National Audit Office

Report
by the Comptroller
and Auditor General

Department for Transport and Network Rail

The Sheffield to Rotherham tram-train project: investigation into the modification of the national rail network

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Key facts

401%

increase in the anticipated final cost of Network Rail's modification works, compared with the budget agreed in May 2012

May 2018

current expected completion date for Network Rail's modification works, more than two years later than originally expected.

2

the number of times the Department for Transport assessed whether to continue with the project

£15 million the budget agreed between the Department for Transport and Network Rail in May 2012. Network Rail initially estimated costs of £18.7 million but thought efficiency savings were possible

£75.1 million Network Rail's anticipated final costs for the national rail modification works, as at June 2017

2.5 years the expected delay in completing the tram-train scheme. The Department originally expected the scheme would be completed by December 2015. In October 2013, Network Rail reset the project timetable following integration of its project with the tram-train vehicle procurement project. It expected to complete its works by March 2016.

1.0 the benefit–cost ratio for the programme when it was approved in May 2012. The business case was based on benefits to local transport users. The Department approved the project on the basis of the 'strategic' business case. Wider industry and economic benefits were considered 'very uncertain'

0.31 the Department's estimated benefit–cost ratio – based on the local public transport case – as at October 2016

What this investigation is about

1 The Sheffield to Rotherham tram-train scheme is intended to provide the first transport service in the UK to use both the street tramway and national rail network. The Department identified that tram-train schemes offered the potential to reduce the cost of transport services and create growth by improving access to city centres, but that such schemes could pose complex technical and delivery challenges.

2 In 2009, the Department for Transport (the Department) announced a pilot project to trial the technology in the UK and assess the potential to extend it to other cities. It wanted to test the operational issues and costs of running tram-trains from the national rail system onto the tramway, and to develop new industry standards. This was the first project of its kind in the UK and required Network Rail to test and secure industry approvals for a number of technical components, including track, signalling, and power configurations.

3 The Sheffield to Rotherham programme involves modifying the existing national rail infrastructure, modifying the tram network and depot, and purchasing vehicles capable of operating on both networks. Three main bodies are involved:

- Network Rail is responsible for the infrastructure project to modify the national rail network to allow tram-trains to run. It designed and is managing the works to modify the national rail tracks, signalling and stations.
- The Department approved the tram-train project and is responsible for overseeing the project and setting the requirements for the tram-train service. It provided part of the funding for Network Rail's works. It also provided most of the funding to purchase the tram-train vehicles and modify the tram network, via two capital grants.
- South Yorkshire Passenger Transport Executive is responsible for modifying the tram network and buying the new tram-train vehicles. It also provided part of the funding to buy the vehicles and modify the tram network.

Stagecoach Supertram, which holds the concession to operate the tram network, is preparing to introduce the new vehicles on the existing tram system and will work with Network Rail to introduce the vehicles across the whole tram-train route when it becomes available. Our report focuses on the modification of the national rail network, which the Department part-funded and Network Rail managed.

4 In May 2012, when ministers approved the programme, the Department expected Network Rail's modification of the national rail network to cost £18.7 million and the tram-train scheme to be completed by December 2015. By December 2016, the cost of these works had quadrupled to £75.1 million and Network Rail's project is now expected to be completed in May 2018. This investigation covers:

- the Department's decision to approve the project;
- cost increases on the national rail infrastructure works and the Department's decisions to continue the project; and
- plans for realising the project's aims.

This investigation does not look at the modifications to the tram network or the procurement and testing of the tram-train vehicles. These are managed by bodies which fall outside the National Audit Office's remit.

5 The report is based on documents received from the Department and Network Rail, interviews with officials and information in the public domain. Our methodology is summarised in Appendix One.

Summary

Key findings

1 The pilot project aimed to test the viability of operating tram-trains in the UK. The Department for Transport's (the Department) approval was based on the wider strategic benefits of rolling out schemes to other cities. The Department wanted to introduce a new service in the UK to reinvigorate under-used rail lines, better penetrate city centre markets and release capacity at mainline railway stations. The Department and Network Rail agreed that a pilot project was the best way to test whether the tramway technology could be extended onto national rail lines, and to develop new industry standards.[1] The project's aims were to test the costs and operational issues of the tram-train technology, and capture this information to assist promoters of similar schemes (paragraphs 1.3 to 1.6).

2 The Department accepted the project's wider financial benefits were uncertain. The business case for the proposed tram-train scheme was based on the benefits to local transport users, such as reduced journey times. The benefit–cost ratio (BCR) of 1.0 fell into the Department's 'low' value-for-money category, using its standard criteria for assessing transport projects.[2] The Department considered the wider benefits of the pilot, such as lower industry costs and economic benefits, to be 'very uncertain'. In May 2012, HM Treasury approved the project "on an exceptional basis" to allow a more detailed evaluation of the value-for-money of tram-train schemes (paragraphs 1.9 to 1.13).

3 The Department and Network Rail initially agreed a budget of £15 million to modify the national rail infrastructure. In May 2012, Network Rail estimated the project would cost £18.7 million but expected to make efficiency savings that would reduce costs to £15 million. The Department added the project to Network Rail's 2014–2019 rail investment programme. Network Rail was an independent body at this time and intended to fund the works within its permitted borrowing limit (paragraphs 1.14 and 1.15).

1 The project aimed to test the viability and cost of providing a new service on national rail and tram networks. These have different track, signalling and power configurations.
2 The Department categorises projects with a benefit–cost ratio of less than 1.5 as 'low' value for money.

4 **On 14 November 2014, Network Rail reported that costs had increased to £44.9 million, an increase of 199% against budget.** During detailed design work, Network Rail found the planned works were more complex and the condition of existing assets was worse than initially expected. In July 2012 the Department announced the national rail line would be electrified after 2019, and asked Network Rail to extend the project's scope as additional works were needed to adapt the tram-train service (at an estimated cost of £5 million)[3] (paragraphs 2.5 to 2.6).

5 **The Department gave approval for the project to continue in order to achieve the pilot's objectives.** On 28 November 2014 the Permanent Secretary concluded the project's rationale had not changed – it was a pilot to test the issues, costs and opportunities of introducing the tram-train concept in the UK. He also recognised that cancelling the project would cause reputational damage. The Department did not recalculate the impact of cost increases on the BCR, but acknowledged that this would reduce (paragraphs 2.8 and 2.9).

6 **The Department agreed to provide cash funding, capped at £45.3 million.** Before September 2014, when the Office for National Statistics reclassified Network Rail as a public body, Network Rail was able to finance efficient cost increases on projects within its permitted borrowing limit. Following reclassification, the Department capped the amount Network Rail could borrow.[4] As Network Rail had incurred cost increases on its rail investment programme, it could no longer fund the tram-train project in this way. In June 2015, the Department agreed to provide cash funding for all of Network Rail's national rail modification works in the 2014–2019 rail investment period (paragraphs 2.10 and 2.11).

7 **In 2015, the Department introduced new arrangements to strengthen its governance of the project.** In April 2015, a review commissioned by the Department identified concerns with the way the project was set up and governed. Some of these concerns focused on the way Network Rail had managed the design phase; for example, the lack of specialist expertise and the integration with other parts of the programme. The Department brought the project into line with its revised governance arrangements for overseeing Network Rail projects and appointed a senior responsible owner (paragraphs 2.12 and 2.13).

8 **In June 2016, Network Rail reported that forecast costs had risen further, by up to £25 million (to £73.6 million): a cumulative increase of nearly 400% against the original budget.** Network Rail established that the works were more complex than it anticipated at the design stage, that it had incurred additional costs in dealing with the condition of assets and the technical innovations required more time than originally expected. At the start of the project, Network Rail did not have a full understanding of the costs, and revised its forecasts as it identified the technical challenges involved in testing the technology (paragraphs 2.15 and 2.16).

3 In July 2012 the Department announced the Sheffield to Doncaster railway line would be electrified in the next rail investment period, starting in 2019. Network Rail added to the works so conversion between power supplies could be done with minimal disruption. The current status of this electrification project is unclear.

4 Following reclassification in September 2014, the Department agreed a capped loan facility for Network Rail to borrow directly from government.

9 **In July 2016, the then Permanent Secretary recommended stopping further work on the project.** The Department's Rail Investment Board, with the endorsement of the Permanent Secretary, recommended stopping the project as many of the lessons of using tram-trains in the UK had already been learned. The Board stated that this would release at least £20 million from the Department's budget but the majority of the £25 million already spent by Network Rail would be lost. The Department did not prepare or request a revised business case at this point (paragraphs 2.17 and 2.18).

10 **The Rail Minister did not accept the Accounting Officer's recommendation and asked Network Rail to meet the funding shortfall.** In addition to the option to cancel the project, the Board presented the Minister with three options to continue. In September 2016 the Minister gave his approval for the project to continue but without increasing the departmental funding cap. Instead, he asked Network Rail to propose alternative funding solutions. The Minister's decision was based on the need for the lessons learned from a fully completed pilot to be available for the development of further schemes. The Accounting Officer did not seek a ministerial direction. In October 2016, the Department re-calculated the BCR to provide assurance that the decision could be defended on value-for-money grounds. In line with HM Treasury guidance, it calculated the BCR of remaining works was 1.49, when treating committed expenditure as a sunk cost. It also recalculated that the BCR of the whole scheme had fallen to 0.31, in terms of the local public transport case (paragraphs 2.19 to 2.21).

11 **Network Rail agreed to fund the remainder of the project.** It allocated £4.6 million from its renewals budget to address issues with the poor condition of existing assets. It proposed to complete the remaining construction works by re-prioritising funding from its wider enhancement programme and re-allocating approximately £21.9 million to the tram-train project. Network Rail reallocated funding that would not be spent before March 2019, the end of the funding period. The Minister endorsed the approach in March 2017 (paragraphs 2.22 and 2.23).

12 **The Department and Network Rail now expect the works to cost £75.1 million, an increase of 401% on the original budget.** Network Rail revised its plans in December 2016 and increased its estimate of project costs. It now expects to complete the works in May 2018, allowing the tram-train service to begin in summer 2018. As at June 2017, Network Rail had achieved a number of significant construction milestones, including installing new track, the power supply and a tram-train platform at Rotherham Parkgate. It also changed the way it is managing the project. For example, it appointed a project director, added new expertise to the project team and created a new schedule of works (paragraphs 3.2 to 3.4).

13 **The Department and Network Rail have learned lessons from the pilot but it is too early to determine whether the project will realise the wider strategic benefits.** The Department and Network Rail have begun to capture the operational issues involved in using tram-trains in the UK and have, for example, established new technical standards for the signalling. Network Rail has shared lessons learned with other tram-train promoters. The Department has not yet evaluated the value for money of the pilot project or the extent to which it will reduce the costs of introducing similar schemes in other cities (paragraphs 3.6 to 3.11).