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Summary

Crossrail will eventually be an important part of the transport network in London and the south of England. Once opened, it will lighten the load for London's overburdened transport network and is expected to increase the city's rail capacity by 10%. However, while it is badly needed, commuters have been let down by a programme that is well behind schedule and has seen costs escalate far beyond what was originally planned. The central section between Canary Wharf and Paddington was supposed to have opened in December 2018 but Crossrail Ltd now expects it to open between October 2020 and March 2021; around two years late. Until the entire railway is open, passengers will not receive the full benefits of the railway, and Transport for London's expected revenue from rail fares on Crossrail will be limited. Crossrail Ltd says that the full railway may not open until as late as 2022.

Funding for the programme has already increased by around £2.8 billion to £17.6 billion and yet, the final cost still remains unknown. As Crossrail has not yet determined and agreed an opening date for the full railway, costs for the programme are likely to continue to climb. Crossrail Ltd has so far failed to understand the complexity and risks involved in the programme, failed in its management of its main contractors and failed to integrate different strands of the programme successfully. While the Department for Transport is ultimately responsible for the use of taxpayers' money on Crossrail, the way in which it set up Crossrail Ltd left it with limited powers to step in and take action, including on executive remuneration, when the programme faltered. While the Department is now working to learn and apply the lessons from what went wrong with Crossrail, it should acknowledge that this is far from an unfamiliar tale, We have witnessed cost increases and delays on major rail projects several times over the past few years and the Department still does not appear to have got a grip on the problem. Until the Department properly embeds the lessons learned from the programme, we remain sceptical about its ability to oversee major rail projects.

Introduction

Crossrail is a major programme to run new rail services between Reading and Heathrow Airport, through a new underground section beneath central London, to Shenfield in Essex and Abbey Wood in south-east London. When complete, the new railway will be around 73 miles (118km) long, with around 26 miles (42km) of new tunnels. Ten new stations are being built and a further 31 are being improved. Crossrail will serve around 200 million passengers per year. The Department for Transport (the Department) and Transport for London (TfL) are jointly sponsoring the programme. Crossrail Limited is an arm's-length body specifically created to deliver the programme and is wholly-owned by TfL. The Crossrail programme has been allocated £17.6 billion of funding, £2.8 billion more than the £14.8 billion agreed in the 2010 Spending Review. The programme sponsors and Crossrail Ltd had planned to start running services through the central section in December 2018 and to start a full east-west service from December 2019. In April 2019, Crossrail Ltd announced that it plans to start running services on the central section between October 2020 and March 2021. It still does not yet have a date for when a full east-west service will start. This report builds on our April 2019 report, Crossrail: Progress review.

Conclusions and recommendations

1. **Completion of the programme is well behind schedule and it remains uncertain when the entire railway will be open.** The Crossrail programme aims to bring substantial benefits to rail passengers in London and the south of England, including reduced congestion and journey times, increased capacity on London's transport network and support for economic growth. However, completion of the crucial central section of the railway is well behind schedule. Crossrail Ltd now plans to open the central section between October 2020 and March 2021 rather than December 2018 as originally planned. Despite the delay, it is still unlikely that Bond Street station will be open to passengers initially. The Elizabeth line, as the new railway will be known, will be an important source of income for TfL. TfL's fare revenue will not increase significantly until the full railway opens, which could now be as late as spring 2022. Meeting these revised windows for opening the railway is still uncertain and there remain risks to manage. After years of continuing delays, the challenge of motivating and incentivising contractors to prioritise Crossrail means that the programme risks losing momentum.

   Recommendation: ***The Department and Crossrail Ltd should inform us as soon as they know when they expect the full railway to open.***

2. **Given the scale and complexity of the remaining work, it is staggering that Crossrail Ltd continued to believe until as late as July 2018 that the central section of the railway would open in December 2018.** This over-optimism which was prevalent throughout has proved hugely damaging to the programme. Crossrail is a large and highly complex programme. The programme involves the development of new software to allow the trains to switch between three different signalling systems and the construction of miles of tunnels and new, bespoke stations, much of which is taking place in small, enclosed and hard to reach places beneath London. Given the amount of work still to be done, it is clear that Crossrail Ltd did not have a full appreciation of the scale and complexity of the outstanding work until recently, particularly the work to bring together all the infrastructure and systems required for the railway to begin operations. The previous Chair and Chief Executive assert that sticking to the December 2018 opening date was important to keep contractors motivated and costs low, and they continue to emphasise that they had overcome significant engineering challenges at earlier stages in the programme. The new Chair and Chief Executive have focused on understanding what work is remaining and sequencing this to arrive at a detailed programme plan and appear to have placed the programme on a more stable course. However, there remains a great deal of work to do and risks to manage, including finishing development of the software onboard the trains, completing fit out of the stations, finishing installation of the signalling systems and testing that the trains can operate safely through the tunnels and stations.

   Recommendation: ***Building on the recommendations in our April 2019 report, the Department and Crossrail Ltd should report to us every six months on:***

   - ***progress across the programme, including on the performance of contractors;***

- ***how they are monitoring progress against the plan; and***
- ***how they are countering the risk of optimism bias and assuring themselves that the revised schedule and cost to completion are robust***

3. **Crossrail Ltd's failure to manage effectively the high number of main contractors needed for the programme contributed to substantial cost increases and delays.** Crossrail Ltd split the main works into 36 separate contracts, rather than dividing the programme into a smaller number of larger contracts. This resulted in an increase in the number of dependencies between the work of different contractors and high levels of costly change to the programme. The former Chief Executive is adamant that this approach, which resulted in Crossrail Ltd retaining responsibility for manging the knock-on consequences from delays across the remaining work of the contractors, was the right one, despite clear evidence that Crossrail Ltd did not manage these dependencies effectively. No one was coordinating the activity of all contractors and acting as an effective 'controlling mind', despite the fact that the programme partners, Bechtel and Transcend Ltd, were originally contracted by Crossrail Ltd to fulfil this role. The former Chair placed some blame for performance falling behind schedule at the feet of some of the key contractors who had been "causing problems", but it was Crossrail Ltd's job to manage its contractors. Crossrail Ltd failed to understand the extent to which contractors' levels of productivity were diverging significantly and repeatedly from its expectations and effectively manage the consequences of this on the programme. Crossrail Ltd is now resetting its commercial and contracting approach to complete the programme.

   Recommendation: ***As it examines its other projects and programmes, the Department and its delivery bodies' commercial teams should review their commercial and contractual models, including where risk sits, to gain assurance that commercial and contractual approaches protect value for money.***

4. **Crossrail Ltd continued to pay its executives bonuses, even as the programme was going off track.** The Crossrail Ltd Executive were paid large salaries and performance bonuses for managing a programme that, it is now clear, was not delivered successfully. The Chief Executive of Crossrail Ltd, for example, was paid a bonus of £481,000 for performance in 2015–16 and £160,000 for 2016–17. The Department told us that it is important that remuneration levels for those delivering large projects allow the Department and its arm's-length bodies to recruit people with the right level of skills and experience. But, in the case of Crossrail, sponsors did not provide enough oversight of, and challenge to, remuneration decisions made by Crossrail Ltd. The Department asserts that the practices it has in place for its other arm's-length bodies provide greater accountability. We have previously raised concerns about how the Department oversees the remuneration practices, including redundancy payments, of HS2 Ltd.

   Recommendation: ***Before the end of the year, the Department should:***

   - ***carry out and publish the results of a full review of pay, including redundancy arrangements, at its delivery bodies; and***

- ***set out how it will ensure that remuneration in its delivery bodies aligns with the overall success of projects, and how it will maintain appropriate control and oversight of executive remuneration.***

5. **Despite it being a key learning point from previous projects, the Department failed to ensure Crossrail Ltd gave enough attention to planning and integrating the programme.** Our work on the Thameslink and Great Western modernisation programmes found that the Department did not focus early enough on integrating the various elements of the programmes. Some of the causes of cost increases and delays on Crossrail relate to the poor integration of complex IT and operational systems and the lack of a fully integrated plan to complete the programme. The Department explained that Crossrail Ltd presented its plan to sponsors as a fully integrated plan to complete the programme. However, it is now apparent that the Department did not understand what a fully integrated plan looks like, and therefore was unable to scrutinise the Crossrail Ltd executive effectively on the realism of its plans. Crossrail Ltd is now undertaking a substantial amount of work to produce a more detailed plan to completion. It is encouraging that the Department has reflected on what has gone wrong on Crossrail and has taken steps to formally capture these lessons, and those from other programmes.

   Recommendation: ***In order to assure itself about how its delivery bodies are managing major rail projects and bringing them into passenger service, the Department should better understand what a fully integrated plan comprises. To do this, it should build on the work now being done by Crossrail Ltd.***

6. **It is unacceptable that the Department devolved so much accountability for taxpayers' money on this major programme.** The Department has repeatedly blamed the Crossrail Ltd Board and Executive, and the overall 'system' of management and governance for the failings of the programme. However, the Department is ultimately responsible for the successful delivery of the programme and ensuring that taxpayers' money is being spent wisely. As one of the sponsors of the programme, the Department played a leading role in establishing the governance arrangements and what the Department and Crossrail Ltd now acknowledge was an "extreme" version of autonomy. The Department acknowledges that striking a balance between autonomy and oversight of its delivery bodies is one of the main lessons from Crossrail.

   Recommendation: ***The Department should examine whether its oversight of its existing delivery bodies provide it with appropriate accountability and governance arrangements over the life of programmes and set its arrangements out in accountability systems statements for its major programmes.***

1 Completing the programme

1. On the basis of a report by the Comptroller and Auditor General, we took evidence from the Department for Transport, the current Chair and Chief Executive of Crossrail Ltd and the former Chair and Chief Executive of Crossrail Ltd about the Crossrail programme.[1]

The Crossrail programme

2. Crossrail is a large, complex programme to run new, direct rail services between Reading and Heathrow Airport at the western ends of the railway, to Shenfield in Essex and Abbey Wood in south-east London at the eastern ends. When complete, the new railway will be around 73 miles (118km) long, with around 26 miles (42km) of new tunnels. Ten new bespoke stations are being built and a further 31 are being improved. Much of the construction work is taking place in small, enclosed and hard to reach places beneath London. New software is being developed to allow the trains to switch between three different signalling systems.[2]

3. The Crossrail programme aims to bring substantial benefits to rail passengers in London and the south of England, including reduced congestion and journey times, increased capacity on London's transport network and support for economic growth. Once Crossrail is open, it will become part of Transport for London's (TfL's) rail and underground network and will be known as the Elizabeth line. The Department for Transport (the Department) and TfL are jointly sponsoring the Crossrail programme, which is being delivered by Crossrail Ltd, a wholly owned subsidiary of TfL.[3]

4. Train services through the central section of the programme were due to start running in December 2018, and the full service due to start running from December 2019. Crossrail Ltd first announced in August 2018 that the programme could not be delivered on time and that it would not be in a position to open the central section through London in December 2018 as planned. In the 2010 Spending Review, the government allocated £14.8 million funding for the programme, which included contingency but excluded the cost of new trains and the main depot. In July 2018, the Department announced that the programme sponsors had agreed an additional £0.59 billion funding, taking the total funding package for the programme to £15.4 billion. In December 2018, the Department announced that as a result of further cost increases it had increased funding for the programme to £17.6 billion (some £2.8 billion more than the level of funding announced in 2010).[4]

5. In October 2018, we questioned the Department on the August announcement that the opening of the central section would be delayed and how it was monitoring and challenging the programme's progress. The Department told us that it began to have concerns that the December 2018 delivery date could not be achieved in "spring" 2018 but that Crossrail Limited maintained the schedule was still possible until it received formal

1 C&AG's report, *Completing Crossrail*, Session 2017–19, HC 2106, 3 May 2019
2 C&AG's report, paras 1, 8, 1.1–1.3
3 C&AG's report, paras 1, 1.2, 1.6
4 C&AG's report, paras 3–4, 1.8–1.9, 2.2, Figure 3

notification of the delay, although its level of confidence started to diminish overt time.[5] In December 2018 we questioned the Department again on its grip of the programme, cost increases and the additional funding package agreed. The Department told us that it was deeply disappointed and frustrated by the significant cost overrun but believed that the funding package should be sufficient to cover the remaining costs of the programme.[6] In March 2019 we further questioned the Department and Crossrail Ltd and in April 2019 we published our progress review of the Crossrail programme, which focused on how the programme had been allowed to unravel and costs spiral out of control, examining who was responsible for what had gone wrong on the programme and what the major causes of cost increases and delays had been. This report builds on our previous report and scrutiny of the programme.[7]

Over-optimism about the programme schedule

6. In our April 2019 report on the Crossrail programme, we concluded that the Department, TfL and Crossrail Ltd's fixation on a delivery deadline of December 2018 led to warning signs that the programme was in trouble being missed or ignored. We found that the pressure on, and determination within, those delivering the programme to meet this deadline led to an overriding culture of over-optimism and that when Crossrail Ltd and the programme's project representative identified failings at a much earlier stage, they were not addressed as they should have been.[8]

7. We asked Crossrail Ltd why it remained committed to the December 2018 opening date for so long and when it had first become aware that the original opening date was undeliverable. The former Chief Executive told us that when he left Crossrail Ltd in March 2018, he believed that there was more than a 50% chance that the programme could be completed on schedule, despite the fact that there was so much risk remaining in the programme.[9] The previous Chair of Crossrail Ltd told us that the first time he began to feel that the programme schedule was not achievable was in June 2018 because by that time it was clear that the programme was not making the required progress to support the opening date.[10] He explained that he first informed the Mayor of London and the Secretary of State in July 2018 that there was no feasible way to deliver the programme on time and that Crossrail Ltd was considering options for a delay. He told us that the response from both sponsors was that it had to be completed in 2018. The Department told us that it asked Crossrail Ltd to do what it could to open something on time. The previous Chair explained that the Mayor's response was to ask if more money could incentivise contractors to deliver on time.[11]

8. The former Chief Executive told us that Crossrail Ltd had remained committed to the December 2018 opening date because it considered that the cheapest way to complete the programme was do so in the shortest possible time. He explained that the vast number

5 Committee of Public Accounts, Oral evidence - *Department for Transport: Implementation of Brexit*, HC 1657, 24 October 2018
6 Committee of Public Accounts, Oral evidence - *Rail management timetabling*, HC 1793, 27 February 2019
7 Committee of Public Accounts, *Crossrail: Progress review*, Ninety-second report of session 2017–19, HC 2004, 3 April 2019
8 Committee of Public Accounts, *Crossrail: Progress review*, Ninety-second report of session 2017–19, HC 2004, 3 April 2019
9 Qq 55, 166–169
10 Qq 162–163
11 Qq 57–69

of suppliers on the programme meant that any delay to the programme would lead to increases in the overhead costs of those contractors.[12] The previous Chair told us that sticking to the deadline was important to keep contractors motivated to deliver.[13] When asked whether he agreed with this, the current Chair of Crossrail Ltd stated that this approach was helpful up to point, but that by 2018 it caused things to go wrong. By 2018, delays to contracts and issues with, for example, access to work sites for multiple contractors were becoming more challenging. He stated that Crossrail Ltd now has other methods for applying pressure on contractors other than a final date, including a more intense approach to managing daily activities on the programme.[14]

9. Our report in April 2019 found that Crossrail Ltd's over-optimism about the potential to deliver the programme on time, even when the signs were there that this was unlikely, stemmed, in part, from the experience of overcoming challenges earlier in the programme.[15] In May 2019, the previous Chair and Chief Executive told us at length about the complexity of the programme and the engineering challenges that Crossrail Ltd overcame. We were told that, even when an explosion at Pudding Mill Lane in November 2017 resulted in substantial delays to the energisation of the railway, the instinct of Crossrail Ltd was to go and fix it. However, the revised plans to complete the programme that Crossrail Ltd produced after the explosion still underestimated the amount of work to be done in stations.[16]

Remaining work to completion

10. In summer 2018, a member of this Committee visited a Crossrail site and was told that the programme was on schedule to open on time. A visit by Committee members in May 2019 illustrated how much work there was still left to do.[17] While the bulk of construction work is complete, there are a number of key activities that must be completed before the railway can be brought into operation, including: completing the fit-out of those stations that are planned to open on day one, testing the trains can operate safely through the tunnels, certifying that equipment on the railway and in stations is functioning correctly, and integrating new services with the national rail network.[18]

11. The current Chief Executive of Crossrail Ltd told us that he had been surprised by how much work was incomplete and that he thought Crossrail Ltd did not have a full grip during early to mid-2018 of the work that was left to do. He also stated that Crossrail Ltd spent 10 weeks at the start of his tenure going through all the remining work in detail. Some stations, for example, remain a long way from completion. Tottenham Court Road is the most of advanced of the 10 new stations and Crossrail Ltd doesn't expect that station to be completed until August or September 2019. Bond Street might not be complete until spring 2021.[19]

12 Q 55
13 Qq 56, 82, 128
14 Q 213, C&AG's report, Appendix 3
15 Committee of Public Accounts, *Crossrail: Progress review*, Ninety-second report of session 2017–19, HC 2004, 3 April 2019
16 Qq 44, 48–51, 55
17 Q 56
18 C&AG's report, paras 3.1–3.3
19 Qq 113–115

12. The current Chair of Crossrail Ltd told us that there remained a substantial amount of work to do on the software of the trains, which was not always entirely predictable. He also explained that the change from Crossrail being a construction programme to a programme with trains running while work was still going on raised safety concerns, which the company was working on.[20] The current Chair told us that the programme had lost momentum following the decision to delay the opening schedule and re-plan the programme. He identified getting back the right levels of drive and can-do spirit so that contractors and the Crossrail team worked together effectively again as one of the biggest leadership challenges of the programme.[21] In April 2019, Crossrail Ltd announced that it had produced a new plan for the introduction of new services on the central section of the new railway.[22]

Opening the new Elizabeth line

13. Crossrail Ltd currently estimates that the central section of the railway will open between October 2020 and March 2021, a delay of around two years. It added that Crossrail Ltd had taken advice from the Department's lessons learned exercise and had specified an opening window, rather than a firm date.[23] Crossrail Ltd told us that it will deliver all of the planned scope of the programme but admitted that when the central section first opens there will be some elements of the programme missing.[24] For example, services will not stop at Bond Street, because completion of the station is still between 18 months and two years away.[25] It told us that there was also substantial work to complete at at least eight stations on the existing network to the east and west of London, including Ealing Broadway, Acton Main Line, Romford and Ilford. Network Rail, which is responsible for enhancement work on the existing network, estimated that this work will be complete by 2020. In the meantime, Network Rail planned to manage the work in order that the stations can remain open, but there is a risk that some stations will not have step free access when new Elizabeth line services begin.[26] Crossrail Ltd also told us that it planned not to install all the non-critical digital systems required to operate the railway initially, to reduce both complexity and the risks involved in getting the stations open. These systems will be replaced by additional operational staff, which will increase the cost of the programme.[27]

14. The National Audit Office found that it is still unclear when a full 24 trains an hour service between Heathrow and Reading in the west and Shenfield and Abbey Wood in the east will commence.[28] Crossrail Ltd currently estimates that this may not happen until twelve months after the central section is complete, which could be as late as spring 2022.[29] Crossrail Ltd originally planned for the full railway to open in December 2019.[30] The Elizabeth line, as the new railway will be known, will be an important source of income for TfL. TfL had estimated that the delay to opening would cost it £600 million

20 Q 228
21 Q 228; C&AG's report, paras 3.8–3.9
22 C&AG's report, para 3.5
23 Q 214–216
24 Qq 219–226
25 Qq 113, 221
26 Qq 222–224; Letter from Tony Meggs to PAC Chair, 28 May; C&AG's report, para 2.4
27 Qq 225–228
28 C&AG's report, para 3.5
29 Qq 217–219
30 C&AG's report, figure 3

in lost revenue from 2019–20 to 2023–24. TfL's fare revenue will not increase significantly until the full railway opens because it is at this point that the full high frequency services through central London will begin. Crossrail Ltd asserted that it was focused on achieving this as soon as possible.[31]

31 Q 227; C&AG's report, paras 3.14–3.18

2 Commercial and contracting approach

15. Crossrail Ltd has contracted the delivery of the programme to private sector design, engineering and construction companies, and an extensive supply chain of small contractors and suppliers of equipment and specialist skills.[32] Crossrail Ltd has always been responsible for integrating the different elements of the new railway being delivered by contractors.[33]

Contracting approach

16. Crossrail Ltd awarded 36 contracts to private companies to build the tunnels and stations for the programme and install the track, electrical power lines and other systems required to operate the railway. By taking this approach, Crossrail Ltd increased the number of dependencies between the work of different contractors that it had to manage, thereby increasing the delivery risk on the programme.[34] The former Chief Executive of Crossrail Ltd told us that the company took this approach because at the time the contracts were let, Crossrail Ltd considered that it was the most appropriate way to contract with the industry because no single firm had the skills, capability and capacity to take on and manage all of the risk in the programme. He asserted that the company let the right number of contracts and had the right commercial mechanisms. He acknowledged that the number of dependencies between the work of different contractors was high, but asserted that the best way to manage the risk from these was for Crossrail Ltd to have the best people in place to manage those risks on a day-to-day basis. He told us that if he had to make this decision again he would not have taken a different approach.[35]

17. In 2009, at the start of the programme, Crossrail Ltd awarded contracts to two project management companies, Bechtel and Transcend Ltd, to support its management of the programme and the high number of contractual interfaces involved in its delivery. Crossrail Ltd awarded the largest of these contracts (worth an estimated £400 million when it was awarded) to Bechtel as its project delivery partner, which was responsible for coordinating the activities of other contractors on the central section of the railway.[36] The previous Chair and Chief Executive acknowledged that Bechtel's role was to act as a 'controlling mind' to coordinate the work of the contractors and make sure that Crossrail Ltd made the right decision to how best to redeploy contractors when there were delays.[37] However, Crossrail Ltd decided to integrate Bechtel into the Crossrail Ltd delivery teams, rather than requiring it to take on delivery risk and to provide independent assurance to Crossrail Ltd on progress across the overall programme. The previous Chair told us that Bechtel dominated the delivery of the programme, with around 400 staff integrated into the Crossrail Ltd team. The former Chief Executive told us that Bechtel was incentivised to help Crossrail Ltd deliver the overall programme, making decisions that optimised the programme across the many dependencies between the contractors, but in the end received no incentive payment because the programme was late and over budget.[38]

32 C&AG's report, para 2.17
33 Committee of Public Accounts, *Crossrail: Progress review*, Ninety-second report of session 2017–19, HC 2004, 3 April 2019
34 C&AG's report, paras 11 and 2.17 and Box 1
35 Qq 88, 91
36 C&AG's report, para 2.18
37 Qq 197, 202
38 Qq 83–88, 197–202

Managing contractors

18. The NAO found that contractors' levels of productivity diverged significantly and repeatedly from Crossrail Ltd's expectations.[39] The previous Chair told us that he visited Crossrail sites every other week and at each Crossrail Ltd board meeting metrics on completeness were discussed.[40] The former Chief Executive similarly told us that he was constantly walking the sites and talking to contractors to understand progress. He added that while progress was demonstrable for physical activity, there were issues measuring the progress of the software. However, the current Chief Executive, who was also on the Crossrail Ltd Board at that time, stated that when he became Chief Executive he was surprised at the lack of station completion. He thought that there was not enough granularity of information coming from the supply chain, and in 2018, there was not enough transparency about the ever-increasing optimism bias of recovery plans and mitigations agreed because of delays. The previous Chair placed some of the blame for delays against the scheme on some of the key contractors who he asserted had been causing problems and not acting in the way he wanted them to. He did acknowledge, however, that there had been a consistent gap between the ambition to achieve the December 2018 opening date and what was delivered on the ground.[41]

19. The large number of dependencies between the work of different contractors on the programme led to significant cost increases across the programme. Between 2013 and 2018, changes and delays to the programme resulted in more than £2.5 billion in increased costs. Nearly £1 billion of this cost increase was the result of additional payments to contractors by Crossrail Ltd for changes that were not caused by the contractor.[42] Crossrail Ltd told us that such 'compensation events', of which around 21,00 had accumulated on Crossrail by 2016, are part of the process for resolving contractual issues as they arise under the form of contract used on Crossrail. It explained that this approach was designed to avoid leaving claims to be resolved at the end of the programme, with the risk of disputes needing to be resolved in court.[43]

20. Crossrail Ltd told us that it was resetting its commercial and contracting approach to complete the programme, including renegotiating with its main contractors the terms of the remaining work, including agreeing fixed, lump sum prices with some contractors.[44] Crossrail Ltd confirmed that this included looking at each contract individually and will incentivise contractors to reduce risk to the programme not completing on time if needed. It told us that it was working with seven or eight large companies, and 20 to 30 smaller companies, and each one will have a discrete package and approach that will be agreed with the Crossrail Ltd board.[45]

39 C&AG's report, Appendix 3
40 Qq 121–122
41 Q 80–82, 117
42 C&AG's report, paras 2.11–2.14 and Figure 5
43 Q 196
44 C&AG's report, paras 3.8–3.9
45 Q 211

3 Learning lessons

21. The Department has been taking time to reflect on what went wrong on Crossrail. In April 2019 the Department and the Infrastructure and Projects Authority (IPA) published a report which captured lessons from what has gone wrong on Crossrail and a number of other major transport projects. During our evidence session, the Department set out what it considered to be the main lessons to be learned from what has gone wrong on the Crossrail programme.[46]

Devolving accountability

22. The Department explained that one of the main lessons to be learned from Crossrail is the need to strike the right balance between the autonomy provided to the delivery partner (in this case Crossrail Ltd) and the oversight that the Department as sponsor and funder provides to that project.[47] Our report in April 2019 found that the Department, as one of the sponsors of the programme, chose to provide Crossrail Ltd with a level of autonomy that Crossrail Ltd described as "extreme". The Department recognised that this level of autonomy hindered its ability as sponsor to understand and challenge progress during the later stages of the programme. The Department accepted that its governance arrangements were insufficient to properly capture the risks to the programme as it progressed and that it should have reviewed its governance arrangements several years ago.[48]

23. We were concerned that this extreme autonomy led to the Department taking a somewhat passive approach to its sponsorship of the programme. We asked the Department whether the failure to reach a timely decision that the programme would not deliver in December 2018 was a derogation of their duty to ensure taxpayers' money was spent correctly. It told us that as sponsor, the Department was responsible for setting dates and key milestones for the programme and that it was for Crossrail Ltd to seek to request a change to those target dates if it believed they could not be delivered. The Department also told us that it had been drawing this conclusion before the company reached that conclusion itself, but that it relied on Crossrail Ltd to advise on the opening date of the line because that was Crossrail Ltd's job. The Department blamed the Crossrail Ltd Board and executive team for the failings in the programme, and laid the blame on the overall system of governance and management of the programme. Given that the Department, as one of the sponsors and funders of the programme, was ultimately accountable for the efficient and effective use of taxpayers' money, we were concerned that this shows that the Department had, in effect, devolved its accountability for successful deliver of the programme.[49]

Programme integration

24. Our 2013 report on the Thameslink programme found that the Department's plans for the franchise to operate the new service was not joined up with plans for

46 Q 22; C&AG's report, para 3.13; Department for Transport and the Infrastructure and Projects Authority, Lessons from transport for the sponsorship of major projects, April 2019.

47 Q 22

48 Committee of Public Accounts, *Crossrail: Progress review*, Ninety-second report of session 2017–19, HC 2004, 3 April 2019, para 21

49 Qq 175–189; Committee of Public Accounts, Oral evidence - *Crossrail: progress review*, HC 925, 6 March 2019

infrastructure work and new trains and we recommended that the Department should focus on integrated planning and aligning decision-making across the different elements of complex programmes from the start.[50] Similarly, our 2017 report on the Great Western modernisation programme found that the Department failed to integrate all the elements needed to deliver benefits for passengers successfully at the planning stage, and did not manage the programme in a joined-up way. We recommended that the Department ensure that it plans major developments to rail services in a way that brings together the trains, infrastructure work and the operation of services.[51]

25. The former Chief Executive told us that Crossrail Ltd, and its suppliers, had significantly underestimated the complexity and volume of work needed for the computerised system that will be used to operate the railway and stations. He stated that there were elements coming together in the stations that have never been done before, driven by the aim to deliver a digital railway that could be controlled from the stations and remotely.[52] The previous Chair told us that he was in no doubt that Crossrail Ltd had underestimated the challenge of system integration.[53] He added that he thought delays to the trains being ready for testing was one of the things that prevented Crossrail Ltd having an in-depth understanding of system integration.[54] Despite the complexity of the programme, the NAO found that the company did not have a fully integrated plan to complete the programme and did not have the skills it needed to understand all the risk and challenge of integrating all the complex elements of the programme. From 2015 onwards, Crossrail Ltd produced a series of plans known as the Master Operational Handover Schedule.[55] This Handover Schedule was presented to the Department as the fully integrated plan that would take the programme from the civil engineering phase to completion of the programme and operation of the railway. Both the Department and the current Chief Executive of Crossrail Ltd accepted that this plan was not sufficient to enable all the activities required to be fully integrated.[56]

26. The lack of a detailed plan to complete the programme, and the lack of understanding about the volume of work remaining also meant that the more than £2 billion of additional cost of the programme remained hidden until very late in the day. The current Chief Executive told us that these costs were always present in the programme but recognised that the system of monitoring that was in place in Crossrail Ltd did not provide the information that the executive needed to understand the true cost of the programme.[57] Crossrail Ltd told us that further work was required at the Canary Wharf station. The station was built by the Canary Wharf Group on a design-build contract. The Canary Wharf Group informed us in a letter received after our evidence session that it completed the station according to the standards and specifications agreed with Crossrail Ltd in September 2015.[58] The former Chief Executive of Crossrail Ltd told us that when the station was handed over to Crossrail Ltd in 2017, further work would be needed for the

50 Committee of Public Accounts, *Progress in delivering the Thameslink programme*, Twenty-sixth report of Session 2013–14, HC 296, 29 October 2013
51 Committee of Public Accounts, *Modernising the Great Western Railway*, Forty-fourth report of Session 2016–17, HC 776, 3 March 2017
52 Qq 77, 94–96
53 Q 55
54 Qq 98–99
55 Qq 100–109, C&AG's report, paras 12, 2.24–2.27
56 Qq 105–108, 111
57 Qq 109–111
58 Letter from Canary Wharf Group to PAC Chair, dated 17 May 2019

station to meet the specifications required of an operational railway. Crossrail Ltd told us that it had spent around £80 million changing the equipment in the station to enable make it equivalent to the standards required for a London underground station.[59] In our evidence session in March 2019, the former Chief Executive told us that Crossrail Ltd had spent a lot of time working on a logical sequence for the remaining work.[60] Crossrail Ltd asserted that it now had a plan that sequences activities that enables the railway to open with all the stations, excluding Bond Street, and was now in a position to be able to set out exactly what is left to do at every station.[61]

Remuneration of senior executives

27. The former Chief Executive of Crossrail Ltd was paid a basic salary of £477,000 in 2017–18 (£463,000 in 2016–17) and the previous Chair was paid £250,000 (£250,000 in 2016–17). The former Chief Executive was also paid a bonus of £160,000 for their performance in 2016–17 (£481,000 for performance in 2015–16).[62] [63] The Chair of Crossrail Ltd, not the programme sponsors, was responsible for carrying out the Chief Executive's annual performance appraisal and setting the performance objectives for the following year. We questioned the former Chair of Crossrail Ltd why this level of remuneration was appropriate given that there were already signs by this time that the programme was not going according to plan.[64] The previous Chair told us that the former Chief Executive's performance was scored against the objectives set and the results audited to make sure the metrics were correct. He told us that only once did they use a degree of discretion in rating performance because they wanted to reflect the outstanding performance of the Executive around the safety of the programme.[65] The previous Chair also told us that the former Chief Executive did not achieve a bonus every year.[66]

28. The Department stated its position on remuneration and bonuses in evidence to our sister committee, the Public Administration and Constitutional Affairs Committee's recent inquiry into the Government's management of major projects.[67] The Department told us that there should be clear limits to remuneration levels but that it was important that remuneration levels for those delivering large projects allowed the Department and its arm's length bodies to recruit people with the right level of skills and experience. The Department stated that its role in setting the remuneration of senior Crossrail Ltd staff was very limited because Crossrail Ltd was a subsidiary of TfL. However, it did acknowledge that there was insufficient sponsor oversight and challenge of, or opportunity to be consulted upon, decisions on the remuneration of senior staff at Crossrail Ltd.[68]

29. The Department explained that it ensured that it has the opportunity to directly participate in the decisions of remuneration committees of its arm's length bodies and that it would take a different approach to the Crossrail Ltd Board on the balance to be

59 Qq 131–142
60 Committee of Public Accounts, Oral evidence - *Crossrail: progress review*, HC 925, 6 March 2019, Qq 46, 97
61 Qq 113–114
62 Numbers rounded to nearest thousand. Bonuses shown were paid in the subsequent financial year.
63 Q 156; C&AG's Report, A memorandum on the Crossrail programme, Session 2017–2019, HC 1924, 28 February 2019, page 19; Transport for London, Annual Report and Statement of Accounts 2016–17, September 2017.
64 Qq 156, 192–195; C&AG's report, paras 2.20, 2.23
65 Qq 156–161
66 Q 191–194
67 Qq 160–161; Evs – DfT submission to PACAC inquiry on government's management of major projects.
68 Q 161

struck between base pay and variable, performance-related pay. It also told us that the practices it has in place for its other arm's length bodies provide greater accountability.[69] However, in December 2017 we reported on concerning remuneration practices in one of the Department's arm's length bodies, HS2 Ltd. We found that HS2 Ltd made £1.76 million of unauthorised payments to staff through compulsory and voluntary redundancy schemes offered at enhanced terms well in excess of those authorised by the Department for Transport.[70]

69 Q 161

70 Committee of Public Accounts, *High Speed 2 Annual Report and Accounts*, Tenth report of session 2017–19, HC 454, 15 December 2017

Formal Minutes

Wednesday 10 July 2019

Members present:

Meg Hillier, in the Chair

Sir Geoffrey Clifton-Brown	Anne Marie Morris
Caroline Flint	Bridget Phillipson
Shabana Mahmood	Gareth Snell
Layla Moran	Anne-Marie Trevelyan

Draft Report (*Completing Crossrail*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 29 read and agreed to.

Introduction agreed to.

Conclusions and recommendations agreed to.

Summary agreed to.

Resolved, That the Report be the One Hundred and ninth of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Monday 15 July at 3:30pm

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the inquiry publications page of the Committee's website.

Wednesday 15 May 2019

Bernadette Kelly, Permanent Secretary, Department for Transport; **Matthew Lodge**, Director of Rail Infrastructure South, Crossrail Senior Responsible Owner, DfT; **Tony Meggs**, Chairman, Crossrail Ltd; **Mark Wild,** Chief Executive Officer, Crossrail Ltd; **Sir Terry Morgan**, former Chair, Crossrail Ltd; and **Andrew Wolstenholme**, former CEO, Crossrail Ltd Q1–299

Published written evidence

The following written evidence was received and can be viewed on the inquiry publications page of the Committee's website.

CRL numbers are generated by the evidence processing system and so may not be complete.

1 Wendover Parish Council (CRL0001)

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the publications page of the Committee's website. The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2017–19

First Report	Tackling online VAT fraud and error	HC 312 (Cm 9549)
Second Report	Brexit and the future of Customs	HC 401 (Cm 9565)
Third Report	Hinkley Point C	HC 393 (Cm 9565)
Fourth Report	Clinical correspondence handling at NHS Shared Business Services	HC 396 (Cm 9575)
Fifth Report	Managing the costs of clinical negligence in hospital trusts	HC 397 (Cm 9575)
Sixth Report	The growing threat of online fraud	HC 399 (Cm 9575)
Seventh Report	Brexit and the UK border	HC 558 (Cm 9575)
Eighth Report	Mental health in prisons	HC 400 (Cm 9575) (Cm 9596)
Ninth Report	Sheffield to Rotherham tram-trains	HC 453 (Cm 9575)
Tenth Report	High Speed 2 Annual Report and Accounts	HC 454 (Cm 9575)
Eleventh Report	Homeless households	HC 462 (Cm 9575) (Cm 9618)
Twelfth Report	HMRC's Performance in 2016–17	HC 456 (Cm 9596)
Thirteenth Report	NHS continuing healthcare funding	HC 455 (Cm 9596)
Fourteenth Report	Delivering Carrier Strike	HC 394 (Cm 9596)
Fifteenth Report	Offender-monitoring tags	HC 458 (Cm 9596)
Sixteenth Report	Government borrowing and the Whole of Government Accounts	HC 463 (Cm 9596)
Seventeenth Report	Retaining and developing the teaching workforce	HC 460 (Cm 9596)
Eighteenth Report	Exiting the European Union	HC 467 (Cm 9596)

Nineteenth Report	Excess Votes 2016–17	HC 806 (Cm 9596)
Twentieth Report	Update on the Thameslink Programme	HC 466 (Cm 9618)
Twenty-First Report	The Nuclear Decommissioning Authority's Magnox	HC 461 (Cm 9618)
Twenty-Second Report	The monitoring, inspection and funding of Learndirect Ltd.	HC 875 (Cm 9618)
Twenty-Third Report	Alternative Higher Education Providers	HC 736 (Cm 9618)
Twenty-Fourth Report	Care Quality Commission: regulating health and social care	HC 468 (Cm 9618)
Twenty-Fifth Report	The sale of the Green Investment Bank	HC 468 (Cm 9618)
Twenty-Sixth Report	Governance and departmental oversight of the Greater Cambridge Greater Peterborough Local Enterprise Partnership	HC 896 (Cm 9618)
Twenty-Seventh Report	Government contracts for Community Rehabilitation Companies	HC 897 (Cm 9618)
Twenty-Eighth Report	Ministry of Defence: Acquisition and support of defence equipment	HC 724 (Cm 9618)
Twenty-Ninth Report	Sustainability and transformation in the NHS	HC 793 (Cm 9618)
Thirtieth Report	Academy schools' finances	HC 760 (Cm 9618)
Thirty-First Report	The future of the National Lottery	HC 898 (Cm 9643)
Thirty-Second Report	Cyber-attack on the NHS	HC 787 (Cm 9643)
Thirty-Third Report	Research and Development funding across government	HC 668 (Cm 9643)
Thirty-Fourth Report	Exiting the European Union: The Department for Business, Energy and Industrial Strategy	HC 687 (Cm 9643)
Thirty-Fifth Report	Rail franchising in the UK	HC 689 (Cm 9643)
Thirty-Sixth Report	Reducing modern slavery	HC 886 (Cm 9643)
Thirty-Seventh Report	Exiting the European Union: The Department for Environment, Food & Rural Affairs and the Department for International Trade	HC 699 (Cm 9643)
Thirty-Eighth Report	The adult social care workforce in England	HC 690 (Cm 9667)
Thirty-Ninth Report	The Defence Equipment Plan 2017–2027	HC 880 (Cm 9667)
Fortieth Report	Renewable Heat Incentive in Great Britain	HC 696 (Cm 9667)

Forty-First Report	Government risk assessments relating to Carillion	HC 1045 (Cm 9667)
Forty-Second Report	Modernising the Disclosure and Barring Service	HC 695 (Cm 9667)
Forty-Third Report	Clinical correspondence handling in the NHS	HC 929 (Cm 9702)
Forty-Fourth Report	Reducing emergency admissions	HC 795 (Cm 9702)
Forty-Fifth Report	The higher education market	HC 693 (Cm 9702)
Forty-Sixth Report	Private Finance Initiatives	HC 894 (Cm 9702)
Forty-Seventh Report	Delivering STEM skills for the economy	HC 691 (Cm 9702)
Forty-Eighth Report	Exiting the EU: The financial settlement	HC 973 (Cm 9702)
Forty-Ninth Report	Progress in tackling online VAT fraud	HC 1304 (Cm 9702)
Fiftieth Report	Financial sustainability of local authorities	HC 970 (Cm 9702)
Fifty-First Report	BBC commercial activities	HC 670 (Cm 9702)
Fifty-Second Report	Converting schools to academies	HC 697 (Cm 9702)
Fifty-Third Report	Ministry of Defence's contract with Annington Property Limited	HC 974 (Cm 9702)
Fifty-Fourth Report	Visit to Washington DC	HC 1404 (Cm 9702)
Fifty-Fifth Report	Employment and Support Allowance	HC 975 (Cm 9702)
Fifty-Sixth Report	Transforming courts and tribunals	HC 976 (Cm 9702)
Fifty-Seventh Report	Supporting Primary Care Services: NHS England's contract with Capita	HC 698 (Cm 9702)
Fifty-Eighth Report	Strategic Suppliers	HC 1031 (Cm 9702)
Fifty-Ninth Report	Skill shortages in the Armed Forces	HC 1027 (9740)
Sixtieth Report	Ofsted's inspection of schools	HC1029 (Cm 9740)
Sixty-First Report	Ministry of Defence nuclear programme	HC 1028 (Cm 9740)
Sixty-Second Report	Price increases for generic medications	HC 1184 (Cm 9740)

Sixty-Third Report	Interface between health and social care	HC 1376 (Cm 9740)
Sixty-Fourth Report	Universal Credit	HC 1375 (Cp 18)
Sixty-Fifth Report	Nuclear Decommissioning Authority	HC 1375 (Cp 18)
Sixty-Sixth Report	HMRC's performance in 2017–18	HC 1526 (Cp 18)
Sixty-Seventh Report	Financial Sustainability of police forces in England and Wales	HC 1513 (Cp 18)
Sixty-Eighth Report	Defra's progress towards Brexit	HC 1514 (CP 18)
Sixty-Ninth Report	Sale of student loans	HC 1527 (Cp 56)
Seventieth Report	Department for Transport's implementation of Brexit	HC 1657 (Cp 56)
Seventy-First Report	Department for Health and Social Care accounts	HC 1515 (Cp 56)
Seventy-Second Report	Mental health services for children and young people	HC 1593 (Cp 79)
Seventy-Third Report	Academy accounts and performance	HC 1597 (Cp 79)
Seventy-Fourth Report	Whole of Government accounts	HC 464 (Cp 79)
Seventy-Fifth Report	Pre-appointment hearing: preferred candidate for Comptroller and Auditor General	HC 1883 (Cp 79)
Seventy-Sixth Report	Local Government Spending	HC 1775 (Cp 79)
Seventy-Seventh Report	Defence Equipment Plan 2018–28	HC 1519 (Cp 79)
Seventy-Eighth Report	Improving Government planning and spending	HC 1596 (Cp 97)
Seventy-Ninth Report	Excess Votes 2017–18	HC 1931 (Cp 97)
Eightieth Report	Capita's contracts with the Ministry of Defence	HC 1736 (Cp 97)
Eighty-First Report	Rail management and timetabling	HC 1793 (Cp 97)
Eighty-Second Report	Windrush generation and the Home Office	HC 1518 (Cp 113)
Eighty-Third Report	Clinical Commissioning Groups	HC 1740 (Cp 97)
Eighty-Fourth Report	Bank of England's central services	HC 1739 (Cp 97)

Eighty-Fifth Report	Auditing local government	HC 1738 (Cp 97)
Eighty-Sixth Report	Brexit and the UK border: further progress review	HC 1942 (Cp 113)
Eighty-Seventh Report	Renewing the EastEnders set	HC 1737 (Cp 113)
Eighty-Eighth Report	Transforming children’s services	HC 1741 (Cp 113)
Eighty-Ninth Report	Public cost of decommissioning oil and gas infrastructure	HC 1742 (Cp 113)
Ninetieth Report	BBC and personal service companies	HC 1522 (Cp 113)
Ninety-First Report	NHS financial sustainability: progress review	HC 1743 (Cp 113)
Ninety-Second Report	Crossrail: progress review	HC 2004 (Cp 113)
Ninety-Third Report	Disclosure and Barring Service: progress review	HC 2006
Ninety-Fourth Report	Transforming rehabilitation: progress review	HC 1747
Ninety-Fifth Report	Accessing public services through the Government’s Verify digital system	HC 1748
Ninety-Sixth Report	Adult health screening	HC 1746
Ninety-Seventh Report	Local Government Governance and Accountability	HC 2077
Ninety-Eighth Report	The apprenticeships programme: progress review	HC 1749
Ninety-Ninth Report	Cyber security in the UK	HC 1745
One-Hundredth Report	NHS waiting times for elective and cancer treatment	HC 1750
One Hundred and First Report	Submarine defueling and dismantling	HC 2041
One Hundred and Second Report	Military Homes	HC 2136
One Hundred and Third Report	Planning and the broken housing market	HC 1744
One Hundred and Fourth Report	Transport infrastructure in the South West	HC 1753
One Hundred and Fifth Report	Local enterprise partnerships: progress review	HC 1754
One Hundred and Sixth Report	Eurotunnel	HC 2460
One Hundred and Seventh Report	Consumer protection	HC 1752

One Hundred and Eighth Report	Emergency Services Network: progress review	HC 1755
First Special Report	Chair of the Public Accounts Committee’s Second Annual Report	HC 347
Second Special Report	Third Annual Report of the Chair of the Committee of Public Accounts	HC 1399
Third Special Report	Fourth Annual Report of the Chair of the Committee of Public Accounts	HC 2370