The Transpennine Route Upgrade Programme

Department for Transport and Network Rail

Key facts

£1bn

spent on the Transpennine Route Upgrade Programme (the Programme) between 2011-12 and 2021-22 (cash prices)

£9bn to £11.5bn

Department for Transport's (the Department) range estimate of the full cost of the Transpennine Route Upgrade Programme (cash prices as at May 2021)

2036 to 2041

estimated delivery date for the full programme (as at May 2021)

2011	year the Department first developed a plan to upgrade the Transpennine route
4 out of 12	core projects in the Programme are at an early stage of development
£190 million	Network Rail's estimated spend on design and development of options not taken forward
5 key outcomes	as of November 2021, the Department's planned outcomes for the Programme are:

- **better punctuality:** infrastructure to support a 50% reduction in average minutes late for passenger services (compared with service performance before the COVID-19 pandemic);

- **enhanced passenger capacity:** one additional fast or semi-fast passenger service and one additional stopping passenger service per hour between Manchester and Leeds;

- **faster journeys:** a 63- to 66-minute planned journey time between Manchester and York on the end-state route, down from 74 minutes on pre-COVID-19 services (saving up to 11 minutes);

- **improved environment:** up to 87,000 tonnes a year possible reduction in carbon emissions from electrification and a shift from other modes of transport to rail; and

- **facilitation of Northern Powerhouse Rail:** works to facilitate the future Northern Powerhouse Rail Programme

15%	Network Rail's cost-efficiency target against the Programme's total infrastructure costs

Summary

About the Transpennine Route Upgrade

1   The Transpennine route is a 76-mile-long rail link in the north of England, which connects Manchester in the west and York in the east via Huddersfield and Leeds. It provides the most direct rail link between Manchester and Leeds, as well as connecting smaller towns and commuter areas. In 2011, the Department for Transport (the Department) announced its intention to upgrade the route. Network Rail, which manages the rail infrastructure in Great Britain, is responsible for delivering the upgrade.

2   In November 2021, the Department published its Integrated Rail Plan for the North and Midlands. This set out government's plans for delivering and sequencing major rail investment in the North and Midlands. One element of this plan is Northern Powerhouse Rail, through which government intends to significantly improve connectivity between the North's major economic centres. The Department announced that the Transpennine Route Upgrade Programme (the Programme) will now be delivered as phase one of Northern Powerhouse Rail. The Programme plans for full electrification of the route, additional track in some sections, new digital signalling, station upgrades, and works to increase the route's capability to carry freight.

3   The Department's outcomes for the Programme, as set out in its May 2021 Programme Business Case and confirmed in line with its Integrated Rail Plan, are to provide:

- **better punctuality:** infrastructure to support a 50% reduction in average minutes late for passenger services (compared with service performance before the COVID-19 pandemic);

- **enhanced passenger capacity:** one additional fast or semi-fast passenger service and one additional stopping passenger service between Manchester and Leeds;

- **faster journeys:** a 63- to 66-minute planned journey time between Manchester and York on the end-state route, down from 74 minutes on pre-COVID-19 services (saving up to 11 minutes);

- **improved environment:** up to 87,000 tonnes a year possible reduction in carbon emissions from electrification and a shift from other modes of transport to rail; and

- **facilitation of Northern Powerhouse Rail:** works to facilitate the future Northern Powerhouse Rail programme. The Department considers that the programme will support economic growth and 'levelling up' in the region, as well as decarbonisation of transport through the electrification of the route.

Scope of this report

4 The Department and Network Rail have been considering upgrades to the Transpennine route for more than 10 years but, until the Integrated Rail Plan in November 2021, the Programme did not have a fully agreed scope and remained in design and development. As the Programme moves into a period of construction that extends into the 2030s, we have considered whether the Department and Network Rail are in a position to deliver the upgrade successfully. Ahead of the next business case update in December 2022, this report examines whether the Department and Network Rail:

- have a clear case for investment and a Programme scope that addresses the identified needs of the route (Part One);

- are ensuring that the Programme is appropriately set up at this stage to deliver successfully (Part Two); and

- are effectively managing the current challenges to the Programme to achieve value for money (Part Three).

5 This report does not examine the government's strategic approach to major rail upgrade programmes as set out in the Integrated Rail Plan for the North and Midlands. Where we do consider other rail programmes, such as Northern Powerhouse Rail, it is in relation to the delivery of the Programme. We set out our audit approach and our evidence base in Appendix One.

Key findings

Investment case and Programme scope

6   The Department has developed a clear case for investment on the Transpennine route. The route connects important areas of the economy in the north of England. However, the infrastructure on the route does not support the current demands for passenger and freight journeys. In the decade prior to the COVID-19 pandemic, the number of annual passenger journeys provided by TransPennine Express and Northern Rail, the two main passenger train operators running services on the Transpennine route, increased by 29%, from 106 million in 2009-10 to 137 million in 2019-20. This resulted in overcrowding of trains and platforms at peak times, and the Department reported that only 38% of trains on the route were on time in 2019. In 2017, the Department concluded that, without improvements, the infrastructure would continue to cause day-to-day problems for passengers and present a barrier to economic growth in the region (paragraphs 1.3, 1.4 and 1.6).

7   The Department has taken too long to decide how to upgrade the route. In 2011, the Department set out plans for electrification of the Transpennine route, which it intended to complete by 2019, to reduce rail industry operating costs and carbon footprint by moving from diesel to electric trains. Work began in early 2015 but was paused so that the scope of the upgrades could be revised to address issues with track capacity. Since 2017, the fundamental need for improved journey times, passenger capacity and decarbonisation has not changed but the Department has repeatedly altered the scope of the Programme to meet differing ministerial priorities and budget constraints. The Department failed to settle on a scope, switching between preferences for options which deliver to varying extents: electrification, digital signalling, additional track, station improvements, and changes to support the transport of different types of freight (paragraphs 1.5 to 1.7 and Figure 2).

8   The Department has now provided greater certainty over the Programme, including agreeing a scope with the potential to address the route's infrastructure issues. In its Integrated Rail Plan in November 2021, the Department set out its commitment to the Programme on both scope and funding as a core element of delivering its plan for rail in the North and the Midlands. The scope includes additional track which will increase capacity for train services and is expected to improve journey reliability. In addition, the Integrated Rail Plan set out that the Programme will be delivered as phase one of Northern Powerhouse Rail. The government's commitment to the Programme's long-term vision and scope reduces the risk of further scope change going forward. The Programme now includes additional construction work to enable Northern Powerhouse Rail and avoid multiple periods of disruption on the same sections of the route. As at May 2021, the Department estimated the total forecast cost of the Programme will be between £9 billion and £11.5 billion in cash terms and that it will be completed between 2036 and 2041 (paragraphs 1.8 to 1.10 and Figure 2).

9   Between 2011-12 and 2021-22, Network Rail spent £1 billion on the Programme, of which an estimated £190 million has been spent on work no longer needed as a result of changes in the scope. The majority of the total spend was incurred from 2020-21 onwards as Network Rail started construction work that would have been necessary under any scope. The changes in Programme scope and outcomes have, however, meant that some design plans and project options were developed but not used. Network Rail estimates that it spent £190 million on such work (paragraphs 1.12 and 1.14).

How the Programme is now set up to deliver

10   The Programme will be challenging for the Department and Network Rail to deliver, given its increased scale and complexity, with projects at varying stages of maturity. The Programme is Network Rail's largest rail upgrade scheme. Network Rail has split the Programme into 12 core projects, alongside additional enabling works, which are at different stages of development, design and construction. The four projects to facilitate Northern Powerhouse Rail are at a much less advanced stage than other parts of the Programme. The Department will not approve the full business case until 2024, with interim approval in December 2022 to seek funding for the next stage of each project. At these decision points, the Department will need to be comfortable that it can approve the Programme as a whole to proceed against the remaining uncertainty in design and costs from projects that are still immature (paragraphs 2.2 to 2.4).

11   The Department and Network Rail are putting in place governance structures that should enable them to manage the Programme more effectively, but this will be tested by upcoming decisions that require trade-offs. Reviews by the Department and the Infrastructure and Projects Authority (IPA) in early 2021 raised concerns about the adequacy of governance arrangements following the Programme's increased size. In response, the Department and Network Rail adopted new arrangements, including a new operating model, that should enable the Programme to be managed separately as a major programme rather than as a typical rail upgrade. They should also support more effective decision-making by involving the key stakeholders who are essential to the Programme's success, including contractors, and train and freight operators. However, these new arrangements are still being put in place and will require a high-level of collaboration to be effective. For example, the Programme will need to make trade-off decisions between competing factors of cost, efficiency and disruption in its scheduling of track construction works, and stakeholders will have different requirements (paragraphs 2.5 to 2.9).

12   **Network Rail entered into its main commercial arrangements with contractors before the scope was settled but they remain appropriate for this stage of the Programme.** Main delivery of the Programme is contracted through two 'alliance' frameworks, which bring together Network Rail and contractors to work together on design and construction, and to share the risks and benefits. Network Rail set up one alliance in 2015 and the other in 2017, but since then the scope and scale of the Programme has changed. An IPA review in early 2021 found the arrangements appropriate overall for the stage the Programme is now at and the key risks it identified at the time regarding the need for a fixed scope and stable funding have since been addressed. However, Network Rail has needed to separately contract out the new digital signalling element, as this was outside the agreed alliance frameworks. Such work with new contractors adds to the integration challenges on the Programme (paragraphs 2.15, 2.16, 2.18 and 2.19).

13   **Network Rail is planning Programme activity in such a way as to provide staged improvements for passengers – this will require effective joint-working.** Network Rail and its delivery partners are aiming to ensure that each stage of the work provides improvements to passengers as it is completed. This requires Network Rail and train operators to bring together changes to infrastructure, operations, rolling stock and timetabling that might otherwise be made without considering the interdependencies. This aims to avoid problems seen in other infrastructure programmes which have not been managed in a joined-up way. Network Rail expects to achieve the first stage of improvements for some journeys by December 2024 (paragraphs 2.11 to 2.14).

14   **Network Rail is applying lessons learned from other major programmes in its management and delivery of the Programme.** During the development of the Programme, Network Rail has drawn on lessons and good practice identified by the Department, the National Audit Office, other major infrastructure projects and experience on the Programme to date to identify 19 themes. The themes include areas we have highlighted on other programmes, such as a focus on promoting openness and transparency to avoid optimism bias. We have seen positive steps taken to incorporate lessons into the Programme and it will be important for this work to continue identifying learning that it can apply throughout the duration of the Programme (paragraphs 2.20 to 2.22).

Challenges for the Programme

Challenges specific to the Programme

15   The negotiations between Network Rail and operators to agree track access for carrying out construction work on the route will be difficult, and if not agreed on time, risk delaying the Programme. The Transpennine Route is an operational railway, and Network Rail must gain repeated access to the track for works, which will disrupt both train operators and the passengers and businesses who rely on the route. Network Rail has established a forum to agree track access arrangements with train and freight operators and manage the disruption, but agreeing access will be a key risk to the timetable throughout the Programme's delivery phase. The Programme will also need buy-in from local leaders, businesses and landowners to ensure timely consent for land access and development. Network Rail has had some early success with its initial application. Failure to obtain timely access and consent could lead to substantial delays in programme delivery and increased costs (paragraphs 3.3 and 3.4).

16   Passengers' awareness of the planned upgrades to the Transpennine route is low, which is a concern because of the disruption it may cause to their journeys. Until early 2022, Network Rail's stakeholder engagement was limited to a few specific places on the route ahead of early construction work. Research by Transport Focus in summer 2019 and Network Rail in spring 2022 found low awareness of the Programme from passengers and concerns about the disruption they would face. The long-term risk is that passengers may switch to other modes of transport to avoid the disruption during the works and not return to using the Transpennine route, reducing the benefits of the Programme. Network Rail is developing its communications approach with train operating companies and plans a large marketing campaign for autumn 2022. It is also implementing diversionary routes to minimise use of rail replacement bus services, which have historically been unpopular with rail users (paragraphs 3.4 to 3.6).

17   The Department has yet to commit funding for rolling stock that is critical for delivering the full benefits. Running electric trains that are capable of using new signalling infrastructure is essential to achieving the full benefits of the upgrade. However, the existing system of rolling stock procurement means that funding and approvals are being sought separately from the rest of the Programme. The Department has yet to commit funding for rolling stock as it will need to consider this as part of its wider budgeting decisions for rail services. Until the funding is committed there is no certainty that rolling stock will be funded to the level needed to achieve the benefits of the Programme. The Department and Network Rail are currently developing a strategy for rolling stock on the Programme (paragraphs 3.15 and 3.16).

Challenges common across major programmes

18   It is not clear how the Department and Network Rail will manage the cost of inflation. Material and energy costs are rising sharply, as is demand from other infrastructure projects for the same skills needed to deliver the Programme, which may also increase cost. The Department and Network Rail have not yet agreed how and if they are able to manage additional inflationary pressures within existing budgets but they are working with HM Treasury to monitor and manage these pressures. It is also not clear if actions by Network Rail and supply chain contractors will be able to fully address the labour shortage. Network Rail is aiming to achieve at least 15% cost-efficiency savings (estimated at £1.5 billion) against the Programme's total infrastructure cost, a target set prior to inflationary pressures emerging, and has identified an estimated £1 billion to date of possible cost-efficiencies with contractors. Network Rail may have to deal with increased costs because of inflation by delaying work on the Programme, or by delaying or de-scoping other rail programmes (paragraphs 3.7 to 3.10).

19   The Department and Network Rail are at an early stage in planning for delivery of benefits, but we would expect them to have established how they will measure success. Our past work on major programmes shows the importance of developing and maintaining a focus on benefits throughout a programme and of building this into decision-making. We found that the Department and Network Rail:

- expect the Programme to achieve a range of benefits but do not yet have a full set of measures and baselines to assess whether they are on track to achieve these as the Programme completes. For example, they have a baseline for faster journey times but not, for example, carbon emissions (paragraphs 3.11 and 3.12);

- have yet to agree with other stakeholders, including other government departments, local government and train companies, who is accountable for delivering and measuring the benefits (paragraphs 3.11 and 3.13);

- have not assessed whether the design parameters set for the Programme in 2019 remain sufficient to ensure long-term resilience in light of climate change and increased frequency and severity of weather events in the region (paragraph 3.14); and

- have not yet determined how the Programme, as phase one of the Northern Powerhouse Rail programme, will be managed within this larger programme as it develops so that benefits and connections between them are fully aligned (paragraphs 3.17 and 3.18).

Conclusion

20 The Transpennine Route Upgrade Programme has had a difficult start, with the Department taking more than a decade to agree a scope. As a result, passengers will have to deal with delays and overcrowding on a route that is at full capacity for longer. The Programme, which is Network Rail's largest rail upgrade, is now in a good position to proceed with greater certainty following the Department's Integrated Rail Plan. There is now an agreed scope that should make a real difference to the users of the route and deliver wider benefits to the region if delivered successfully.

21 The Department and Network Rail are putting in place appropriate structures, such as revised governance and operating model, suitable for a major programme about to go into substantive delivery. However, these arrangements have yet to be tested and many of the changes are still a work in progress. There is still work to be done by the Department and Network Rail to manage key areas of risk and challenge, as well as planning to achieve the intended benefits, if they are to ensure the Programme is in a good position to secure long-term value for taxpayers' money.

Recommendations

a   **The Department and Network Rail should review their business case approvals strategy and how this will manage the uncertainty in design and cost from projects still at an early stage.** The strategy should include setting out what the focus of future update approvals will be to reduce the risk of scope changes being introduced back into the Programme.

b   **The Department and Network Rail should include in their next business case update in December 2022:**

- their rolling stock strategy for the Programme, including the level of funding required to achieve planned benefits, the expected funding commitment from the Department and the implications of any funding gap;

- an update on the effectiveness of its new governance arrangements and operating model and establish future review points for its governance and commercial arrangements;

- the likely extent of the financial risk posed by inflationary pressures and confirm how this will be funded and managed between the Department, Network Rail and HM Treasury;

- how they will incorporate the lessons learned they have identified from other major programmes into their management of the Programme; and

- how the Programme will be integrated with the wider Northern Powerhouse Rail programme.

c   **The Department and Network Rail should complete their development of metrics for evaluating the benefits from the Programme,** such as for reduced carbon emissions or interconnectivity across the region.

d   **The Department and Network Rail should agree with other government departments, local government and train operating companies who should have ownership in delivering and measuring the wider benefits of the Programme.** This should include agreeing with local authorities on how to improve passengers' end-to-end journeys and increase usage of the upgraded route.

e   **As part of developing its marketing campaign for passengers, Network Rail should set out how it will assess its success at informing passengers and addressing their concerns**. This should include metrics to monitor passengers' awareness of the Programme and how it will disrupt their journeys. It should also consider continued monitoring of how the disruption may affect future passenger uptake.