National Audit Office

REPORT BY THE
COMPTROLLER AND
AUDITOR GENERAL

HC 1834
SESSION 2010–2012

28 MARCH 2012

Department for Transport

The completion and sale of High Speed 1

Our vision is to help the nation spend wisely.

We apply the unique perspective of public audit to help Parliament and government drive lasting improvement in public services.

The National Audit Office scrutinises public spending on behalf of Parliament. The Comptroller and Auditor General, Amyas Morse, is an Officer of the House of Commons. He is the head of the NAO, which employs some 880 staff. He and the NAO are totally independent of government. He certifies the accounts of all government departments and a wide range of other public sector bodies; and he has statutory authority to report to Parliament on the economy, efficiency and effectiveness with which departments and other bodies have used their resources. Our work led to savings and other efficiency gains worth more than £1 billion in 2010-11.

Department for Transport

The completion and sale of High Speed 1

Ordered by the House of Commons
to be printed on 27 March 2012

Report by the Comptroller and Auditor General
HC 1834 Session 2010–2012
28 March 2012

London: The Stationery Office
£16.00

This report has been prepared under Section 6 of the National Audit Act 1983 for presentation to the House of Commons in accordance with Section 9 of the Act.

Amyas Morse
Comptroller and
Auditor General

National Audit Office

23 March 2012

This report concludes our examination of the project to build a high speed railway between London and the Channel Tunnel for international and domestic railway services. We have published two previous reports on the project, which highlighted the value-for-money risks when expected passenger numbers did not materialise.

Printed in the UK for the Stationery Office Limited
on behalf of the Controller of Her Majesty's Stationery Office
2483537 03/12 7333

Contents

The National Audit Office study team consisted of:

Bridget Jackson, Phil Airey, Andrew Makin, Helen Mullinger, Tracey Payne, Colin Ratcliffe and Ken Foreman under the direction of Geraldine Barker and John Ellard

This report can be found on the National Audit Office website at www.nao.org.uk/hs1-2012

For further information about the National Audit Office please contact:

National Audit Office
Press Office
157–197 Buckingham Palace Road
Victoria
London
SW1W 9SP

Tel: 020 7798 7400

Email: enquiries@nao.gsi.gov.uk

Website: www.nao.org.uk

Twitter: @NAOorguk

Key facts

£7.0bn

NAO estimate of journey time saving benefits from the project to 2070

£8.3bn

estimated value[1] of other transport benefits, wider economic impacts and regeneration benefits needed to achieve the benefit-cost ratio of 1.5 to 1 expected for the project

£10.2bn

present value[2] of estimated net cost of the project to the taxpayer to 2070

November 2007	St Pancras International station and the high speed line fully open. The first section of the high speed line opened in 2003
£6,163 million	outturn costs of constructing the high speed line
June 2009	London & Continental Railways (LCR) brought into public ownership to prepare to sell the right to run the high speed line
£660 million	to establish Eurostar as a standalone company and prepare to sell HS1 Limited
£2,048 million	sale price in November 2010 for HS1 Limited, a company with a 30-year concession to run the high speed line
18.1 million	total passenger journeys on international (9.7 million) and domestic (8.4 million) high speed services, including passengers travelling between stations in Kent, in 2011

1 Journey time savings are one element of the expected benefits of the scheme. Other benefits will have a significant value but we have been unable to estimate these.

2 The 'present value' is the value in 2010 prices of costs occurring over a 60-year period to 2070, which takes account of when they are predicted to occur. The present value is estimated using the Government's standard discount rate for appraisals and evaluations.

Summary

Project background

1 This report concludes our examination of the project to build a high speed railway between London and the Channel Tunnel for international and domestic railway services. The Department for Transport[3] (the Department) awarded a private finance initiative (PFI) contract in 1996 to London & Continental Railways (LCR). The contract was to build the line and run the British arm of the Eurostar international train service (Eurostar UK). The Department commissioned a high capacity railway with a theoretical capacity to run up to 20 trains an hour in each direction and chose a route through east London to stimulate regeneration.

2 Passenger forecasts carried significant weight in the project so it was important that they should be as well based as possible:

- The Department originally expected LCR to raise private sector finance against expected revenue from Eurostar UK.
- Transport benefits (journey time savings and capacity improvements) for international passengers made up over half of the expected project benefits in the Department's 1998 assessment.

3 We have published two previous reports on the project, which highlighted the value-for-money risks when expected passenger numbers did not materialise:

- In our first report, in 2001, we reported that the taxpayer was exposed to the financial consequences of international passenger numbers being below forecast.[4] This was because the Department had agreed to guarantee the debt LCR needed to fund the project in 1998. The Department did not then expect its guarantees to be called on. It expected the debt interest and principal debt to be repaid from charges that Eurostar UK paid for using the line and payments by the Department to reserve capacity for domestic high speed services.
- In 2005, we reported that Eurostar UK's revenues grew by 11 per cent in 2004 when it opened the first part of the line but international passenger numbers were below forecasts made in 1998.[5]

3 Then known as the Department of Transport.
4 Comptroller and Auditor General, *The Channel Tunnel Rail Link*, Session 2000-01, HC 302, National Audit Office, March 2001.
5 Comptroller and Auditor General, *Progress on the Channel Tunnel Rail Link*, Session 2005-06, HC 77, National Audit Office, July 2005.

4 The guarantees the Department agreed to in 1998 enabled LCR to build the high speed line. LCR opened the line fully in November 2007, when Eurostar began running international services from St Pancras station in London. Domestic high speed services to Kent followed in December 2009. In June 2009, LCR was brought into public ownership. In November 2010, LCR sold HS1 Limited, a company with a 30-year concession to run the line, to a consortium of Borealis Infrastructure and Ontario Teachers' Pension Plan.

5 This report examines:

- whether risks for the taxpayer were reduced during construction of section two of the line, and the subsequent restructuring of LCR, prior to sale;
- whether the sale of HS1 Limited was well managed; and
- the likely benefits and costs to the taxpayer of the project.

Our methodology is summarised at Appendix One.

Key findings

6 **International passenger numbers have grown since the high speed line opened but continue to be below original expectations. This left the taxpayer exposed to an ongoing liability to support the project.** In 2011, there were 9.7 million passenger journeys on Eurostar services. Actual numbers, however, between 2007 and 2011 have been, on average, one third of the level that LCR forecast in 1995 for its bid. While forecasting has improved since the project started, numbers were also around 30 per cent below the Department's 1998 forecasts, before it guaranteed the project debt. The Department, therefore, expected LCR, via its subsidiary Eurostar UK, to start to use loan arrangements that the Department had put in place when it agreed to guarantee the project debt to pay track access charges from 2010 onwards.

7 **LCR delivered the new railway within the overall funding available and timescale for construction although at higher cost and later than its targets. This compares well with other railway projects.** Constructing the high speed line, including additions to the project scope funded separately, cost £6,163 million (outturn costs). The total cost of building the line was 18 per cent higher than LCR's combined contract targets for both sections which LCR funded in part from contingency. The line fully opened in November 2007, within the overall timetable to complete the project by December 2007 but 11 months later than target. This compares well with performance on the West Coast Main Line upgrade where costs rose by over £6 billion (240 per cent) and the upgrade was delivered four years late. The Department negotiated an increase in the target cost on the second phase of construction. In our view, it did this because the forecast cost increase on section two would have required the contractor to forfeit the whole of its management fee, removing a key incentive to deliver. The high speed line has performed well since it opened with only 0.43 per cent of services being delayed by infrastructure incidents, such as track or signal failures, in 2010-11.

8 **The project demonstrates the impact that over-optimistic key assumptions at project initiation, in this case demand forecasts for international passengers, can have if the business case and financing are dependent upon them.** The cost to the taxpayer is higher than originally expected because the Department is now responsible for servicing and repaying the project debt. We estimate that net taxpayer support may reach £10,200 million (present value to 2070, in 2010 prices).

9 **The Department's business case in 1998 estimated a benefit-cost ratio of 1.5 to 1, when it included an estimated value for regeneration benefits. We have only been able to measure part of the benefits that the project is expected to deliver:**

- Drawing upon the Department's method for appraising transport projects and forecasts of passenger numbers on the high speed line, we estimate the value of journey time saving benefits would be £7,000 million.[6] There is some uncertainty around this estimate due to the complexities involved in modelling the behaviour of transport users. However, we estimate the value of journey time saving benefits lies in the range £6,100 million to £7,700 million. The estimate for business passengers is based on a simplifying assumption that all time savings result in additional productive time or reduced costs to employers.
- Other expected benefits from the project such as reduced crowding, improved train reliability, wider economic impacts and regeneration would have a significant value. We have been unable to estimate these as data are not yet available.

10 **In restructuring LCR before the sale, the Department removed open-ended taxpayer support and made the high speed line an attractive opportunity for investors.** The Department reduced track access charges to a sustainable level that reflected actual use of the high speed line. This increased the proportion of overall payments made by the domestic operator to bring payments in line with the actual services that are run on the high speed line. The taxpayer thus avoided having to lend LCR some £880 million to £1,440 million up to 2051[7] so its subsidiary, Eurostar UK, could continue to pay high access charges designed to both recover and earn a return on the cost of constructing the high speed line. The Department invested £660 million to establish Eurostar as a viable standalone company and prepare HS1 Limited for sale. The Department also negotiated the merger of Eurostar UK into a new company, incorporating the interests of the French and Belgian governments, with the Department retaining a 40 per cent shareholding.

6 Present value, 2010 prices.
7 Present value, 2010 prices.

11 **The Department and LCR handled the sale of HS1 Limited well and it achieved higher-than-expected sale proceeds.** At £2,048 million, the winning bid was higher than LCR's estimates of sales proceeds which were in the range £1,300 million to £1,900 million. The winning bid offered only the third highest net proceeds but was within £23 million of the top bid and had no conditions that might delay completing the sale. In particular, it was not subject to European Union merger controls. The Department took a number of actions which helped to achieve the high price:

- The Department provided comprehensive information that removed uncertainty and encouraged final bids from four bidders. It timed the sale during a period of relative stability in the financial markets.
- There was a high level of competitive tension in the sale. In uncertain market conditions, the Department judged that the relatively small difference in bids did not justify choosing the highest priced offer, and that a delay could reduce the price or force a resale.
- During the sale, the Department decided to guarantee the payment of track access charges to HS1 Limited based on the current level of high speed domestic services running on the line for the duration of the 30-year concession. LCR and its advisers estimated this guarantee could add up to £500 million to the sale price. The estimated present value of the track access charges is £2,400 million but this amount would be payable only if no domestic high speed services run after the current franchise ends in 2014, which is highly unlikely.
- The Department has transferred most operational risk to the new owners of HS1 Limited but, as with all sales of businesses running public services, it retains a residual risk as the ultimate owner of the high speed line.

12 **The Department has not yet evaluated the project but it is developing an evaluation plan.** The Department commissioned a review of project delivery in 2010 but it has not reassessed the project benefits and costs since 2001, despite committing to the Committee of Public Accounts to do so. It is the Department's view that a robust assessment of transport benefits from the high speed line requires at least three years of data and should therefore occur after December 2012, when the domestic high speed service has been operational for three years.

13 **The Department also expected the project to deliver regeneration benefits at sites around the three international stations. LCR is working in partnership with the private sector at King's Cross and Stratford where development is occurring.** Analysis of the approved developments at all three locations commissioned by LCR has estimated they will support at least 70,000 jobs. The Department told us that it intends to review regeneration benefits after the 2012 Olympic Games when the legacy plan for the Olympic Park has been implemented. Under its transport analysis guidance the Department would need to identify the impact, for example, on unemployment in areas served by the high speed line to quantify regeneration benefits. It is the Department's opinion that these impacts are not as easy to isolate as the impact on transport benefits, where the Department already collects data, and a specific study will be required to assess the wider economic and regeneration benefits.

14 **It is the National Audit Office's view that the Department should already have an evaluation plan in place which identifies the data it needs to collect and monitor to measure project benefits.** The Department has started work to identify the method it will use to evaluate wider economic impacts and regeneration benefits and how it will establish a counterfactual. There is a risk that the Department will not be able to measure robustly the impact of the project because it is not able to demonstrate that it has collected the information it will need.

Conclusion on value for money

15 In assessing whether a project will deliver value for money, the Department considers a wide range of impacts that a project might have, some of which it can quantify and others on which it has to make more qualitative judgements. The original business case in 1998 was based on benefits to transport users, from faster journey times and increased rail capacity, and regeneration benefits. The data available only allows us to estimate that the value of journey time savings benefits, over a 60-year appraisal period to 2070, would be £7,000 million. We estimate that the net costs to the taxpayer to 2070 would be £10,200 million. On these measures we would conclude that the project is not value for money. When including other impacts from the project, some of which are unmeasurable, we accept that such a clear conclusion is not possible. The Department, however, would need to demonstrate that these benefits are going to be at least £8,300 million, giving a higher contribution than originally expected, to achieve the benefit-cost ratio of 1.5 to 1 estimated in 1998.

Recommendations

16 Our recommendations are designed to apply to the Department for Transport and other government departments starting major infrastructure projects.

Demand forecasting

a **The original estimates for passenger demand on which the business case was based were over-optimistic. This was partly because the project was novel and there were no comparable data on likely demand. The Department has improved its forecasting since the project started.** In such cases, departments should ensure that demand forecasts are subject to rigorous scrutiny and scepticism. Departments should assess the benefits under a range of different scenarios, perform a sensitivity analysis of key assumptions and a sense check to understand the reality of meeting forecast demand.

Risk transfer

b **Forecast cost overruns on section two meant the private sector consortium managing the construction would forfeit its entire fee, removing a key incentive to deliver the project.** Departments should recognise that the private sector will bear project risks only to the extent of any investment or profit that it has at risk. Departments should not try to transfer excessive risk as this can create unintended behaviour within its project partners.

Regeneration benefits

c **The Department justified the project on the basis of jobs that will be delivered at the three regeneration sites. The delivery and measurement of regeneration benefits needs cooperation with many parties at both a local and national level.** For future projects, departments should work with HM Treasury and other departments to develop a government-wide strategy for delivering all benefits identified during the project appraisal and how they should be subsequently evaluated. This strategy will help to make a party responsible for monitoring progress in achieving expected benefits and taking remedial action if they are delayed or look at risk.

Project evaluation

d **The Department is developing a plan to evaluate whether the project costs and benefits have been delivered in line with expectations.** In its evaluation plan, the Department should set a clear timescale for the evaluation and a clear framework and data collection processes to assess the impact of the high speed line on travel patterns and behaviour. It should ensure that its evaluation framework will give a robust counterfactual, if the high speed line had not been built, and evidence on the source of benefits. In particular, the Department should understand how the project contributes towards regeneration goals which were one of the scheme objectives.

e **The Department should follow the Magenta Book evaluation guidance published by HM Treasury in its evaluation of the project and critically assess the assumptions included within the project appraisal.** The business case for transport infrastructure includes assumptions and other inputs to the modelling and appraisal processes. As part of its evaluation plan the Department should seek to understand whether these were appropriate, and learn lessons where necessary for the appraisal of future schemes. This will allow more confidence over the costs and benefits in future business cases and improved analysis of alternative options.

Part One

Completing the project

1.1 This part of the report covers completing the construction and the start of passenger services on the line.

Project background

1.2 Constructing the 68 miles (109 kilometres) of high speed railway line (**Figure 1** overleaf) occurred in two phases and involved building:

- section one largely along the route of existing motorways;
- twenty kilometres of tunnels under central London for section two;
- a new maintenance depot for Eurostar trains in east London;
- two new railway stations at Ebbsfleet in Kent and Stratford in east London; and
- refurbishing St Pancras station, a 19th-century grade one listed building, in London.

1.3 Appendix Two provides a chronology of the whole project. We have reported twice on the project:

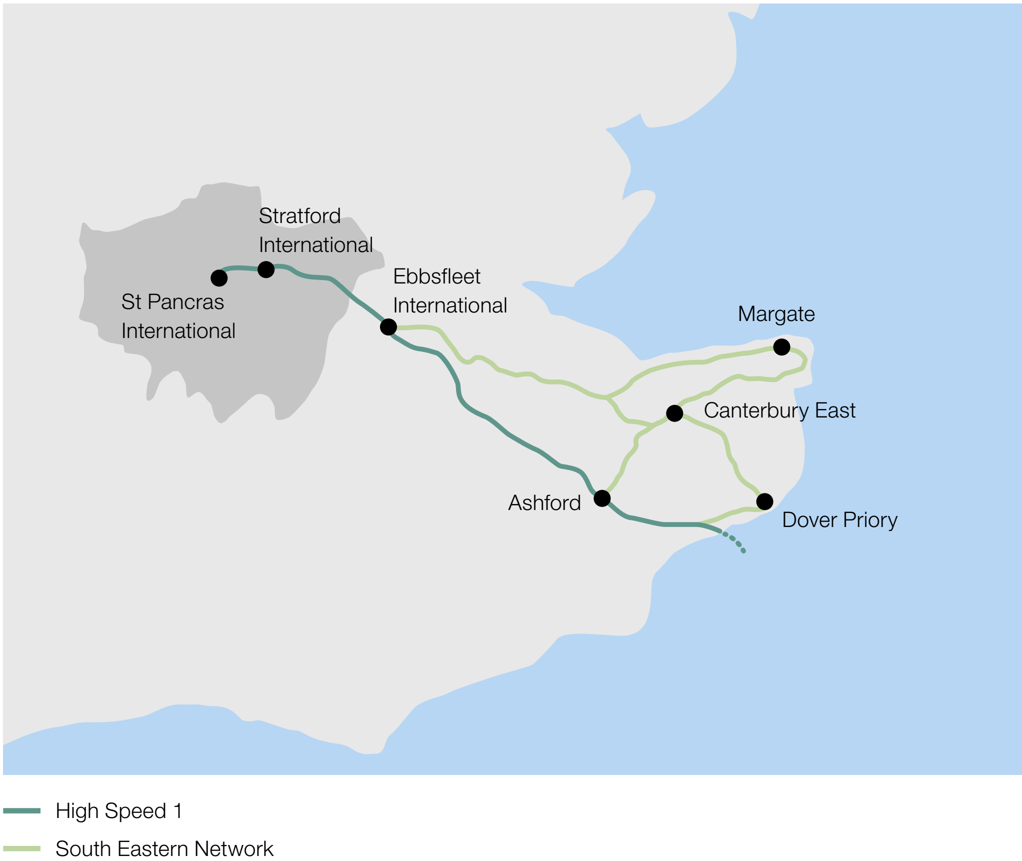
- In 2001, we reported on the Department for Transport's[8] (the Department) agreement to a new financing plan with London & Continental Railways (LCR) under which the taxpayer guaranteed the debt needed to construct the line.[9] The new finance plan was necessary as in 1996-97, international passenger numbers and revenue, were approximately half the level expected, which meant that LCR could not raise the project funding alone. LCR contracted the day-to-day management of Eurostar UK to Inter-Capital and Regional Railways, a private sector consortium, to the end of 2010. LCR records show that this arrangement transferred some risk and the consortium paid £172 million (outturn costs) to Eurostar between 1999 and 2010 because revenue was lower than forecast.

8 Then known as the Department of the Environment, Transport and the Regions.
9 Comptroller and Auditor General, *The Channel Tunnel Rail Link*, Session 2000-01, HC 302, National Audit Office, March 2001.

- In 2005,[10] we reported on construction progress and the growth in international passenger numbers after the first section of the line opened in 2003, although volumes and revenues were still below forecast. We also reported on changes in delivery arrangements after Railtrack, which had agreed to buy the high speed line from LCR and bear the risk of any cost overruns, ran into financial difficulties in 2002. LCR arranged cost overrun protection insurance which was designed to transfer a proportion of construction risk to Bechtel and the insurance market for the second phase of construction.

Figure 1

The route of the high speed line



Source: National Audit Office

10 Comptroller and Auditor General, *Progress on the Channel Tunnel Rail Link*, Session 2005-06, HC 77, National Audit Office, July 2005.

1.4 When we last reported, work had started on building section two. Under the arrangements established after Railtrack ran into financial difficulties, LCR managed the different elements of the project – construction, running the infrastructure and development property – directly or through management contracts with third parties, with a central team to liaise with government and other stakeholders (Appendix Three). Union Railways (North), a subsidiary of LCR, was the client for construction of section two, which was managed by Rail Link Engineering (RLE), a consortium of four of LCR's shareholders.

1.5 The timescale for the line to be ready to run services was set in the Development Agreement between the Department and LCR, which was restated in 1998, and was 31 December 2007 for section two. The funding available for construction agreed between Railtrack and LCR (as the party responsible for financing and building the line) in the 1998 restructuring was £6,150 million. The Department advised us that the funding arrangements remained in place after Railtrack withdrew from the project. The contract between RLE and Union Railways incentivised RLE to deliver the construction of each section with a lower target cost and shorter timescale. As a consequence of the target cost and funding arrangements there were two levels of contingency for cost increases:

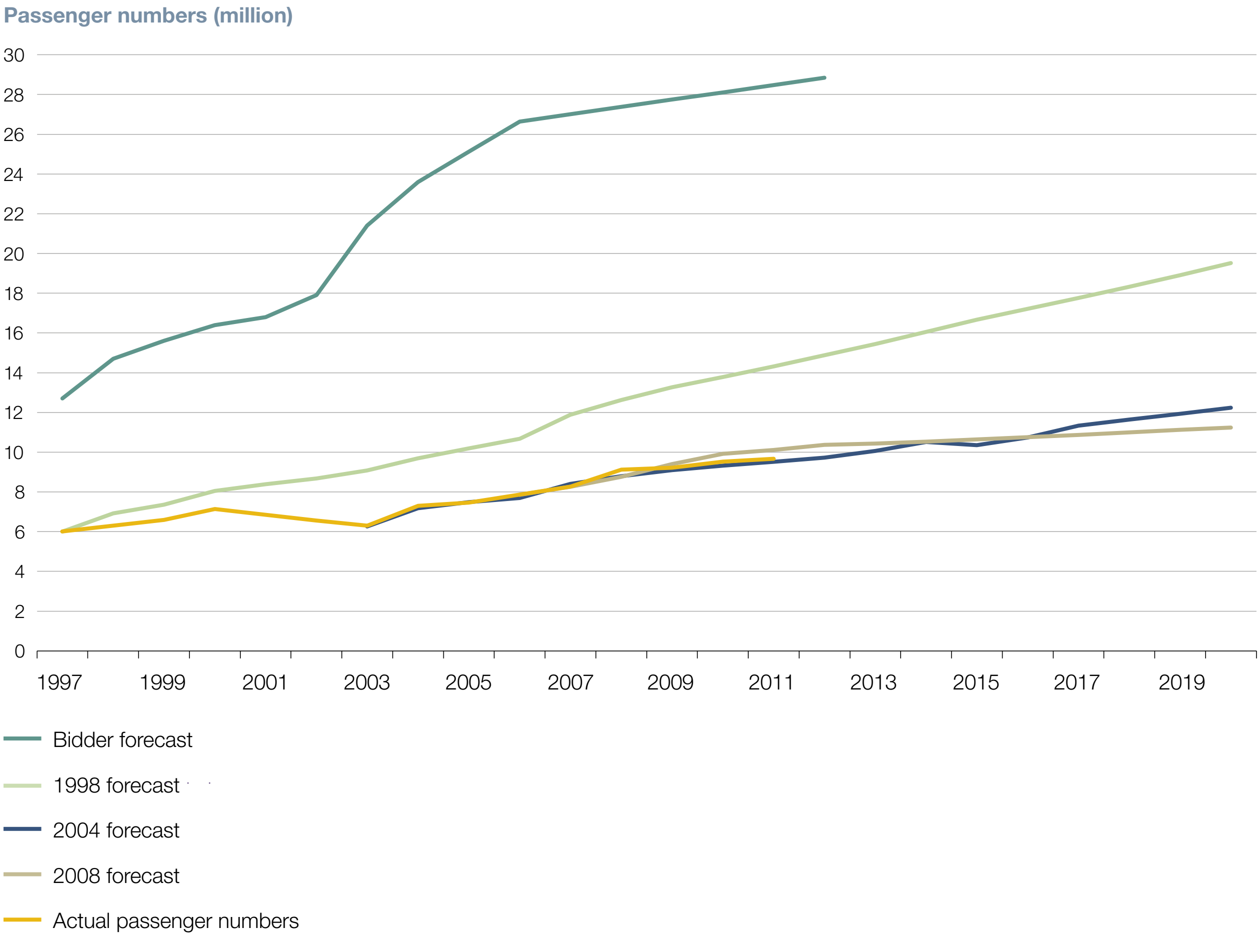
- Target costs for both sections contained contingency on the estimated costs for construction of each section. This contingency was held by RLE.
- Contingency funding of 18 per cent over the combined target costs for both sections was held by LCR.

Completing construction and the opening of the line

1.6 The high speed line opened in full in November 2007. This was within the overall project timescale but 11 months later than target. The high speed line has performed well since it opened, which key stakeholders have attributed to using tried and tested technology. During 2010-11, performance was consistently good with only 0.43 per cent of services being delayed by incidents such as track or signal failures, which are attributable to the infrastructure. The line has spare capacity with 55 per cent of capacity used at peak time in 2010. It is theoretically capable of running up to 20 trains per hour in each direction.

1.7 International passenger numbers increased when each section of the high speed line opened but numbers are still far short of original forecasts. During 2008, the first full year of Eurostar operations on the completed line, international passenger numbers increased by 10 per cent to 9.1 million and reached 9.7 million in 2011 (**Figure 2**). High speed domestic services to Kent were officially launched in December 2009. There were 8.4 million passenger journeys on the service in 2011, the second year of operation, including passengers travelling on high speed trains on the non-high-speed parts of the rail network between intermediate stations in Kent.

Figure 2
Forecast and actual international passenger numbers



NOTE

1 Bidder forecast data taken from Comptroller and Auditor General, *The Channel Tunnel Rail Link*, Session 2000-01, HC 302, National Audit Office, March 2001, Figure 6.

Source: National Audit Office analysis

Cost of construction

1.8 The total outturn cost of building the line was £6,163 million (**Figure 3**). The original construction scope was delivered within the available funding LCR agreed with Railtrack and which remained as the budget after Railtrack withdrew from the project in 2002. The total cost includes work outside the original contract scope and was 18 per cent higher than the combined contract targets for sections one and two (£5,233 million). This compares well with other recent major infrastructure projects, particularly given the complexity of section two. On the West Coast Main Line we reported that costs rose by over £6,000 million (240 per cent) and delivery was four years late.[11] The cost increase is equivalent to extra costs reported by the Netherlands Court of Audit on HSL South, a 100 kilometre high speed rail project, which were expected to be €600 million (some 10 per cent of project budget).[12] The increase over target cost was met by LCR releasing contingency while increases in scope were funded separately.

Figure 3
Outturn cost of constructing the high speed line[1]

	Section one		Section two		Whole line		
	Target (1998) (£m)	Outturn (£m)	Target (2001) (£m)	Outturn (£m)	Sum of targets (£m)	Outturn (£m)	Overall funding available (£m)
Funding for construction							**6,150**
Construction costs	1,713	1,761	2,947	3,541	4,660	5,302	
Total contract cost[2]	**1,930**	**1,919**	**3,303**	**3,778**	**5,233**	**5,697**	
Work outside original contract scope							
Station fit-out[3]						109	
New depot[4]					Up to 402	357	**402**
Total cost of building high speed line						**6,163**	

NOTES
1 All figures budgeted outturn cash flow or actual outturn cash flow.
2 The total contract cost includes Union Railway costs, property costs and income, as well as construction costs which include payments to RLE for project design and management.
3 Passenger and retail facilities at St Pancras, Stratford and Ebbsfleet international stations funded by LCR.
4 Separately funded by the Department. Costs include £16 million for land purchase which was not part of the original scope or budget.

Source: For section one: Figure 6 in Progress on the Channel Tunnel Rail Link, Session 2005-06, HC 77, restated to remove rounding; all other costs are National Audit Office analysis of LCR and departmental data

11 Comptroller and Auditor General, *The Modernisation of the West Coast Main Line*, Session 2006-07, HC 22, National Audit Office, November 2006.
12 Algemene Rekenkamer, Netherlands Court of Audit, *Risk Management HSL South*, November 2007.

Increases over target cost

1.9 We reported in 2005 that cost increases in real terms on section one construction were met from contingency funding and so, section one was delivered within target outturn cost although RLE forfeited part of its management fee.[13] On section two there was a 20 per cent increase in target construction costs. RLE negotiated an increase in the target cost with the Department to reflect higher-than-expected inflation and changes to individual contracts and so earned its management fee. The increase was funded by releasing contingency held by LCR who had also arranged cost overrun insurance to recover a proportion of any cost overruns on section two from Bechtel and the insurance market. However, this was not triggered because any cost overrun was calculated from the revised target cost set in the contract with RLE.

1.10 In our view, the risk transfer arrangements for construction cost increases did not work on section two because, at the time of its negotiations with RLE in 2005, the Department was not prepared to risk significant delay to the project completion:

- The Department initially asserted in negotiations with RLE that the project contracts provided adequate protection against higher-than-expected inflation. Costs were adjusted for inflation using indices for inputs on individual contracts, such as labour and raw materials, before they were compared with target. RLE considered that these indices did not reflect the level of inflation in the rail sector, particularly in the South East.

- The Department was concerned, that if it did not reach agreement with RLE, there would be contractual disputes which could lead to delays on the project. RLE had submitted claims for changes to individual contracts of £750 million and proposed to move the target completion date from December 2006 to February 2008.

- RLE had incentives to deliver to target cost but not the target date. Railtrack had been incentivised to deliver the project to time but no alternative arrangements were put in place when it withdrew from the project in 2002 even though public announcements were made in 2004 that Eurostar services would start running from St Pancras in 2007. When it renegotiated the target cost, the Department made £12 million of RLE's reinstated management fee dependent on milestones to allow Eurostar services to start from St Pancras in November 2007.

- The scale of cost overrun on section two meant that RLE anticipated losing its entire management fee, a key incentive to deliver the project. Bechtel, one of its members, was also facing a large payment, under cost-overrun insurance.

13 Comptroller and Auditor General, *Progress on the Channel Tunnel Rail Link*, Session 2005-06, HC 77, National Audit Office, July 2005.

Additional work

1.11 Eight per cent of the total cost of building the high speed line was due to additional work:[14]

- The Department agreed that Eurostar needed a new maintenance depot at Temple Mills in east London which, like changes to the project scope on other construction projects, it funded separately. The depot was needed because trains could not easily access the existing facility in west London from St Pancras. The Department considers that building the depot was cheaper and less risky than its alternative option which was to upgrade the North London Line. In return for funding the depot, the Department negotiated the early return of Waterloo International, one platform of which is due to come back into operational use from 2014, and the west London depot.
- The fit-out of the new stations at Stratford and Ebbsfleet, and the refurbished St Pancras, which had not been included in the original contract scope, was funded by LCR.

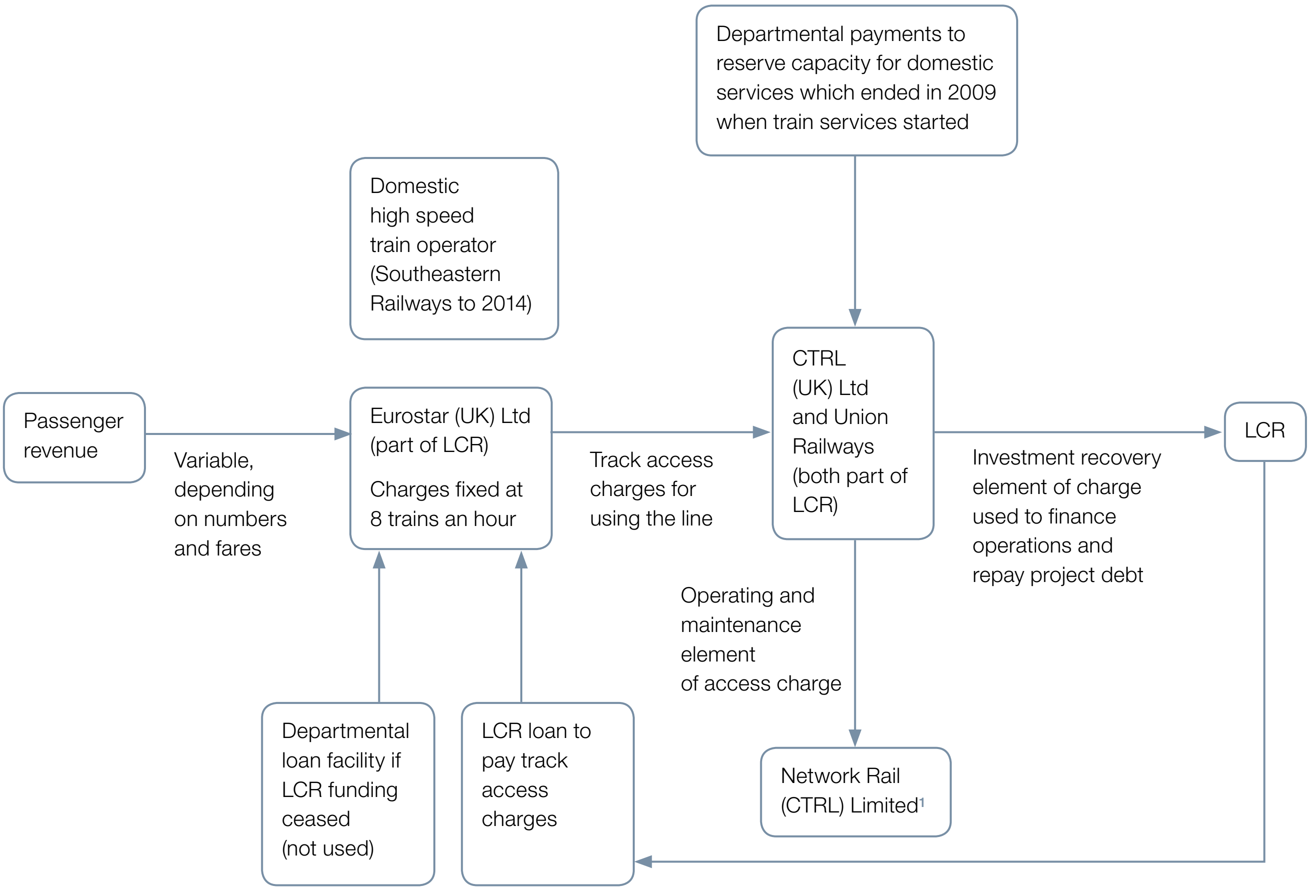
Passenger demand forecasts

1.12 As we reported in our first and second reports on the project, international passenger demand fell far short of forecasts due to over-optimistic original forecasts. The Department and LCR have also attributed lower than expected demand to unforeseen developments such as competition from low-cost airlines. LCR was unable to raise funding for the project and the Department, therefore, supported the construction by guaranteeing the project debt. The new project finance arrangements allowed the high speed line to be built and a management agreement transferred some international passenger risk to the private sector to 2010. However, LCR, and ultimately the taxpayer, was exposed to the risk of lower-than-expected passenger revenue in the long term.

1.13 When it guaranteed the project debt, the Department did not expect its guarantees to be called on. It expected that LCR would be able to finance its operations, including debt repayments, from track access charges that Eurostar and the domestic operator paid for using the line (**Figure 4** overleaf). The Department set the charges for Eurostar UK at a level that would, together with domestic capacity charges, recover the cost of construction from passenger revenue, and give a return on the investment. By the end of 2008, Eurostar UK had built an intra-company debt of £1,700 million with its parent company, LCR, in part to meet high track access charges. The Department expected Eurostar UK to use a loan facility with the Department in the near future.

14 The additional work comprised station fit-out costs, £109 million, and a new depot, £357 million.

Figure 4
Original track access charging regime



NOTE
1 Network Rail (CTRL) Limited is a wholly-owned subsidiary of Network Rail Infrastructure Limited.

Source: National Audit Office analysis

1.14 The Office for National Statistics initially classified LCR as a private sector company. However, in 2006, on the basis of more complete information, it reclassified LCR as a public sector company with effect from 1999, bringing LCR's debt and losses on to the public balance sheet.

1.15 The project highlights the difficulties in basing a business case and financing for a project on demand forecasts where there is only a limited track record on which to base estimates. The original forecasting undertaken in 1995 for LCR's PFI bid has proved over-optimistic which meant that the PFI proposal was not sustainable. Actual passenger numbers over the five years between 2007 and 2011 have been, on average, a third of the level originally forecast by LCR in its bid (Figure 2). Both LCR and the Department commissioned consultants to forecast passenger numbers before they agreed the restructuring in 1998 which predicted lower levels of passengers travelling on the line. Actual passenger numbers, however, have proved to be two-thirds of the Department's 1998 forecasts (which estimated 14.3 million passenger journeys in 2011) when it guaranteed the project bonds. Forecasting has improved since the project started. Recent forecasts commissioned from consultants in 2004 and 2008 are far closer to actual passenger numbers but do not predict reaching the levels forecast in 1998.

Part Two

Restructuring of LCR and sale of HS1 Limited

2.1 This part examines the action that the Department took once construction was completed to restructure LCR and to sell, in November 2010, HS1 Limited, a company with a 30-year concession to run the high speed line. It also examines whether the concession sale was a good deal and the remaining risks for the taxpayer.

The reason for restructuring

2.2 In 2006, the Department, LCR and HM Treasury established a joint review of options for LCR. The key objectives of the review were to reduce the taxpayer's long-term risk exposure and realise best value from LCR's businesses and assets. The review concluded that these objectives were most likely to be achieved through a restructuring of LCR in which the Department directly assumed the project debt, enabling LCR and its component businesses to be separated out and allowed to trade on a commercial and standalone basis.

2.3 The restructuring also addressed two further factors:

- Changes in European Union rules intended to promote competition in international rail markets meant that the approach of using high access charges for Eurostar to run services on High Speed 1 to support the project's debts could not be sustained. Charges for all train operators using the high speed line had to be non-discriminatory and reflect the costs of operating the line plus a rate of return that was affordable and would preserve the viability of train operators.

- The Department's recognition that, without change, LCR, via its subsidiary Eurostar UK, would, from 2010 onwards call upon other debt support aids such as the loan facility that it had put in place so that the company could continue to pay access charges.

We estimate that, if the Department had not restructured LCR and its businesses, the future call on the access charge loan facility would have amounted to some £880 million to £1,440 million up to 2051,[15] depending on future passenger demand.

15 Present value, 2010 prices.

2.4 In June 2009, the Department bought out LCR's shareholders for a nominal sum (£2), assumed project debt with a present value of £4,800 million[16] and restructured LCR into its three constituents – the high speed line, Eurostar UK and property development investments. Interest payments, which will amount to some £204 million in 2011-12, on the project debt are paid from the Department's Annually Managed Expenditure.

The cost and outcomes of restructuring

2.5 As well as assuming the project debt and writing off a loan of £110 million it had provided in 1998, the Department invested £660 million to establish Eurostar as a viable standalone company and prepare HS1 Limited as an attractive asset that it could sell (**Figure 5** overleaf). The Department obtained clearance from the European Commission for the support that it provided to LCR and its businesses.

Eurostar UK

2.6 The Department took measures to establish Eurostar as a standalone company which would not be reliant on future taxpayer support:

- The Department established a new track access charging regime, under which train operators would pay access charges that reflected their use of the high speed line. Under the new track access charging regime, access charges paid by Eurostar were reduced to the levels being paid by the domestic operator. A greater proportion of overall charges (60 per cent of HS1 Limited's forecast access charge income over the 30-year concession) is now paid by the domestic operator because it uses more of the capacity of the line. To support domestic high speed services, the Department pays additional subsidy to the domestic train operating company. The Department forecasts that additional subsidy payments will amount to almost £110 million in 2011-12. If this level of subsidy in 2010 prices was to continue until the end of the concession in 2040, we estimate that the present value of subsidy payments will be some £2,100 million but the actual level will depend on the outcome of future franchise negotiations.

- The Department provided support worth £217 million to free Eurostar UK of its legacy liabilities, give the company sufficient capital to support trading in adverse conditions and help purchase new trains when necessary.

- The French, Belgian and UK arms of Eurostar, which had operated as a joint venture, were incorporated into a single entity under the control of a single management team. LCR holds a 40 per cent shareholding in Eurostar International on behalf of the Department based upon the proportion of assets and capital the Department contributed to the new business compared to its other shareholders.[17]

16 Present value in 2010 prices of the cost of repaying and servicing the project debt to 2052 when the debt is settled.
17 The French national operator, SNCF, holds 55 per cent and the Belgian national operator, SNCB, holds the remaining 5 per cent of the shares.

Figure 5

Costs incurred by the Department during the restructuring and sale of HS1 Limited[1]

Item	Amount (£m)	Total (£m)	Notes
Eurostar support			
Prepayment of existing rolling stock leases	177		Prepayment reduced running costs allowing Eurostar to build up sufficient reserves to fund replacement trains.
Recapitalisation – investment in Eurostar	40		Investment acquired a 40 per cent shareholding in Eurostar International Limited.
Subtotal		217	
Costs associated with restructuring and sale			
Buy-out of Network Rail (CTRL) Limited contract to maintain the high speed line[2]	109		Contract restructured, giving the new owners the opportunity to obtain greater efficiency.
Budgetary support to LCR	100		Transitional support to LCR between restructuring and sale.
Assumption of lease payments for Ashford International station	65		Annual rental payments for Ashford station have been assigned to the Secretary of State until 2021.
Advisers' fees	60		The total amount spent by the Department and LCR on financial, legal and technical advice to support the restructuring and sale.
Eurostar UK pension deficit	59		The Department used the restructuring as an opportunity to settle its liabilities for the Eurostar UK pension deficit. Support was capped at £59 million.
Transition elements of access charges	50		Payment of access charges for domestic services which would not begin for some six months after the new track access charge regime was implemented.
Subtotal		443	
Total costs		**660**	

NOTES

1 Incurred costs are given in outturn prices and occurred in 2009 and 2010.

2 The payment may result in a reduction in funding to Network Rail from the Department in the next control period that starts in 2014.

Source: National Audit Office analysis of LCR and departmental data

HS1 Limited

2.7 The Department addressed two aspects of HS1 Limited's business that were likely to reduce the price that bidders were prepared to offer for the business:

- The Department led negotiations with Network Rail to change the operation and maintenance contract for the high speed line, which was inflexible. In return for a payment of £109 million, Network Rail (CTRL) Limited[18] agreed to implement a programme of efficiency savings over the first five years, after which HS1 Limited has the right to market test the contract. The formal term of the contract has also been reduced from 80 to 37 years.

- The Department gave a commitment to the new owners of HS1 Limited on the number and pattern of domestic passenger trains that would run on the line, agreeing to fund any shortfall in access charges if these fell below the current service. LCR and its advisers estimated that the potential benefit to sale proceeds from this commitment was up to £500 million. In the Department's view, the commitment is unlikely to be called. This seems a reasonable view as the number of commuters into London has remained fairly stable over the last 30 years and Southeastern Railways told us that it has seen a new commuting market emerge to east London. In the most extreme case, if no domestic high speed services run after 2014, when the current franchise ends, we estimate that the present value of the domestic commitments to HS1 Limited is around £2,400 million until 2040 (2010 prices).

Restructuring outcome

2.8 By restructuring, the Department reduced the future level of public sector support committed that LCR and its businesses were likely to require, and capped its exposure to shortfalls in international passenger revenue. Following restructuring, HS1 Limited was an attractive opportunity for investors, such as pension funds, looking to match long-term liabilities in the form of future pension payments with long-term assets. The line is a modern, high-quality infrastructure asset, generating a secure, index-linked revenue stream. The Department retains ownership of LCR which holds property development assets and a 40 per cent shareholding in Eurostar International Limited.

2.9 The Department and LCR decided to sell the high speed line within a company, HS1 Limited, which held a pre-negotiated 30-year concession to operate the railway. The Department retains ultimate ownership of the line. A 25- to 30-year concession would match the time horizons of likely investors and the availability of long-term finance from the markets. The sale itself was a competitive auction that could be marketed to a broad range of potential bidders. This structure offered two advantages:

- HS1 Limited already had its own experienced management team with the necessary safety qualifications, so the field of potential bidders could be widened beyond those with experience in the rail industry; and

18 Network Rail (CTRL) Limited is a wholly-owned subsidiary of Network Rail Infrastructure Limited.

- selling a company through a competitive auction was a well-established process that would stand a better chance of completion within the timescale envisaged.

2.10 The Department's key objectives for the sale were to realise value for money for the taxpayer through maximising sale proceeds and passing appropriate risks to the private sector. If these key objectives were satisfied, the Department also aimed to conclude any deal by 31 March 2011. We found that the Department had achieved these objectives in the sale.

The sale outcome

2.11 The Department and LCR achieved sale proceeds of £2,048 million for HS1 Limited, which was more than the benchmark valuation of around £1,500 million used to judge the sale's success. LCR had obtained indicative estimates of the potential sale value of HS1 Limited between June 2008 and June 2010, which lay in the range £1,300 million to £1,900 million. We compared the sale of HS1 Limited against lessons learned from our reports on past privatisations and asset sales and found that LCR and the Department had handled the sale well:[19]

- LCR and the Department delayed the sale, which had been scheduled to complete during the financial crisis, until market conditions improved. The delay also enabled HS1 Limited to establish a longer track record in operations.

- To help secure the sale in what could be uncertain market conditions, LCR developed a finance package that bidders could use. The finance package involved, among other things, obtaining an indicative rating from credit rating agencies and agreeing loan terms with a syndicate of banks. While none of the final bidders used the finance package, they all told us that it was useful as a benchmark when seeking their own finance.

- LCR and its adviser, UBS, maintained competitive tension throughout the sale to help maximise proceeds for the taxpayer. Before launching the sale process in June 2010, LCR and UBS prepared a list of over 100 potential bidders. LCR received six indicative offers, all of which it judged to be robust, and four final offers, after two parties withdrew voluntarily in the second round of bidding.

- Governance arrangements made a clear separation between commercial and policy decisions. LCR was responsible for key decisions relating to the sale but these required the Department's approval, supported by its own professional advisers.

19 A detailed assessment is contained in Appendix Five (available on our website at www.nao.org.uk/hs1-2012).

2.12 After final bids were clarified, three of the four bidders were closely grouped in terms of net proceeds, with £23 million separating their bids (**Figure 6**). On 5 November 2010, LCR selected the winning bidder on the grounds of certainty of delivery although it had not submitted the highest bid. The Department accepted LCR's recommendation and the Secretary of State approved the sale, which was completed on 17 November 2010. The winning bid was assessed to be the most economically advantageous:

- The bidder could complete quickly, eliminating further exposure to the business risks in HS1 Limited and market uncertainty.
- The bid was not conditional on a number of proposed contractual changes, nor did its financing rest on it being able to offer lenders security over payments of access charges.
- The domestic UK merger control regime applied to the winning consortium but, unlike the EU regime, this allows buyers to complete a purchase without advance clearance from the competition authorities.

Public sector comparator

2.13 The Department did not prepare an estimate of the value of keeping the high speed line in public ownership as it considered that the best way to assess the value of HS1 Limited was by testing it in a functioning market. Moreover, it was the Government's policy to sell assets not needed for delivering essential public services.

Figure 6

Summary of final offers (£ million)

	Winning bidder	Unsuccessful bids[1]		
	Borealis Infrastructure and Ontario Teachers' Pension Plan	Arsenal	Greenwich	Southwark
Final bids	2,048	2,097	2,065	1,960
Net proceeds[2,3]	**1,012**	**1,035**	**1,031**	**918**
Bid expiry date	7 November 2010	15 November 2010	8 November 2010	No date

NOTES

1 The names of unsuccessful bidders are anonymised.

2 Bids adjusted for repayment of loans from European Investment Bank and KfW, cash balances in HS1 Limited and completion on 31 December 2010.

3 The winning bid produced actual net proceeds for the Department amounting to £1,016 million once adjustments had been made for outstanding loans, debt breakage costs, working capital and cash balances.

Source: National Audit Office analysis of LCR and departmental data

2.14 We have conducted our own analysis of the price paid for HS1 Limited. Our analysis shows that the weighted average rate of return required by the buyers of HS1 Limited and their lenders at 5.1 per cent real was higher than the Government's standard discount rate of 3.5 per cent real for appraisals and evaluations but within the mid-range of rates of return allowed by the regulators of other UK infrastructure companies and industries such as Network Rail. Our analysis supports the view that the Department and LCR got a fair price.

Risks remaining following the sale

Operational risk

2.15 **Figure 7** shows the allocation of key risks before and after the sale. The Department kept the risk that the number of domestic services using the high speed line might reduce. The key risks transferred to HS1 Limited were demand for international passenger services; and the line becoming unavailable so that the new owners would not be entitled to access charges paid by train operating companies.

Figure 7
Key risk allocation

Risk	Risk allocation before sale	Risk allocation following sale
Income – number of trains using the line, availability and performance		
Reducing domestic passenger trains	Department	Department
Reducing Eurostar services (not offset by new operators using the line)	LCR and Department	HS1 Limited
Trains are delayed owing to reasons under the control of HS1 Limited	Network Rail (CTRL) Limited and Department	Network Rail (CTRL) Limited and HS1 Limited
Costs – maintaining and renewing the high speed infrastructure		
Maintenance and renewals: Office of Rail Regulation not satisfied that costs incurred efficiently, leading to reducing track access charges	Network Rail (CTRL) Limited, LCR and Department	Network Rail (CTRL) Limited and HS1 Limited

Source: National Audit Office

2.16 The financial impact on HS1 Limited of the line being unavailable for long periods of time is mitigated by insurance (for example, in the event of a terrorist attack) or is held by third parties. Network Rail (CTRL) Limited is responsible for failures caused by inadequate maintenance. In addition, when the line is available for use, the Department underpins some 60 per cent of HS1 Limited's forecast income over the 30-year concession in the form of access charges paid by domestic services. The Department arranged for the costs that HS1 Limited pays to Network Rail (CTRL) Limited to operate and maintain the line to be subject to periodic efficiency reviews by the Office of Rail Regulation during the concession.

Residual risks and benefits

2.17 As with all sales of public assets, the Department retains the ultimate risk if HS1 Limited fails, although it has done much to minimise the cost implications if this should occur. It received the proceeds from the sale of HS1 Limited as a cash lump sum, so would only be required to pay the costs of running the line until a new owner could be found. The Department's shareholding in Eurostar could go up or down in value depending on Eurostar's future trading performance (**Figure 8**).

2.18 There are no mechanisms in the concession for the taxpayer to share automatically in any increase in profits if use increases or if the deal is refinanced in improved market conditions. The Department examined the case for a formal clawback mechanism to capture any future upside. However, this was considered too complex to administer and could have reduced the price offered by bidders, although the extent of any reduction was not quantified.

2.19 The Department has included in the concession some protection for taxpayers from higher-than-expected usage. The investment recovery element of track access charges is capped. However, if HS1 Limited considers that increased demand means that higher charges could be supported, it can seek approval from the Department. This would allow the Department to negotiate a share in any increased profits. Given the limited scope to increase revenues beyond those that HS1 Limited assumed in its business plan, we consider that the likelihood of increased profits from increased usage is low. However, the winning bidder could seek to refinance the acquisition at lower interest rates when market conditions improve and keep the refinancing gain.

Figure 8
The Department's shareholding in Eurostar International Limited

It is too early to reach an accurate valuation of the Department's shareholding in Eurostar International Limited but Eurostar's performance in its first full year of incorporation has been positive. In March 2012, Eurostar reported that passenger numbers for 2011 had increased by 2 per cent, to 9.7 million, from the previous year and that it had made an unaudited profit of £21 million. It has made a £700 million investment in a new fleet of high speed trains and refurbishing its existing fleet. Eurostar told us that this investment has been funded by revenue and debt raised against future passenger revenue.

Source: Eurostar International Limited

Part Three

Assessment of project costs and benefits

3.1 This part outlines the costs that the taxpayer has paid to date on the project and estimates future liabilities. It also examines the benefits that were expected from the high speed line and the Department's progress in delivering them.

Overall project cost

3.2 The Department's commitment to support the project to date is £8,162 million, after adjusting for the proceeds it received from the sale of HS1 Limited (**Figure 9**). Total construction costs of £6,163 million (Figure 3) account for three-quarters of the net funding provided to the project with the remainder used to finance the project debt and support the operations of LCR and its subsidiaries. The present value of project debt of £4,800 million will now be paid by the taxpayer as a consequence of expected international passenger demand, and therefore revenue, failing to materialise.

Figure 9
Net government support for the project

	Government support (£m)	Expected government support (£m)	Additional government support (£m)
Incurred support (outturn prices)			
Grants and capacity payments	3,668	3,171	497
Restructuring and sale support[1]	600	–	600
Loan write-off	110	–	110
Net income from concession sale	(1,016)	–	(1,016)
Future support (present value, 2010 prices)			
Present value of project debt interest and repayments	4,800	–	4,800
Net government support	**8,162**	**3,171**	**4,991**

NOTE
1 See Figure 5 'Costs incurred by the Department during the restructuring and sale of HS1 Limited'. Excludes £60 million paid to advisers.

Source: National Audit Office analysis of LCR and departmental data

Previous value-for-money assessments

3.3 We have previously reported on the cost benefit appraisals the Department carried out for the project in 1998[20] and 2001[21] to support its grant investment, following changes to the way the project would be financed and delivered. The Department estimated in 1998 that the project would deliver a benefit-cost ratio of 1.5 to 1 (with regeneration benefits) which it defines as medium value for money. When we recalculated the business case we found the benefit-cost ratio to be nearer 1.4 to 1, which the Department defines as low value for money (**Figure 10**).

Figure 10

Previous value-for-money assessments[1,2]

	Sections one and two (NAO recalculation)	Section two only	
	1998 (£m)	2001 (£m)	2001 (£m)
	Services to St Pancras and Waterloo	Services to St Pancras and Waterloo	Services to St Pancras only
Benefits (excluding regeneration)	**2,270**	**1,453**	**1,527**
Regeneration benefits	500	475	475
Total benefits (with regeneration benefits)	**2,770**	**1,928**	**2,002**
Costs	(2,050)	(1,171)	(1,101)
Benefit-cost ratio (without regeneration benefits)	**1.1**	**1.2**	**1.4**[3]
Benefit-cost ratio (with regeneration benefits)	**1.4**	**1.6**	**1.8**[3]

NOTES

1 All assessments are 1997 present values in 1997 prices.

2 Figures shown are for the central – that is, what was considered the most likely – case for forecast passenger numbers.

3 The benefit–cost ratio outputs for the 2001 assessment did not include an estimate for domestic transport benefits.

Source: Department for Transport cost benefit appraisal results summarised in Comptroller and Auditor General reports: The Channel Tunnel Rail Link, Session 2000-01, HC 302, National Audit Office, March 2001; and Progress on the Channel Tunnel Rail Link, Session 2005-06, HC 77, National Audit Office, July 2005

20 Comptroller and Auditor General, *The Channel Tunnel Rail Link*, Session 2000-01, HC 302, National Audit Office, March 2001.

21 Comptroller and Auditor General, *Progress on the Channel Tunnel Rail Link*, Session 2005-06, HC 77, National Audit Office, July 2005.

3.4 While the 1998 and 2001 assessments are not directly comparable because they differ in scope, the main project benefits the Department identified in each case were benefits to transport users, from faster journey times and increased passenger rail capacity, and regeneration benefits. The Department chose to route the line through east London to stimulate regeneration.

3.5 Including a monetary value for regeneration was unconventional for a public transport project at the time because the Department did not have an agreed method for calculating such benefits. It valued the expected regeneration benefits based on the 50,000 jobs that it originally estimated the line would create at sites around the three international stations, and the amount that the Government would be prepared to pay to create these jobs through other interventions.

Regeneration progress

3.6 In 2005, we reported that there were encouraging developments associated with achieving regeneration benefits from the project. If fully implemented, the approved master plans for developments at King's Cross, Stratford City and Ebbsfleet Valley will deliver new office, retail and other spaces which analysis commissioned by LCR estimated would support at least 70,000 jobs. Around half of the overall development, as set out in the approved site scheme, has been delivered at Stratford to date and a quarter is under contract or built at King's Cross. LCR told us that the rate of development has been as expected when the developments were given planning approval even though the order in which development has taken place has changed as a result of external events, such as the economic downturn and the 2012 Olympic Games. The high speed line contributed to London winning the right to host the 2012 Olympic Games.

3.7 LCR has sold some sites and used the remaining land that it obtained from the Department in 1996 at King's Cross and Stratford to establish development partnerships with the private sector which manage the land commercially for profit (**Figure 11**). LCR expects to start to receive income from its core property holdings at King's Cross and Stratford between 2015 and 2020. The Department and LCR have no direct influence over development at Ebbsfleet because the sites are owned by private sector developers.

Project evaluation

3.8 The Department reviewed the lessons from the delivery of the project in 2010 but it has not reassessed the project costs and benefits since 2001, despite committing to do so to Parliament and significant changes in the level of taxpayer funding. In evidence to the Committee of Public Accounts in 2005,[22] the Department agreed that it would revisit the costs and benefits of the link. HM Treasury best practice guidance recommends that departments evaluate projects and policy when they have been completed, or are advanced to a determined stage.

22 HC Committee of Public Accounts, *Channel Tunnel Rail Link*, Thirty-eighth Report of Session 2005-06, HC 727, May 2006.

Figure 11
Development at King's Cross and Stratford City

LCR's approach to redevelopment has been to put the land it received from the Department in 1996 into a joint venture with other land holders and private sector developers who put in equity equal to the land values. Each partner holds shares in the joint venture equal to the value of the assets they contributed. LCR's intention is to have a long-term interest in the partnerships to benefit from increases in land value as the site redevelopment takes place. Redevelopment is likely to take place over a 10- to 15-year period.

King's Cross

LCR contributed 73 per cent of the land in the total 67 acre redevelopment site. It owns a 36.5 per cent share in a development partnership with a private sector developer and other land owner. Planning permission was granted in 2006 for an 8 million square foot mixed-use development of offices, residential flats, retail and leisure space. Redevelopment of the site started after the high speed railway had been built. To date, LCR told us that the core site-wide infrastructure is in place. The University of Arts London opened its new campus in autumn 2011 and work has started on planned housing and office developments.

Stratford City

LCR owned all of the land in the 180 acre redevelopment site which was raised using the spoil from building Stratford International station and the tunnels for the high speed line. Planning permission for an 1.25 million square foot mixed-use scheme of offices, housing and retail and leisure facilities was granted in 2005. The way the development is being delivered has changed since the planning permission was granted as a result of the successful bid to host the 2012 Olympic Games and LCR's private sector development partner has also changed.

LCR has sold some of its land for the development of the Olympic Village and Westfield shopping centre. It has leased its remaining land to the Olympic Delivery Authority until 31 March 2013 after which it plans a development of predominantly office space in a joint venture with a private sector developer.

In addition, LCR is working with two other land holders to deliver an additional residential scheme with private developers at a site called Chobham Farm.

Source: National Audit Office analysis of LCR data

3.9 In 2009, LCR published a study of the economic impact of the line,[23] which forecast that the project would deliver a benefit to cost ratio of over 1.8 to 1, when wider economic impacts are included, which the Department defines as 'medium' value for money. Without these benefits, the study forecast a benefit to cost ratio just below 1.0 to 1 which indicates poor value for money (**Figure 12** overleaf). The assessment was based on LCR's estimate at the time of net project costs. Over 90 per cent of wider economic impacts were calculated using theoretical models, as these related to domestic high speed services which had not commenced at that stage. The Department told us that by their nature these benefits are difficult to observe and therefore evaluate.

3.10 The LCR study estimated that the project could deliver an additional £10,000 million in regeneration benefits, based on the number of jobs expected to be delivered by developments at King's Cross, Stratford and Ebbsfleet. The assessment did not use the Department's approach for valuing regeneration benefits but illustrates what the value of regeneration would be if the developments deliver the expected level of jobs and 5 per cent are attributable to the high speed line. This value was not included in the calculated benefit-cost ratios.

23 London & Continental Railways and Colin Buchanan in association with Volterra, *Economic Impact of High Speed 1*, January 2009.

Figure 12
LCR's assessment of costs and economic benefits

	Present value[1] (£m)	NAO commentary on basis of valuation
Benefits		
International transport benefits (journey time savings)	2,500	
Domestic transport benefits	1,200	
Congestion relief	100	
Total transport benefits	**3,800**	
Wider economic impacts	3,800	Ninety per cent calculated from theoretical models. £1,000 million depend on reusing Waterloo International platforms.
Total benefits	**7,600**	
Net costs	(3,900)	Construction costs exclude wider costs of the project already incurred. Includes operating costs and revenue paid to the train operators rather than government.
Additional costs to achieve economic impacts	(400)	Estimated cost of work to bring Waterloo International platforms into use for commuter services.
Total costs	**(4,300)**	
Initial benefit-cost ratio[2] (excluding wider economic impacts)	**1.0**	
Adjusted benefit-cost ratio (including wider economic impacts)	**1.8**	
Regeneration benefits	10,000	The valuation does not use the Department's method.

NOTES
1 2009 present values in 2008 prices, assessed over a 60-year period to 2069 and stated to two significant figures.
2 Rounded up to 1.0.

Source: London & Continental Railways and Colin Buchanan in association with Volterra, Economic Impact of High Speed 1, January 2009

3.11 The Department is developing a plan to evaluate the project. It is the Department's view that a robust assessment of transport benefits from the high speed line can be made after December 2012, three years after the introduction of domestic high speed services. This is based on standard industry demand forecasting guidance which forecasts that the expected change in demand would be complete three years after a major service change, with the majority of change occurring by the end of the first year. The Department intends to review regeneration benefits once the legacy plan for the Olympic Park has been implemented, after the 2012 Games. The Department has told us that non-transport benefits are not as easy to isolate as transport benefits, where the Department already collects data, and a specific study will be required to assess the wider economic and regeneration benefits.

3.12 It is the National Audit Office's view that the Department should already have an evaluation plan in place and be tracking the delivery of benefits from the project. The Department has started work to identify the method it will use to evaluate wider economic impacts and regeneration benefits and how it will establish a counterfactual. Until it has completed this work, neither we nor the Department know for certain whether data will be available or can be collected to evaluate these aspects of the project robustly. There is a risk that the Department will not be able to measure robustly the impact of the project because they are not able to demonstrate that they have collected the information they will need. The HM Treasury Green Book states that, ideally, the data needed to evaluate a project would have been considered at the outset. The Department should use a project evaluation to inform how it monitors and measures wider economic impacts and regeneration benefits from other major infrastructure projects, such as Crossrail on which it is committed to spending nearly £4 billion in the four years to 2014-15, and to improve the quality of new project appraisals.

NAO assessment of benefits and costs

3.13 We have sought to assess current progress in achieving the project benefits using the information available. The Department's latest transport analysis guidance assesses a wider range of impacts than considered in the Department's past cost-benefit assessments of the project, such as improved rail reliability and wider economic impacts. These benefits form part of a calculation of the benefit-cost ratio but we were unable to estimate their value as data are not yet available. The Department has a number of assets which it can sell or reuse, such as its 40 per cent shareholding in Eurostar International Limited. These assets were most recently valued for the Department at some £500 million. We have not included these assets in our assessment because we cannot separate out how their value has changed since 1996 as a direct result of the project and what is due to external factors. Appendix Four (available on our website at www.nao.org.uk/hs1-2012) provides detail on our method and the benefits and assets we recognise but have been unable to value.

3.14 We have estimated the present value of total government support for the project at £10,200 million (in 2010 prices). This differs from the net government support given in Figure 9 because it includes likely future costs and they have been inflated or discounted, according to when payments will occur. Incurred costs comprise grant payments made to LCR during construction, charges to reserve capacity on the line for domestic services and the cost of preparing for the sale of HS1 Limited. Future costs include servicing and repaying the project debt and subsidising domestic high speed services. There is some uncertainty over estimates for the value of future subsidy payments as they depend on negotiations between the Department and future train operators when the franchise is re-let. There are also different methods that can be used to estimate the level of subsidy. We have assumed that the current level of subsidy remains constant as this was the only information available to us at the time of our fieldwork. The Department has since estimated that, if projected revenues grow at a greater rate than costs over time, the value of subsidy payments to 2070 would reduce to £1,600 million.

3.15 We estimate the present value of journey time saving benefits is £7,000 million using current forecasts for growth in international and domestic passenger numbers to 2030 and taking a 60-year evaluation period to 2070 (**Figure 13**). There is some uncertainty around this estimate due to the complexities involved in modelling the behaviour of individual transport users, but we estimate the value of journey time saving benefits lies in the range £6,100 million to £7,700 million. The lower bound of this estimated range is extreme as it assumes that there would have been no growth in rail passenger numbers without the high speed line. The estimate for business passengers is based on a simplifying assumption, that all time savings result in additional productive time or reduced costs to employers. In accordance with HM Treasury guidance, we have included the full value of international passenger benefits rather than, as occurred in previous benefit-cost assessments of the project, a proportion based on the estimated number of UK resident travellers.

3.16 The project will deliver other transport benefits, wider economic impacts and regeneration benefits. The Department would need to demonstrate that they have a value (present value, 2010 prices) of at least £3,200 million to exceed the costs the taxpayer is likely to incur and £8,300 million to achieve the benefit-cost ratio of 1.5 to 1 originally expected from the project. The Government also had strategic reasons for supporting the project that are harder to quantify, such as showing that the UK can deliver large-scale infrastructure projects.

Figure 13
Estimate of costs and journey time saving benefits

	Present value[1] (£m)	Total present value (£m)
Benefits		
International transport benefits		
Journey time savings[2]	5,100	
Domestic transport benefits		
Journey time savings[2]	1,900	
Journey time saving benefits		**7,000**
Costs		
Government grants and guarantees		
Capital grants and other support[3]	(3,700)	
Restructuring and sale support[4]	(500)	
Present value of costs incurred to date		**(4,200)**
Future liabilities		
Repayments of project debt to 2052[5]	(4,800)	
Subsidy for domestic high speed services to 2070[6]	(2,900)	
Present value of future liabilities		**(7,700)**
Proceeds from sale of HS1 Limited		
Gross sale proceeds	2,000	
Deductions from sale proceeds	(1,000)	
Forecast proceeds from future HS1 concession sale in 2040	700	
Present value of income from concession sales		**1,700**
Net taxpayer contribution[7]		**(10,200)**

NOTES

1 All figures are 2010 present values in 2010 prices assessed over a 60 year period to 2070 and are stated to two significant figures.

2 Estimates for journey time saving benefits are based on the most likely case for passenger demand forecasts as contained in HS1 Limited's 2010 business case.

3 Excludes the grant funding for Temple Mills as explained in paragraph 9 of Appendix Four; and costs of around £95 million associated with the Thameslink project.

4 See Figure 5 'Costs incurred by the Department during the restructuring and sale of HS1 Limited'; excludes advisers' fees and lease payments for Ashford International station. We have also excluded the £110 million loan write-off referred to in paragraph 2.5. The figure includes a £109 million payment to Network Rail (CTRL) Limited which may result in a reduction in funding to Network Rail from the Department in the next Control Period that starts in 2014.

5 Repayment of project debt includes the Department's assumption of lease payments for Ashford International Station.

6 There is some uncertainty over estimates for the value of future subsidy payments as they depend on negotiations between the Department and future train operators when the franchise is re-let; and movements in train operator revenues and costs over time. Our estimate is based on continuing the level of subsidy paid in 2010-11, £108 million, to 2070. Different methods can be used to estimate future levels of subsidy payments. The Department has estimated that, if projected revenues grow 3 per cent higher than costs over time, the value of subsidy payments to 2070 would reduce to £1,600 million.

7 See Appendix Four (www.nao.org.uk/hs1-2012) for further details of our assessment.

Source: National Audit Office analysis of LCR, Department for Transport and National Rail Trends data

Appendix One

Methodology

We reviewed the completion of the second stage of construction of the high speed link (section two), the sale of HS1 Limited and the progress being made in delivering the benefits expected from the project.

Our full methodology can be found online at www.nao.org.uk/hs1-2012.

The main elements of our fieldwork, undertaken between May and November 2011 were:

Method	Purpose
Document review	
We looked at a range of documents relating to the construction of the line, delivering benefits and the restructure of LCR and sale of HS1 Limited, including: • minutes of departmental and LCR meetings; • management accounts; • progress reports; • key correspondence; • business cases and submissions; and • data and findings from our previous two reports on the project.	To identify and understand the Department's objectives and basis for decision making; chronology of events; performance against cost, time and specification; risks for the taxpayer and benefits from the project.
Interviews and workshop	
We consulted a range of individuals, including key project staff in the Department and LCR, as well as their advisers and partners who were involved in delivering the project, restructuring LCR, and selling HS1 Limited.	To confirm and provide context to our understanding of the Department's objectives and basis for decision making; chronology of events; performance against cost, time and specification; risks for the taxpayer and benefits from the project.
We held a workshop to bring together key parties involved in the construction of the line, including individuals from the Department and current and former employees of LCR and its subsidiaries.	To identify lessons from the project.

Method	Purpose
Financial and quantitative analysis	
We scrutinised data regarding performance against cost, time and specification. Part of this analysis involved performing an assessment of the project costs to estimated journey time saving benefits, which is explained in more detail in Appendix Four (a web publication only). We also reviewed the Department's appraisal of options for the restructure and sale.	To quantify project costs, the value of taxpayer support received and benefits realised. Also to assess the potential restructuring and sale scenarios the Department was faced with.
Literature review	
We conducted a review of literature on high speed rail and other significant rail infrastructure projects. Part of this involved contacting other nations' Supreme Audit Institutions to identify applicable work they have conducted on high speed rail. We also reviewed previous reports on the project.	To identify how the project compares with other high speed rail and major rail infrastructure projects.
Expert input	
We drew on in-house expertise in transport cost-benefit analyses, corporate finance and the rail industry. We also used NAO good practice guidance on option appraisal and advice on asset sales to help evaluate the Department's performance.	To supplement our knowledge and understanding of these technically complex subject areas and provide additional quality assurance over the outputs of our analysis.

Appendix Two

Project chronology

Figure 14
Project chronology

Date	Event
1987	Department of Transport study identifies a need for extra rail capacity in the south east to meet expected increases in demand for domestic services and for international rail services.
1988	Original invitation to tender to design and build a rail link between the Channel Tunnel and London. It was awarded to Eurorail, which formed a joint venture with British Rail to take forward the project.
June 1994	Department issues invitation to tender for the private finance initiative contract to finance, build and operate a new high-speed rail link between the Channel Tunnel and St Pancras and run Eurostar UK.
November 1994	Eurostar services start running through the Channel Tunnel on existing UK rail lines to Waterloo station.
	Introduction to Parliament of the hybrid bill to build the high speed rail link.
February 1996	London & Continental Railways (LCR) awarded the high speed rail link contract.
December 1996	Royal Assent granted to the Channel Tunnel Rail Link Bill.
February 1998	European Night Services, including rolling stock lease, cancelled.
June 1998	First restructuring agreeing to: • split construction into two sections; • bring Railtrack in to manage construction, purchase section one and take an option to build and buy section two; and • provide taxpayer guarantees to enable LCR to raise funding.
October 1998	Construction starts on section one.
July 2001	Construction of section two begins.
October 2001	Railtrack enters railway administration.
June 2002	Second restructuring: • LCR buys section one back from Railtrack, following its collapse; and • sections one and two to be owned by LCR.

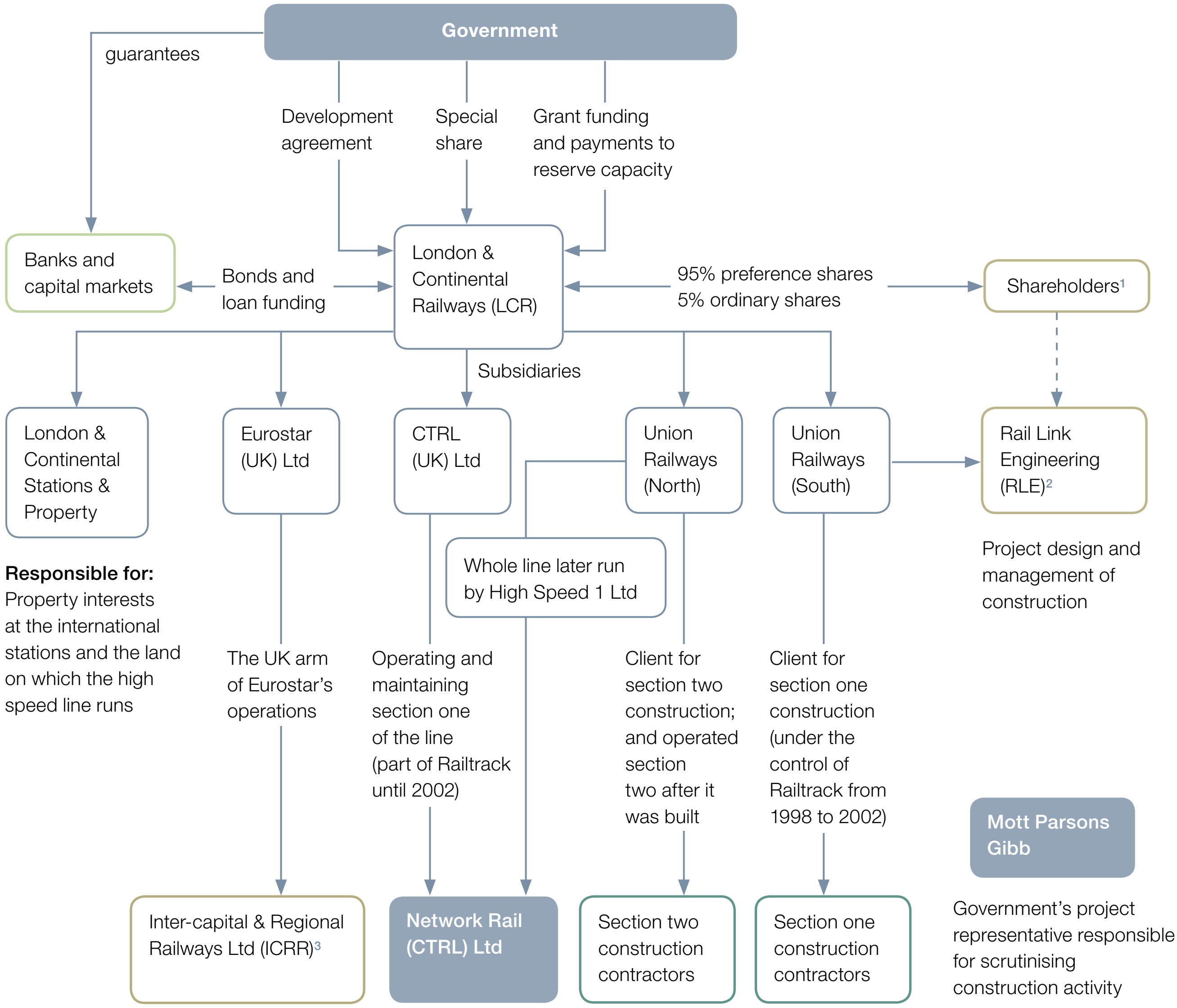
Date	Event
September 2003	Section one from the Channel Tunnel to Fawkham Junction, near Ebbsfleet, opens.
November 2007	St Pancras station and section two opens.
November 2008	Decision taken to delay the sale of HS1 Limited owing to adverse market conditions.
June 2009	The Department takes LCR and its subsidiaries into public ownership.
	Preview of the domestic high speed service starts running a limited number of trains from Ashford and Ebbsfleet International stations.
August 2009	HS1 Limited granted a concession to operate the high speed line.
December 2009	Full domestic high speed services commence.
June 2010	Formal launch of the sale of HS1 Limited.
September 2010	Eurostar incorporation.
November 2010	Sale of HS1 Limited.

Source: National Audit Office analysis

Appendix Three

Project delivery structure

Figure 15
Project delivery structure



NOTES

1 LCR's shareholders comprised Bechtel Ltd, SG Securities (UK) Ltd, National Express Group Plc, French Railways Ltd (SNCF), EDF Energy Plc, Ove Arup & Partners Ltd, Sir William Halcrow & Partners Ltd, and Systra.

2 RLE consisted of four shareholders in LCR: Bechtel Ltd; Ove Arup & Partners Ltd; Sir William Halcrow & Partners Ltd; and Systra.

3 The following LCR shareholders were members of ICRR: National Express Group Plc and SNCF. SNCB and British Airways formed the other members of the ICRR consortium.

Source: National Audit Office analysis

Design and Production by
NAO Communications
DP Ref: 009824-001

This report has been printed on Consort 155 and contains material sourced from responsibly managed and sustainable forests certified in accordance with the FSC (Forest Stewardship Council).

The wood pulp is totally recyclable and acid-free. Our printers also have full ISO 14001 environmental accreditation, which ensures that they have effective procedures in place to manage waste and practices that may affect the environment.

Published by TSO (The Stationery Office) and available from:

Online
www.tsoshop.co.uk

Mail, Telephone, Fax & Email
TSO
PO Box 29, Norwich NR3 1GN
Telephone orders/General enquiries: 0870 600 5522
Order through the Parliamentary Hotline
Lo-Call 0845 7 023474
Fax orders: 0870 600 5533
Email: customer.services@tso.co.uk
Textphone: 0870 240 3701

The Parliamentary Bookshop
12 Bridge Street, Parliament Square,
London SW1A 2JX
Telephone orders/General enquiries 020 7219 3890
Fax orders: 020 7219 3866
Email: bookshop@parliament.uk
Internet: http//www.bookshop.parliament.uk

TSO@Blackwell and other Accredited Agents

£16.00

ISBN 978-0-10-297548-2