CIS is not clear about the identity of the promoter at the pre-appraisal stage and this has the potential to cause unnecessary confusion: it is easy to map these things out on paper, but harder to pin down in real time when trying to follow the process.
4. Rail schemes often have a level of complexity in terms of phasing – and therefore benefits realisation – which are not as pronounced in other modes. This makes the business case process itself a risk, as delays getting one project through the stage gates can have impacts on the business case of other projects.
5. The learning curve for the industry has been substantial for everyone involved in Team Scotland. Even though Network Rail has led the development of the pre-pipeline schemes, the consultancy input we have had both in terms of modelling and peer review from the consultancy market in Scotland has been invaluable and will support the development of stronger business cases going forward.