National Audit Office

Report
by the Comptroller
and Auditor General

Department for Transport

Lessons from major rail infrastructure programmes

HC 267 SESSION 2014-15 29 OCTOBER 2014

Key facts

£3.6bn to £21.4bn

range of actual or forecast construction costs of the rail infrastructure programmes we have examined (costs are in different price bases).

13 to 29 years

range of timescales the programmes have taken, or are forecast to take, to deliver, from planning to the start of operations.

5

significant rail infrastructure programmes in the UK since 1998 from which we have developed these lessons.

9 to 10 years	of actual or forecast construction phases for these programmes.
3 to 9	new or substantially remodelled stations in each programme.
2.1:1 to 1.4:1	range of benefit–cost ratios for recent rail programmes at the time the Department approved them to go ahead, the higher ratio was for Thameslink and the lower for High Speed 2.
355 km	of planned and completed new UK rail lines built since 1998 in the High Speed 1, Crossrail and High Speed 2 programmes.
1,255 km	of existing rail lines which have or will be transformed in the West Coast Mainline modernisation and Thameslink programmes.

Summary

Introduction

1 The Department for Transport (the Department) sponsors a number of significant rail infrastructure programmes with which it aims to deliver improved transport benefits to the public. These programmes are large in scale and complex, with construction either expected to, or having taken, 9 to 10 years, and cost up to £21.4 billion. The NAO and Committee of Public Accounts reported on five of these during the last decade, including the now completed Channel Tunnel Rail Link (later called High Speed 1) and the modernisation of the West Coast Mainline. We have also reported on the progress of Crossrail and Thameslink which are under construction, and High Speed 2 which is still being planned.

2 Our reports have focused on key issues and risks to future delivery covering: the business case; planning for delivery; securing funding; setting up delivery arrangements; construction; and the delivery of benefits and evaluation. We intend to revisit the three ongoing programmes (High Speed 2, Thameslink and Crossrail) as they progress.

3 This review looks at a number of issues that the Department has faced, as identified at the time of our reports, in sponsoring major rail infrastructure programmes, and sets out the lessons learned from its experience. The lessons will also be of interest to other departments which sponsor or invest in major infrastructure although they will need to be adapted to the specific circumstances of each programme.

4 To date we have not examined, and therefore do not comment upon in detail, the transition to running train services. We highlight where the Department has carried out further work following our reports, but we have not carried out additional audit work to evaluate the Department's progress for this review. We are likely to examine these areas when we revisit the three ongoing programmes.

Our report

5 Overall our reports reflect an improvement in the Department's sponsorship of major rail programmes. It took over responsibility for oversight of programmes following the abolition of the Strategic Rail Authority in 2005. This marked a change in the Department's role because, prior to that point, it had taken an arm's-length role on programmes which were largely delivered and overseen by the private sector.

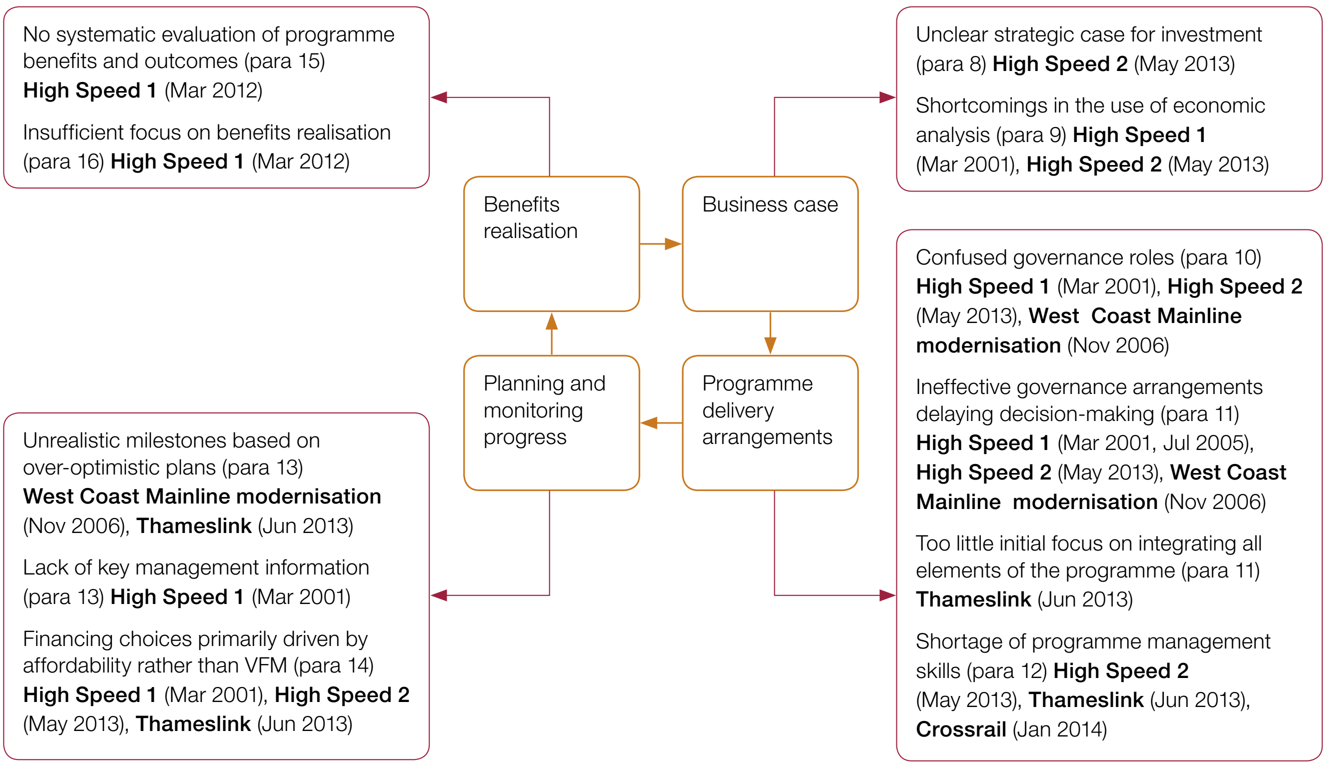
6 In Part One we summarise the five rail programmes and the scope of our reports from which these lessons are drawn. **Figure 1** shows issues the Department has encountered, identified from past NAO reports on individual programmes arranged according to the programme management cycle. As this report shows, the Department has responded to many of these issues. The remaining parts of the report describe the Department's progress against these issues in four main stages in the cycle:

- business case (Part Two);
- programme delivery arrangements (Part Three);
- planning and monitoring progress (Part Four); and
- benefits realisation (Part Five).

Figure 1

The Department's past programme management issues

The report shows that the Department has responded to many of these issues



Note

1 This figure shows the NAO conclusion at the time of our report as given in brackets.

Source: National Audit Office analysis

7 We summarise below the lessons from the Department's experience with the issues we have identified.

Business case

8 Clear strategic objectives are needed to build support for a programme. The Department's objectives for programmes such as High Speed 1 and High Speed 2 go beyond meeting an immediate transport need. They include transforming the transport system, supporting economic growth and other national aspirations. These objectives were more challenging to explain because there has been a lack of definitive research on the wider impacts of transport. A programme can be delayed if sponsors cannot explain what they are trying to achieve, and build public and political support. For example, it took a long time for the Crossrail programme to get the support it needed to go ahead. The first bill was defeated in Parliament in 1994 and, after a pause in the programme, the second bill took 3 years to be approved. On High Speed 2, we believe criticism of the programme from taxpayers and politicians occurred, in part, because the strategic case was unclear. Since our report, the Department published, in October 2013, *The Strategic Case for High Speed 2* and Parliament has voted to support the programme (paragraphs 2.2 to 2.4).

9 Economic analysis must be sense-checked to ensure results are realistic. The Department's experiences show it needs to sense-check the results of its analysis particularly where there is strong external pressure to go ahead with a programme. Such scrutiny might have identified errors in early analysis of phase 1 of High Speed 2 which led to an initial benefit–cost ratio of 2.4:1 (restated to 2.6:1 in our 2013 report). After correcting these errors and changes to assumptions, the current ratio, of 1.4:1, is more in line with equivalent programmes. The Department is improving quality assurance of its analysis but the reduction in the ratio undermined public confidence in the decisions it made on the basis of the higher ratio. Confidence can also be reduced if key assumptions are perceived or challenged as unrealistic. For this reason it is important that the Department explains changes to a benefit–cost ratio which can be a normal consequence of updating assumptions or data (paragraphs 2.5 to 2.7).

Programme delivery arrangements

10 The role of programme sponsor should be separated from delivery. The Department has separated its sponsor role from programme delivery since the West Coast Mainline modernisation programme where Railtrack held both roles. It uses different approaches to sponsorship to reflect the needs of the programme. The separation allows the Department to oversee and challenge progress, while the delivery body concentrates on delivering the programme. It is easier to distinguish between sponsor and delivery body roles during delivery than when a programme is being developed. For example on High Speed 2, the Department, as sponsor, established HS2 Limited to develop proposals for a high speed line but it also has a role in promoting the programme to obtain Parliamentary approval (paragraphs 3.2 to 3.3).

11 Governance arrangements will need to adapt during programme delivery. The Department and Transport for London planned changes to the governance of the Crossrail programme at the outset. The delivery body, Crossrail Limited, earned autonomy to let contracts without prior approval from programme sponsors by passing a series of review points which tested its ability to deliver. This has meant key decisions can be made more quickly. The Department also expects Transport for London, to take a more leading role as the programme moves from construction to fitting systems, testing and operating the railway. On Thameslink, the Department was sensible in changing the governance structure when original arrangements did not allow it to manage the interdependencies between different elements of the programme. When we reported in 2013, the Department was strengthening its systems integration team to better manage interdependencies on the programme, and also set up the interface steering group to manage interfaces between the infrastructure and other programmes (paragraphs 3.4 to 3.8).

12 The Department needs more programme management capacity and skills. The Department has limited programme management skills for the scale of its investment programme. It has sought to manage its pool of experienced programme managers by rotating senior staff between programmes, putting the most experienced people on the highest risk programmes and appointing experts to do detailed reviews. These actions demonstrate that it has a shortage of skilled staff and this is an issue which we and the Committee of Public Accounts have repeatedly commented upon. The Department also needs to continue to develop the capability of its senior responsible owners and use its experienced staff to build skills and capability so that it has sufficient capacity for the number and scale of programmes for which it is responsible (paragraphs 3.9 to 3.12).

Planning and monitoring progress

13 Programme plans must be realistic and responsive to unexpected events. The Department is often subject to pressure to start construction as quickly as possible and build momentum on a programme. We saw this on Thameslink where the Department approved the programme budget when plans for the second stage of the programme were immature. The Department responded sensibly by adjusting the scope of some work and rescheduling completion for 3 years later to keep costs for phase two within budget. The Department's understanding of the need to integrate the various elements of complex programmes at an early stage has improved but it will always be a source of risk for starting rail services. Partly in response to the 2010 Spending Review, the sponsors and Crossrail Limited decided to change and extend the schedule for opening Crossrail, and to extend the deadline for completing the central tunnelled section by a year to reduce integration risks. Delaying the start of full operations contributed to cost savings which allowed sponsors to reduce committed funding by £1.1 billion during the spending review (paragraphs 4.3 to 4.4).

14 Beneficiaries of new transport could contribute more funding and finance. Past finance choices have been based on what the government can afford or on policy rather than value for money. With section 1 of High Speed 1, the Department used private finance which we calculated in 2001 cost £80 million more than HM Treasury funding even though it guaranteed the loans. In 2010, the Department sold a 30-year concession to run the high speed line for £2.0 billion, with a further sale possible after 2040. However, it is responsible for repaying project debt valued at £4.8 billion at the time of our report. On Crossrail, sponsors have more successfully used a mixed model of public and private funding. Beneficiaries of the line are providing funding through a business rate supplement and negotiated contributions from private sources (paragraphs 4.8 to 4.11).

Benefits realisation and evaluation

15 Benefits and outcomes need to be evaluated to inform future programmes. Evaluation of completed programmes would provide evidence of the impact of transport investment. This could also help the Department negotiate larger contributions for future programmes from those who benefit most from proposed investment. Responding to criticisms from the Committee of Public Accounts, the Department has commissioned an evaluation of High Speed 1 which we understand will be published shortly. This information has not been available to help the Department develop High Speed 2. The Department is considering how it will evaluate programmes such as Crossrail and High Speed 2. This early planning will allow the Department to collect data it needs for the evaluation and monitor progress in achieving benefits during programme delivery (paragraphs 5.5 to 5.7).

16 A single organisation should be responsible for delivering wider benefits. We have seen that transport investment can stimulate redevelopment around stations at some locations. However, expected developments around the new High Speed 1 station at Ebbsfleet have not yet occurred several years after the line opened. The Department partly attributes this to the economic downturn and the availability of other viable development opportunities. Regeneration and development are not the Department's core responsibility, and no other organisation was responsible for coordinating activities at Ebbsfleet. The government announced plans in the 2014 budget to address this. It is important that wider benefits are delivered to achieve the benefit–cost ratio originally expected from a programme (paragraphs 5.2 to 5.4).

Our view on the Department's progress

17 Our reports show that the Department has made progress in its management of rail infrastructure programmes. In particular, it has established governance structures which separate its role as sponsor during delivery and allow construction to progress. It has also responded well on programmes such as Thameslink and Crossrail to manage risks and control costs, using risk-based assessments of likely costs and completion dates. Our reports also indicate that there are areas where the Department has not made as much progress as in others or where it will need to focus as current and future programmes develop:

- developing clear strategic business cases and scrutinising economic analysis of the estimated benefits of new railways;
- building its capacity and capability as a sponsor;
- developing plans that are mature and realistic before construction begins;
- understanding the impact of transport investment so that it can seek a greater contribution from those who will directly benefit from a programme; and
- monitoring and evaluating benefits against the programme's original objectives and using evaluation to inform future programmes.