



House of Commons
Committee of Public Accounts

Modernising the Great Western Railway

Forty-fourth Report of Session 2016–17

*Report, together with formal minutes relating
to the report*

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The Committee of Public Accounts

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Publication

Committee reports are published on the [Committee's website](#) and in print by Order of the House.

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Committee staff

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Summary

We reported in November 2015 on the staggering and unacceptable increase in the estimated costs of the Great Western Main Line electrification programme which rose by £1.2 billion in the space of a year. The extent of the serious failings in the Department for Transport's (the Department's) and Network Rail's management of the Great Western modernisation programme which led to these cost overruns and a delay to completion of up to three years are now clearer. Both the Department and Network Rail accept that there were significant failings in the design, planning and cost-estimating of the programme. The case for electrification and new trains were seen as two linked programmes, rather than being managed as a whole and the accountability arrangements put in place were overly complex and failed to provide the assurance the Department needed to be an effective client of Network Rail. The serious management failings evident in this programme raise concerns about the Department and Network Rail's ability to manage similar projects in the future, such as the planned electrification schemes on Midland Main Line and TransPennine routes. The Department's claim that many of the passenger benefits of electrification can be obtained without electrifying the whole route raises questions about whether full electrification is the most appropriate way to achieve benefits for passengers, and value for money for taxpayers. But whilst the Department is taking this optimistic view this cannot detract from the £330m additional costs that the delays to electrification will incur.

Introduction

Modernising the Great Western Railway involves upgrading infrastructure, trains and passenger services along the rail route that connects London with south-west England and south Wales. The Department for Transport expects electrification of the railway line to increase capacity, reduce journey times, reduce operating costs and generate environmental benefits. The programme has seen significant cost increases and is taking longer than expected, and in November 2015 Network Rail replanned the modernisation programme. Electrification of the railway line between Maidenhead and Cardiff is now expected to cost £2.8 billion, which is an increase of £1.2 billion against the estimated cost of the project in 2014. The Department also currently expects to incur costs of up to £330 million as a result of delays to electrification. Electrification of some sections of the route will be delayed by up to 36 months. Some parts of the electrification project, such as between Bristol Parkway and Bristol Temple Meads, have been deferred to the next rail investment period (2019–2024). The Department is revising its business case for the entire modernisation programme, which is expected to be completed in March 2017.

Conclusions and recommendations

1. **It is not clear whether the Great Western electrification project can be delivered to the revised target of December 2018 and budget of £2.8 billion.** The estimated cost of electrification increased by £1.2 billion to £2.8 billion by the end of 2015 following Network Rail's replanning of the project, which also identified delays to parts of the project of 18 to 36 months. The Department and Network Rail are confident that the project is now on track as important milestones have been met. But Network Rail admitted that there are still "very significant risks" to be managed and noted that "every single part of the programme is absolutely on the limit".¹ The most recent risk analysis indicates a financial exposure of £274 million, £49 million more than the £225 million of contingency currently available and risks still remain that costs could increase further.

Recommendation: *Network Rail must ensure that all risks to the project are identified, monitored and controlled and use this information to identify with the Department the critical path for the whole modernisation programme, setting out how the infrastructure, new trains and planned services will interact with each other by March 2017.*

2. **Network Rail failed to plan the infrastructure work properly.** Network Rail admits that the early stages of the project were not carried out in an appropriate way. The initial design was incomplete. The cost estimating was not good enough and it started construction before it had the necessary permits and consents in order to try to meet the schedule. Network Rail's failure to put in place an adequate plan to obtain the more than 1,800 separate consents it needed from local authorities, such as permission for works that could affect protected species or listed buildings, led to higher costs. Network Rail could not explain why it had not sought to avoid these problems by obtaining an Order under the Transport and Works Act enabling the Secretary of State to have granted planning permission for the whole scheme.

Recommendation: *Network Rail must improve its ability to produce realistic cost estimates, including making greater use of data from completed projects. Network Rail must make sure that robust and detailed plans, including a critical path, are in place for infrastructure projects before starting construction works and consider whether an Order under the Transport and Works Act would be preferable to multiple individual planning consents and other approvals.*

3. **The Department failed to challenge Network Rail's plans effectively despite the very significant sums of public money at risk.** Despite being liable to pay £400,000 per day to lease new trains that could not be used until the overhead electrification was complete, the Department did not adequately challenge Network Rail's plans to carry out the infrastructure work. Instead, it left the role of scrutinising Network Rail's plans to ensure they were both deliverable and the most efficient way of carrying out the work to the Office of Rail and Road. The Department accepts that this system was too complex, "much weaker and less reliable than [it] thought", though it believes that it has since put in place a "very clear structure of accountability".

1 [Qq 55, 58](#)

Recommendation: *The Department must ensure that it has obtained suitable assurance over cost and deliverability before taking decisions on infrastructure investment and other major decisions which depend on infrastructure being available. It must set out how it will continue to develop its own programme management expertise, and how it will use this to monitor Network Rail's delivery.*

4. **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.** Until 2015, the Department managed the different elements as separate but related projects, rather than as one single integrated project, even though improving services for passengers required all the elements to be completed on time. The Department should have had an integrated business case for the programme sooner than March 2015, bringing together the new infrastructure, new trains and service patterns. This would have allowed the Department to manage the interdependencies between the elements and the risks the programme faced. The Department built an 18-month buffer into the programme to allow for the infrastructure to be ready for new trains in advance but this was not based on the actual risks facing the programme. The Department's new approach to infrastructure planning involves it specifying outputs and Network Rail providing options to meet them. These options will be reviewed by the Department, who will then make a decision based on costs, benefits and risks to delivery. The Department is also trying to align decisions about infrastructure improvements with franchise timetables, such as future improvements to the Midland Main Line. We are concerned that serious failings in planning and delivering this programme will affect the case for future investment in rail programmes.

Recommendation: *The Department and Network Rail need to ensure that they plan major developments to rail services in a way which brings together trains, infrastructure work and the operation of services. As part of this, they should obtain independent assurance on the deliverability of their plans. We will expect to see this approach on forthcoming major programmes including the Midland Main Line and TransPennine upgrades.*

5. **The Department's claim that nearly all the benefits for passengers can be achieved without full electrification of the route casts doubt on the value for money of this and other electrification schemes.** The Department maintains that the decision to defer the electrification of sections of the route will have "little, if any, impact on the benefits of this programme to passengers" as many of the benefits, including more trains per hour, journey time savings and more seats, do not depend on electrification. The Department also considers that wider benefits, such as reduced operating costs and environmental benefits, will only be marginally impacted by the decision. However, the planned reallocation of diesel trains to increase capacity elsewhere on the network will be delayed. Some £130 million has been spent on infrastructure work to deliver electrification on the deferred sections, although Network Rail maintain that these costs will largely be recovered should electrification go ahead.

Recommendation: The Department needs to reassess the case for electrification on a section by section basis and fund schemes only where worthwhile benefits for passengers could not be achieved otherwise at lower cost. In its new business case for the Great Western programme, which it expects to complete by the end of March 2017, it should reassess the extent of electrification, and it should also look again at its plans for the Midland Main Line and TransPennine routes.

1 Delivery of the Great Western modernisation programme

1. On the basis of a report by the Comptroller and Auditor General (C&AG) we took evidence from the Department for Transport (the Department) and Network Rail on modernising the Great Western Railway.²

2. Modernising the Great Western Railway involves complex infrastructure works, new trains and service changes. The Department funds the programme and sets high-level requirements for the programme. It is also responsible for commissioning new Intercity Express trains for the Great Western Main Line, and for awarding and managing the franchise to run services along the route. Network Rail is responsible for delivering the infrastructure programme. The total cost of infrastructure works is estimated at £5.58 billion, and new trains to run along the line will cost £4.1 billion.³ The Department expects the infrastructure programme to deliver faster and more reliable train services for passengers. Passengers elsewhere on the network will also benefit once electrification is completed, since new electric trains will displace diesel trains. These can then be used to increase capacity on routes into Bristol and Exeter, and on routes in the Northern franchise.⁴ Wider benefits also include greater capacity across trains, stations and railway lines, reduced operating costs of running electric trains, and environmental benefits.⁵

3. In early 2015 it became clear that Network Rail did not have a grip on the programme's cost and schedule. Costs on the electrification project soared in 2014 and were rising by about £100 million a month.⁶ In response, in June 2015 the Department asked Sir Peter Hendy, chair of Network Rail, to review Network Rail's infrastructure programme. The review led to a replan of Network Rail's portfolio of infrastructure projects, including the modernisation of the Great Western Railway.

Electrification of the Great Western Railway

4. We previously reported in November 2015 that the £1.2 billion cost increase on the Great Western electrification project was staggering and unacceptable.⁷ Since we reported, the project has been 'reset' with an expected final cost of £2.8 billion and delays of up to 36 months.⁸ This will also delay the reallocation of existing diesel trains to other parts of the network.⁹ Network Rail told us that the current estimated final cost of £2.8 billion remains unchanged since November 2015.¹⁰ While electrification of most stretches will be finished in December 2018, the Department announced in November 2016 it would "defer" electrification of four sections of track (between Bristol Parkway and Bristol

2 C&AG's Report, *Modernising the Great Western railway*, HC 781, Session 2016–17, 9 November 2016

3 C&AG's Report, para 2

4 C&AG's Report, para 4.6

5 C&AG's Report, figure 3

6 Q 153

7 Committee of Public Accounts, *Network Rail's 2014–2019 investment programme*, Ninth Report of Session 2015–16, 16 November 2015, para 5

8 C&AG's Report, para 1.7

9 C&AG's Report, para 14

10 Q 55

Temple Meads, Thingley Junction and Bristol Temple Meads, Oxford and Didcot Parkway and of the Thames valley Branches) until the next rail investment period (2019–2024) to reduce spending in the current period.¹¹

5. In spite of the previous delays and cost increases, the Department believed that there were “a range of reasons” for being “pretty confident” that Network Rail would complete electrification works to the revised schedule.¹² For example, Network Rail met a critical milestone for completing a section of track between Didcot and Reading which was needed to test trains in September 2016, although this was close to the deadline.¹³ However, the Department accepted that its information “is less rich and less deep than [it] would like”.¹⁴ Specifically, Network Rail had not yet completed an analysis of the likely impact of risks. Additionally, it will not implement Earned Value Management techniques, which are used to monitor and report a programme’s progress, until January 2017. Network Rail accepted these were techniques “you would normally expect in any major capital-intensive industry of the type Network Rail is”.¹⁵

6. Given the programme’s history of large cost increases, we asked Network Rail about the amount of contingency in the programme as there is still some way to go before the project is completed so there is a risk that the costs of delivery could escalate further. Network Rail told us that there was currently a £49 million gap between its estimated risk exposure of £274 million and the contingency available of £225 million due to costs rising since the programme was replanned.¹⁶ This gap indicates that costs may not yet be fully under control, although Network Rail believed that the levels of risk and contingency were “about in balance”.

Network Rail’s cost estimation

7. Network Rail accepted that “the cost estimating was not good enough” in the early stages of the electrification project, and that it “made commitments [to the Department] before [it] had a handle on the details”. This was a serious mistake which resulted in significant cost increases. Network Rail agreed that taking longer to get costs right at the planning phase of the programme would have given it the opportunity to get things right first time when it started construction.¹⁷ Network Rail accepted that its ability to estimate costs had not been good enough at the time and told us that it was trying to address its weaknesses by implementing an “enhancements improvement programme” to improve its capabilities in cost estimation, project delivery and governance, and project and portfolio monitoring.¹⁸ Network Rail stated that it was 89% of the way through delivering the improvement programme and that it was now far more confident about its ability to consistently measure and estimate costs. However, Network Rail recognised that it had more to do to improve its capacity to produce reliable cost estimates and a “culture of capital management”.¹⁹

11 [Q 6](#)

12 [Q 53](#)

13 [Q 53, 57](#)

14 [Q 54](#)

15 [Q 129](#)

16 [Q 71](#)

17 [Q 4, Q 115](#)

18 [C&AG’s Report](#), para 3.12

19 [Q 93](#)

8. Accurate cost estimation is essential, since Network Rail is now required to operate within a fixed budget. Network Rail's funding limit for enhancements in the current rail investment period (2014–2019) is £15.7 billion.²⁰ The Department for Transport's decision to defer electrification on four sections of track until the next investment period (2019–2024) because of the need to fund critical Great Western projects illustrates the importance of accurate costing since further difficult decisions may be required if cost increases on one project are not balanced by savings on others.

2 The Department and Network Rail’s approach to planning and management of infrastructure programmes

The Department’s case for investing in infrastructure programmes

9. We questioned the Department about the benefits of electrification to passengers and taxpayers, and how the decision to defer electrification along some parts of the route would impact passenger services. The Department told us that the benefits promised to passengers by December 2018, namely; increased capacity, journey time savings, and more seats, would be entirely or largely unaffected by the decision to defer electrification of some sections by using trains that can operate both under electric and diesel power.²¹ However, some benefits, such as reduced operating costs and lower air pollution, would only be achieved if the line is electrified. The impact of the deferrals along some route sections is therefore “marginally higher costs for the exchequer” and “marginally higher emissions”.²² The Department sought to draw a distinction between electrification of these sections, and electrification of the stretch of track between Maidenhead and Bristol, which it feels will deliver significant passenger benefits.²³ Some £130 million has been spent on infrastructure work to deliver electrification on the four deferred sections, although Network Rail maintain that these costs will largely be recovered should electrification go ahead.²⁴

10. The National Audit Office found that changes to the scope of the modernisation programme have resulted in its benefit-cost ratio falling from 2.4:1 to 1.6:1.²⁵ We asked whether the modernisation programme would have gone ahead had it been known at the start that the benefit-cost ratio was 1.6:1. The Department told us that there had still been a strong strategic case for proceeding including meeting expected growth on the route, improving connectivity and the need to replace a very ageing fleet of trains. The Department is currently refreshing the business case, to take account of recent changes to the programme.²⁶

Network Rail’s planning of infrastructure work

11. Network Rail told us that there had been many shortfalls in the design, planning and cost-estimating of the project and admitted that it had not fully understood the scale, complexity and difficulty involved until the end of 2015.²⁷ Network Rail noted that “if you start a big project really badly, it is really hard to get it back under control”²⁸ and stated that it was still working very hard on improving planning and that it would have the

21 [Qq 6, 17–20](#)

22 [Q 28](#)

23 [Q 85](#)

24 Network Rail ([GWR0003](#)) paragraph 3

25 [C&AG’s Report](#) para 7

26 [Q 40, Q 148–149](#)

27 [Q 55](#)

28 [Q 115](#)

integrated critical path analysis showing the dependencies between all the different parts of the programme in January 2017. Network Rail told us that it had started construction works when it did before it had the necessary permits and consents in order to meet the deadlines it had agreed with the Department for Transport.²⁹

12. Network Rail needed to obtain more than 1,800 separate “consents” to carry out the works needed to electrify the Great Western Main Line. These “consents” include permission from English Heritage to carry out work on listed bridges and agreement that roads could be closed. The electrification project could potentially be delayed if any one of these consents is not achieved in time, and failure to obtain them all in time has led to higher costs.³⁰ Network Rail told us that there was still a risk that the project could be delayed further if it failed to get the “consents” it needs in time.³¹ Instead of this piecemeal approach Network Rail could have applied for permission to carry out works on large sections of the route (or even for all the electrification works) under the Transport and Works Act. Network Rail accepted that this would have been a far better approach but could not explain why this had not been followed.³²

The Department’s management of complex infrastructure programmes

13. The Department told us that the elements of the modernisation programme, particularly electrification and the interaction with investment decisions on new trains, were considered together but that no single business case was put forward.³³ The Department accepted that the infrastructure and new trains were seen as two linked projects, rather than “one programme which needed to be managed as a whole.”³⁴ This was particularly unacceptable, since the contract for the new trains put the Department at risk of having to pay £400,000 to the company supplying the trains for every day the infrastructure was delayed.³⁵ An integrated business case for the programme was produced in March 2015, but this was clearly too late to manage the cost pressures and risk to schedule delays the programme faced. In addition, the Department wrongly thought that an 18-month buffer between completion of electrification and introduction of new trains was sufficient. The Department acknowledged that this buffer was “not enough” and it did not think of how the dependencies could be managed and risks to be reduced.³⁶

14. The Department told us that a factor behind the lack of proper planning in the early stages of the programme had been the accountability arrangements. The Department specified its high-level requirements, and scrutiny of Network Rail’s plans had been passed over to the Office of Rail and Road. The Department accepted this tripartite structure had been too complex and “much weaker and less reliable than [it] thought”.³⁷ The result was that the Department failed to challenge Network Rail and get the assurance it needed over Network Rail’s ability to deliver the works to support the introduction of new trains in time and within budget.

29 [Q 4](#)

30 [C&AG’s report](#), para 3.8, [Q 106](#)

31 [Q 104–107](#)

32 [Qq 106, 107](#)

33 [Q 48](#)

34 [Q 50](#)

35 [C&AG’s Report](#), paragraph 4.11

36 [Q 51](#)

37 [Q 109, Q112](#)

15. The Department recognises that there was a need for it to engage as a “very effective client and sponsor of major change programmes”, and that it was unacceptable for it to act “at one very large remove”, as it had for much of this programme.³⁸ It agreed that its failure to obtain proper assurances over the deliverability of this programme, particularly before signing the contracts for new trains in 2012, was illustrative of broader problems in the Department at the time. However, it believed that it had made significant progress since then, putting in place “a very clear structure of accountability”, developing programme management and commercial expertise and expanded its approach to assurance.³⁹

16. While there has been an improvement in the management of the programme since 2015, the Department has still not produced an integrated critical path combining the electrification, the trains and franchising elements. It recognised that it needed this to effectively manage risks to the timetable for improving services. Making such improvements to services generally requires infrastructure work carried out by Network Rail, delivery of new trains and changes to services made by the franchisee. The Department told us that it would have a clear view of the programme and its associated risks when it completes its integrated critical path in March 2017.⁴⁰

38 [Q 112](#)

39 [Q 150](#)

40 [Q 70](#)

Formal Minutes

Wednesday 22 February 2017

Members present:

Meg Hillier, in the Chair

Mr Richard Bacon	Kwasi Kwarteng
Philip Boswell	Anne Marie Morris
Chris Evans	John Pugh
Caroline Flint	

Draft Report (*Modernising the Great Western Railway*), proposed by the Chair, brought up and read.

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

Paragraphs 1 to 16 read and agreed to.

Introduction agreed to.

Conclusions and recommendations agreed to.

Summary agreed to.

Resolved, That the Report be the Forty-fourth 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 27 February 2017 at 3.30pm]

Witnesses

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

Wednesday 14 December 2016

Question number

Philip Rutnam, Permanent Secretary, **Brian Etheridge CBE**, Director of Network Services, Rail Group, Department for Transport, and **Mark Carne**, Chief Executive, Network Rail

[Q1-164](#)

Published written evidence

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

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

- 1 Department for Transport ([GWR0002](#))
- 2 Great Western Railway ([GWR0001](#))
- 3 Network Rail ([GWR0003](#))

List of Reports from the Committee during the current session

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 2016–17

First Report	Efficiency in the criminal justice system	HC 72 (Cm 9351)
Second Report	Personal budgets in social care	HC 74 (Cm 9351)
Third Report	Training new teachers	HC 73 (Cm 9351)
Fourth Report	Entitlement to free early education and childcare	HC 224 (Cm 9351)
Fifth Report	Capital investment in science projects	HC 126 (Cm 9351)
Sixth Report	Cities and local growth	HC 296 (Cm 9351)
Seventh Report	Confiscations orders: progress review	HC 124 (Cm 9351)
Eighth Report	BBC critical projects	HC 75 (Cm 9351)
Ninth Report	Service Family Accommodation	HC 77 (Cm 9351)
Tenth Report	NHS specialised services	HC 387 (Cm 9351)
Eleventh Report	Household energy efficiency measures	HC 125 (Cm 9351)
Twelfth Report	Discharging older people from acute hospitals	HC 76 (Cm 9351)
Thirteenth Report	Quality of service to personal taxpayers and replacing the Aspire contract	HC 78 (Cm 9351)
Fourteenth Report	Progress with preparations for High Speed 2	HC 486 (Cm 9389)
Fifteenth Report	BBC World Service	HC 298 (Cm 9389)
Sixteenth Report	Improving access to mental health services	HC 80 (Cm 9389)
Seventeenth Report	Transforming rehabilitation	HC 484 (Cm 9389)
Eighteenth Report	Better Regulation	HC 487 (Cm 9389)

Nineteenth Report	The Government Balance Sheet	HC 485 (Cm 9389)
Twentieth Report	Shared service centres	HC 297 (Cm 9389)
Twenty-first Report	Departments' oversight of arm's-length bodies	HC 488 (Cm 9389)
Twenty-second Report	Progress with the disposal of public land for new homes	HC 634 (Cm 9413)
Twenty-third Report	Universal Credit and fraud and error: progress review	HC 489 (Cm 9413)
Twenty-fourth Report	The sale of former Northern Rock assets	HC 632 (Cm 9413)
Twenty-fifth Report	UnitingCare Partnership contract	HC 633 (Cm 9413)
Twenty-sixth Report	Financial sustainability of local authorities	HC 708
Twenty-seventh Report	Managing government spending and performance	HC 710
Twenty-eighth Report	The apprenticeships programme	HC 709 (Cm 9413)
Twenty-ninth Report	HM Revenue & Customs performance in 2015–16	HC 712
Thirtieth Report	St Helena Airport	HC 767
Thirty-first Report	Child protection	HC 713
Thirty-second Report	Devolution in England: governance, financial accountability and following the taxpayer pound	HC 866
Thirty-third Report	Troubled families: progress review	HC 711
Thirty-fourth Report	The Syrian Vulnerable Persons Resettlement programme	HC 768
Thirty-fifth Report	Upgrading emergency service communications	HC 770
Thirty-sixth Report	Collecting tax from high net worth individuals	HC 774
Thirty-seventh Report	NHS treatment for overseas patients	HC 771
Thirty-eighth Report	Protecting information across government	HC 769
Thirty-ninth Report	Consumer-funded energy policies	HC 773
Fortieth Report	Progress on the Common Agricultural Policy Delivery Programme	HC 766

Forty-first Report	Excess Votes 2015–16	HC 954
Forty-second Report	Benefit sanctions	HC 775
Forty-third Report	NHS financial sustainability	HC 887
First Special Report	Protecting the Public's Money: First Annual Report from Chair of Committee of Public Accounts	HC 835

Public Accounts Committee

Oral evidence: The Great Western Railway, HC 776

Wednesday 14 December 2016

Ordered by the House of Commons to be published on 14 December 2016.

Watch the meeting <http://www.parliamentlive.tv/Event/Index/82c1a5d8-2053-46d3-9c91-603307f24407>

Members present: Mr Richard Bacon (Chair); Philip Boswell; Chris Evans; Kevin Foster; Kwasi Kwarteng; Nigel Mills; Karin Smyth.

Questions 1-164

Witnesses

I: Philip Rutnam, Permanent Secretary, Department for Transport, Brian Etheridge CBE, Director of Network Services, Rail Group, DfT, and Mark Carne, Chief Executive, Network Rail.

Sir Amyas Morse, Comptroller and Auditor General, Adrian Jenner, Director of Parliamentary Relations, and Rebecca Sheeran, Director, National Audit Office, and Richard Brown, Treasury Officer of Accounts, HM Treasury, were in attendance.



Report by the Comptroller and Auditor General
Modernising the Great Western railway (HC 781)

Examination of witnesses

Witnesses: Philip Rutnam, Brian Etheridge and Mark Carne.

Chair: Good afternoon and welcome to this meeting of the Public Accounts Committee on Wednesday 14 December 2016. We are taking evidence on the National Audit Office Report on modernising the Great Western Railway. This is an important project, involving complex infrastructure works, new trains and service changes, and it has been subject to various delays. The NAO Report states that the Department for Transport “did not produce a business case bringing together all the elements” of the programme until March 2015. We want to examine the strategic planning and programme management capabilities of the Department for Transport and of Network Rail, as well as their abilities in estimating costs and, most importantly, the impact all this has had on passengers and taxpayers. Our witnesses are Mr Philip Rutnam, the Permanent Secretary of the Department for Transport; Mr Brian Etheridge, the director of network services for the Department for Transport; and Mr Mark Carne, chief executive of Network Rail. In the first instance, our questions will be led by Karin Smyth, and then by Kevin Foster. Karin Smyth, the floor is yours.

Q1 **Karin Smyth:** Mr Rutnam, can you tell us the benefits of electrification of this line?

Philip Rutnam: The benefits of electrification alone are principally reduced operating costs—it costs less to move a train using electric power than it does to move it using diesel—and improved environmental outcomes, such as less pollution and less noise. There are also benefits in terms of being able to accelerate and decelerate trains more quickly, so there are some interactions with journey times and capacity. It is a mixture of all those benefits. They are quite complex, particularly when you get into journey times and capacity, because you need to compare different types of traction, and it depends on the mix of traffic on the route, but those are the types of benefit.

Q2 **Karin Smyth:** In 1835, an Act of Parliament created the Great Western Railway; you will be aware of that. It took Mr Brunel six years to build the entire thing from Paddington to Bristol Temple Meads. In the past six years, why have you not been able to deliver most of those benefits to the people of Bristol?

Philip Rutnam: We all stand in admiration of what the Victorians managed to achieve in building the railway system. It was truly remarkable, but there was one very important difference between what happened in the 19th century, in the initial development and construction of the railway system, and what is happening now. In the 19th century,



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they were building through green fields. They were building an infrastructure that did not then exist. What is happening now is the modernisation and upgrading of a system that very much does exist and in fact is extremely busy day in, day out. It is carrying millions of passengers every day.

The national railway network covers well over 4 million—nearly 5 million—passengers. It is a very, very busy system, and that means when you modernise it, you can only do certain types of works during relatively small intervals at night, when the system is not being used, or else in relatively short blockades during weekends or holiday seasons. Mr Carne, who is more the expert on the physical task of upgrading the railway system, could expand a bit on that point, but that is the very big difference between what is happening now and what happened when the Great Western Railway was built in the first instance.

Q3 Karin Smyth: It is a fair response; Mr Brunel had open fields, but when you started this project, Bristol and Bath, for example, and everything along the way was already there. You knew that at the outset. Why did you not manage that?

Mark Carne: We certainly did know the extent of the railway, but it is a huge project we are undertaking. The scale of it should not be underestimated, with 170 bridges, 1,000 km of track that we have to electrify and 17 tunnels. The original achievement was terrific and remarkable, but we get to work on it for a few hours every night, in the middle of every night, and every time we finish work at the end of that night, the railway has to be running again for the 2,300 trains that run every day up and down the Great Western line.

Q4 Karin Smyth: This was the case in 2009, 2010 and 2011, when you were embarking upon this project.

Mark Carne: If I could have my time all over again and we were doing this project again, I would take even longer over the early phases of it, so that we could spend less time on the construction period. As the NAO Report makes clear, the early stages of this project were not carried out in an appropriate way. The initial design was incomplete. The cost estimating was not good enough for the project. We started construction on this project before we had the permits and the consents because we had to in order to try to meet the schedule. If I had my time again, I would take longer over the early phases of a project of this magnitude and scale, so that you got it right. Probably the No. 1 lesson that any project manager anywhere in the world will reiterate is, "Get it right at the beginning and then you have a good chance of delivering it."

Q5 Karin Smyth: Colleagues will pick up on some of that detail later. Let me come back to the people of Bristol, Mr Rutnam, who are very keen to see the benefits that you have described. When will we see those benefits in Bristol?

Philip Rutnam: Provided that the infrastructure is delivered, as I believe it will be, to the timelines set following the re-plan of the project last



year—again, we can talk about that in more detail—I am fully expecting the great bulk of the benefits of the programme to flow to passengers not just in Bristol but in Cardiff, Bath and a range of places across the south-west and south Wales from December 2018.

Q6 Karin Smyth: You have deferred the electrification of the link down from Thingley Junction to Bristol and from Parkway down to Bristol. When will you deliver that part of the project?

Philip Rutnam: Those were deferrals, as you said. The plan is to take those forward in what is known as control period 6, which is the period 2019 to 2024, rather than control period 5. A lot more work will need to be done, but that is the fundamental plan. It is important to emphasise that those deferrals have very little, if any, impact on the benefits of this programme to passengers. That is, not least, because the trains that we are buying are what are known as bi-modes, or hybrids, able to operate both under electric power where the electric wires exist and under diesel power where the electric powers do not exist. Come December 2018, we will still have the same increase in frequency of services, the same improved passenger experience, in terms of better trains with more space, and the reduction in journey times that we were expecting anyway if we had electrified all the way from Thingley Junction to Bristol Temple Meads or from Parkway down to Bristol Temple Meads. The benefits to passengers will be either entirely or very largely unaffected. To go back to the slightly complicated answer that I gave you earlier about the benefits of electrification itself, there would be benefits associated with reducing the operating costs on the relatively short sections of track using electric power rather than diesel, and there would be some associated environmental benefit. But fundamentally for passengers there will be no difference.

Q7 Karin Smyth: So are you able to give me a date for when electrification of that part of the line will be delivered?

Philip Rutnam: I am not able to give you a date now.

Q8 Karin Smyth: When will you be able to give me a date for when electrification of that part of the line will be delivered?

Philip Rutnam: Not until we have done a good deal more work on planning Network Rail's investment programme with Network Rail for the period from 2019 onwards. If we have learnt one thing—among many things—from our experience on this programme to date, it is that it is unwise prematurely to give dates for when projects will be completed until the planning has been done.

Q9 Karin Smyth: So when will you be able to give us a date as to when we are going to get a date?

Philip Rutnam: We have a process for developing the investment plans for Network Rail for enhancements from 2019 onwards. That is going to be carrying on through 2017 and 2018. I am afraid that I cannot give you a date at the moment for when—



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Q10 **Karin Smyth:** So in 2018 we might get a date as to when we can expect the date in the second control period.

Philip Rutnam: I understand the desire to know when electrification of those two sections of track will take place, but I do not want to give you a commitment now until we have done a lot more on planning and preparation for those projects.

Q11 **Karin Smyth:** Okay, I am going to stop you there—thank you for that—and move to the day after the deferment. I have a letter here from the West of England local enterprise partnership that was sent to the Secretary of State. It starts off with a very friendly, “Dear Chris”, but quickly moves into saying, “We are surprised and dismayed by yesterday’s announcement on deferring the section from Bristol to Bath.” It says, “We are disappointed”.

The West of England local enterprise partnership talks about our economy, which as you may or may not know, is worth £33 billion a year. It says that we are a net contributor to the national economy of £0.6 billion. We are the only core city that contributes to the Treasury in that way. They say: “Our economic growth cannot be taken for granted. A partially electrified service undermines the development of our economy and we would like you to reconsider this decision.” They go on to talk about the passenger numbers at Bath and Temple Meads. They have not had an answer to that question. Why are they surprised and dismayed by that announcement of deferral?

Philip Rutnam: I can understand the reaction, but my response to it goes back to what I said earlier: the deferral of those two sections of track should not have any material impact on the benefits for passengers or the service available to them from December 2018. I think the reason why that is not understood as widely as it should be is that we need to be much better at explaining that electrification itself is an input. The service that comes to passengers—

Q12 **Karin Smyth:** Let me stop you there, because that is very helpful. Our local newspaper said the day after: “Bristol loses its spark...soaring costs mean that the electrification of Bristol rail lines is put on hold indefinitely.” Given what you said, my real question is why you are electrifying that part of the track.

Philip Rutnam: Why would we electrify the bits that have been deferred?

Q13 **Karin Smyth:** I am very parochial about this. I think it is about taxpayers’ money, which is why I talk about Bristol and the west of England’s contribution to the Treasury. For the people of Bath and Bristol in particular, why are you now electrifying that section?

Philip Rutnam: We intend to continue with electrification of those sections of the track because, as I tried to explain, there are other benefits from electrification other than simply benefits to passengers in terms of reduced journeys and better service.

Q14 **Chair:** By “reduced journeys”, do you mean reduced journey times?



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Philip Rutnam: Reduced journey times, yes. Thank you. The benefits include the fact that you can reduce the operating cost of the service, which is in truth a benefit to taxpayers. You can also reduce pollution. Electric trains, provided the electricity is generated in a clean way, are less polluting. There are also some benefits in terms of reduced wear on the track. There will still be a range of associated benefits.

Q15 **Karin Smyth:** Is this not really a cancellation of this part of the track?

Philip Rutnam: No, it is not a cancellation of those two sections of electrification. What the Government has said is that it is deferring those parts of the electrification project out of this control period. That deferral should not, as I have tried to explain, have any material impact on what passengers experience or on the economy of Bristol and that region.

Q16 **Karin Smyth:** It will, because it is deferring some benefits. It necessarily will. In that case, can you explain to us how you are measuring the benefits now? We are particularly interested in what your perception is of the cost-benefit ratio, for a start, of electrifying that part of the track.

Philip Rutnam: I might ask Mr Etheridge to comment on the work we are doing on the business case, but fundamentally there is a business case for this entire very large, very complex modernisation programme. The business case was produced in March 2015 and is now being refreshed, as you would expect to happen with a business case of this scale and complexity from time to time. Mr Etheridge might want to pick up on how we assess benefits.

Brian Etheridge: If you look at figure 8 of the Report, it gives quite a good summary of the benefits here. The NAO has made a calculation that as we stand, this still has a benefit-cost ratio of 1.6. We have validated that and we believe it to be the case. We are refreshing the business case, and that work will be completed in February or March next year. As Mr Rutnam has tried to explain, this is quite a complex set of relationships. You do not necessarily get a benefit just because the train is powered in a slightly different way. It is the circumstances—

Q17 **Karin Smyth:** We were promised electrification because it had benefits.

Brian Etheridge: It does have benefits, and it is quite clear here—

Q18 **Karin Smyth:** Hence my question: why do you not cancel it?

Brian Etheridge: The passenger will not notice the difference.

Q19 **Chair:** In that case, why do it all? Mr Rutnam said there are all these benefits. Presumably that means benefits to the people using trains. Does it?

Brian Etheridge: If you sit on a train, you won't know—

Q20 **Chair:** When we are speaking of benefits, to whom are the benefits?

Brian Etheridge: The benefits are in overall cost because it is cheaper overall to run electric trains than it is to run diesel trains, but you have to

balance that against the cost of the infrastructure that you are putting in, as figure 8 sets out.

Chair: I understand that the reduced cost—if that is correct—is a benefit to taxpayers and obviously passengers are taxpayers. The other benefits that we are talking about—Mr Rutnam mentioned reduced journey time—are benefits to passengers. If you don't have the reduced journey time because you haven't had the electrification—again, assuming that is true—then you don't get that benefit.

Brian Etheridge: We are working with Great Western Railway. I think they have put a report in to you that says that they don't anticipate material disbenefits to passengers because of the work that we are doing. That is because the relationship between how we run a bi-mode train under the electric wires and thereafter means that we can still preserve the journey improvement times as originally set out.

Q21 **Chair:** That is the benefits of—what did you say? Bi-modal trains?

Brian Etheridge: Yes. So the passengers will still get better trains, they will get more reliable trains, they will get more seats and ultimately they won't notice the difference between them.

Karin Smyth: We need to try to get a grip on what you know now about the costs and the benefits. We hear what you are saying about comfortable trains and maybe more of them, but what is your estimate of the costs involved for this particular part of the track and the costs compared with the benefits? How are you costing that? What is the criteria by which you are making that judgment now? That is what we want to understand.

Brian Etheridge: The cost-benefit calculation is quite a complicated one. It is very simply the cost of doing the works necessary to put this into place against the benefits that you have seen.

Q22 **Karin Smyth:** We are giving £0.6 billion a year in our contribution to the Treasury. We would like to know how much we are getting back for it.

Brian Etheridge: Very simply, if it is a cost-benefit of 1.6:1—for every £1 that you are putting in, you get £1.60 back.

Q23 **Karin Smyth:** Are those the costings that you are going to use? Are you happy with that?

Brian Etheridge: At the moment we are happy with that. We recognise, as the Report makes clear in the recommendation to us, that we need to refresh the overall business case, which was last looked at in great detail in 2015.

Q24 **Karin Smyth:** Will you be including in that the benefits to the regional economy provided by Bristol? Is that a part of your calculation?

Brian Etheridge: Yes; there is an aspect within the calculation that looks at the wider benefits of the money that we are spending.



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Q25 **Karin Smyth:** Will you be talking to groups in Bristol and Bath and the business community and so on about what those benefits are?

Brian Etheridge: We have a very well-established methodology, which we are very happy to share with the Committee about how this works—

Q26 **Karin Smyth:** We are not terribly impressed so far with what we are seeing, so forgive me for being a little bit sceptical. I want assurances about what the future will look like.

Philip Rutnam: We talk to groups in Bristol, we talk to Bristol City Council.

Q27 **Karin Smyth:** You have been to visit them, but as they say in their letter, they had completely no sight of this devastating decision on the regional economy.

Philip Rutnam: We talk to the local enterprise partnership and others frequently. Please can I just try again to explain that this should not be seen as a devastating decision for the economy or the people of Bristol?

Q28 **Karin Smyth:** Those aren't my words. "Dismay" is the word. This is not a group that is pretty friendly to Labour MPs, I can tell you. "Surprised and dismayed" are the words in their letter to the Secretary of State.

Philip Rutnam: I understand that, but what we are expecting to deliver from 18 December for the people and businesses of Bristol is a change from two trains per hour, which is what you will get at the moment if you go to Paddington and try to go to Bristol, to four trains an hour and a reduction in journey time of about 15 minutes, perhaps 17 minutes. Each train will have 25% more seats than now, and each train will be new and will have, I hope, a much better customer experience. All of those benefits will follow. Because we have deferred the electrification of those two short sections of track, the disbenefit will be marginally higher operating costs, which affects taxpayers, not passengers. Of course the people of Bristol are taxpayers, but it is not an impact that I think will be perceptible directly in any way in Bristol. There will also be marginally higher emissions from the trains.

It is very common in transport projects for there to be different types of benefits, some directly to road users or rail users, some to the Exchequer and the Government, and some impacts—what are known as externalities—on the wider environment. In this case, we will be delivering all the benefits to passengers and the people of Bristol and Bath along that line and the effect of the deferral is marginally higher costs for the Exchequer—I can't give you a figure, but very marginally higher—and marginally higher emissions. When we electrify those two sections of track, those operating costs will come back down again and the emissions will come back down again.

Q29 **Karin Smyth:** The emissions issue is very important, because the other thing that's happened in Bristol this week is that we look like we might be starting to charge drivers for driving diesel cars in Bristol. So, you are bringing in more diesel into the Bristol and Bath area. If drivers have to



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pay a greater charge for driving diesel cars, shouldn't you have to be charged for bringing diesel and part-diesel engines into our economy? Would you take account of that in your cost-benefit—?

Philip Rutnam: In our cost-benefit appraisal, when we look at the impact of the electrification, from Thingley Junction to Temple Meads Parkway to Temple Meads, we will, of course, take fully into account the impact of the emissions—we assess the environmental impact and we have methodology for valuing that—as well as the impact on operating costs.

Q30 **Karin Smyth:** Can you tell me how much has been spent already on the sections that have been deferred, in preparation for electrification?

Philip Rutnam: On those two sections, I'm afraid I can't say myself; Mr Carne can.

Mark Carne: So far, we've spent about £47 million on the three pieces of track.

Q31 **Karin Smyth:** If electrification doesn't go ahead, how much of that money is wasted?

Mark Carne: Well, I can't give you an answer to that now, because it includes a number of different aspects of the work, including improving the track and the system, as well as preparation works for electrification. So I'd be happy to come back to the Committee with a response on that breakdown; I don't have it to hand.

Q32 **Karin Smyth:** That would be helpful. I tried to ask the Minister this question in Westminster Hall. In the work that you are doing from now to some period in 2024, which we have not been able to determine—how much will you spend on those sections that are not to do with electrification? We understand the signalling problem, but what we don't have clarity on is—I take what has been said, but I remain sceptical—if this does not go ahead, how much money is being spent preparing for electrification now and up to 2024 that may not be needed by electrification, given that we get all the benefits by not electrifying?

Mark Carne: As I said, I will come back to you with a breakdown of it. There's a significant amount of work that needs to be done in the Bristol area, including massive resignalling jobs—

Karin Smyth: Yes, we understand that.

Mark Carne: Which we're continuing to do, and track work, particularly around Bristol Temple Meads and the diamond at Bristol Temple Meads that we have to do, and four-tracking at Filton Bank. So there's a lot of work that we need to do—

Karin Smyth: There is—we understand that.

Mark Carne: And I will give you that, and I will happily provide you with that.

Q33 **Karin Smyth:** You understand what the Committee's concern is. Given



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the amount of money that this has cost so far—we will come on to that in a bit more detail—if this is not going to happen, the Committee needs to know sooner rather than later about the difference between work that is essential for signalling and so on, and work that is purely allocated to electrification, which is why we'd like to understand both what's been spent so far and what is likely to be spent in the next few years. Thank you.

Q34 **Chair:** The issue really, Mr Carne, is the incremental cost of keeping going.

Mark Carne: Yes—[*Interruption.*] And it's the electrification work that is being deferred, rather than the other works.

Q35 **Chair:** Do you know what the incremental cost is in each case, of each—?

Mark Carne: The total incremental cost of the electrification works that are being deferred is around £160 million, but I need to make absolutely sure that there are no other elements within that, to come back to you, but I—

Q36 **Karin Smyth:** Just a couple more questions from me. Can I come back to this date issue; we might need to revisit it later? If you are going to start delivering in the next rail investment period, then you need to make a decision, in order to tell Network Rail way in advance of that period? So, you must be making that decision some time around 2017, surely, to get cracking before 2019? So you could come back to us fairly soon, couldn't you?

Brian Etheridge: The timetable for this is that, I think, in January of next year, we have an assessment from the industry of the types of priority across the network that may be worthy of funding—

Q37 **Karin Smyth:** Sorry—across the national network or—?

Brian Etheridge: Across the national network, which will include Great Western, of the types of investments that may be worthy of funding in the next period. We will then have to look at that and decide, according to the amount of money we think we have available, what the priorities of that will be. That will be for Ministers then to decide.

However, the planning process is the most complicated one. It reflects some of the things that have been said in the Report. We do not want to embark upon the next controlled period in the way that we did the one before if we do not fully understand both the interdependencies of the individual aspects of a programme such as Great Western and the interdependencies between big programmes. There is only a limited amount of Network Rail capacity, skills and crucial equipment, which all has to be planned and—

Q38 **Karin Smyth:** I understand that it is difficult, and colleagues will come back later in the session to why you did not look at doing this with recourse to Parliament at an earlier stage. But I am going to keep pressing you about this date, because I think you can be clearer with



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those of us in the west of England particularly—if you cannot do it now, perhaps you can do it quite soon or we can pick it up—about the date on which the decision needs to be made. That is not some vague time between now and 2024; it is some time next year.

Brian Etheridge: Indeed, and if we go by the process that we have in the plan, some time next year Ministers will say what their priorities are. Two years before the period we are now talking about, there was a high-level statement from the Government about the priorities for investment. That will set the overall framework.

Q39 **Karin Smyth:** We are the gateway to the whole south-west, so I hope we are worthy of a high priority from the Minister. I have two last questions. Given what you said about electrification, and given that we have these bi-modal trains now, will you be reassessing the case for electrifying the whole line between London and Swansea?

Brian Etheridge: That is a recommendation in the Report that we intend to follow. We will be doing that in the early months of next year.

Q40 **Karin Smyth:** The early part of next year. Is that part of the same decision-making process that you were just talking about?

Brian Etheridge: No, that is very specific to this programme. Indeed, it is a process that we will be going through with most of our programmes, to constantly reassure ourselves that as circumstances change, which they clearly have in this programme, the business case remains valid. That should be more of an iterative process as we go forward. This is quite a complex business case, for the reasons we have tried to explain, but we will do a full business case review early next year and it should be finished by March.

Q41 **Karin Smyth:** Will that also include the lines between the midland main line and the trans-Pennine route?

Brian Etheridge: I was referring to this one. There are separate business case processes already in train for those. We recently had a business case for the part of the midland main line up to Corby and we are developing a business case from Kettering through to Sheffield. It is exactly the same process.

Q42 **Karin Smyth:** So they are being reviewed.

Brian Etheridge: They are being reviewed, and you should expect them to be constantly reviewed. As you are pressing us for an early indication of timescales, you will appreciate that by the time you get to actually building these things, circumstances change. I am sure it is as important to you as it is to us that we improve the mechanism for constantly refreshing those business cases, so that we can make absolutely certain that when a decision is made early in the process it will still lead to the benefits we are looking for by the time we put spades in the ground.

Q43 **Karin Smyth:** Can I come back to the decision whether to electrify? If the emissions and the operating costs are marginal, can you give us a



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percentage or an idea of how much you think electrification is worth pursuing for those sections of the Bristol and Bath line? How marginal is it?

Philip Rutnam: At the risk of stating the obvious, that will depend on the business case. But although the reduction in operating costs and increased emissions is marginal, as you said, it lasts for a very long time. When you look at it in terms of the business case, you are trading off a capital cost that we would be incurring in the period up to 2024 against benefits that recur for as long as the railway is in use, effectively. We do not quite appraise it like that, but it is for a very long time. Small increments, decrements, increases, decreases or benefits can have really big impacts when you assess them over such a long period.

Q44 **Karin Smyth:** Given that we are talking about such long periods, will this new look at our section be considering new forms of technology, such as the new battery-operated trains, or are we just looking at what we have got?

Philip Rutnam: Generally, when we assess business cases for projects like this, we are doing it on the basis of what we know about established technology, rather than seeking to base a whole decision on a technology that is not yet proven, because in other projects and programmes that has proven to be a fatal flaw. In this case generally we test and make assumptions based on established technology, proven technology; and then we will do an assessment—a sensitivity analysis, it's called—to look at how things might change in the future in a way that we are not anticipating. So there might be a sensitivity analysis around technological change, for example. That's a high-level answer.

Karin Smyth: We are a very high-tech city in a high-tech region, so we are happy to have the best.

Q45 **Kevin Foster:** Perhaps this a good question to start with, as it links to what we have just talked about: if we are already working on a business plan for things like Midland Mainline and projects that are yet to come, how come it took until 2015 to put together a business plan for the whole project of modernising the Great Western railway, given that the actual application was announced in 2009?

Philip Rutnam: There were business cases for different components of this project.

Q46 **Kevin Foster:** Yes, I am aware of that. Why not one for the whole programme?

Philip Rutnam: And also, from what I have seen of looking at the past, decisions around, in particular, electrification and the interaction with investment decisions on new trains, were taken as far as possible together. What we did not do, and I accept that we should have done, is build an integrated business case across all its different dimensions that brought together in one place not just the trains decision, on investing in the trains, and the decision on investing in the infrastructure, but also the



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service patterns, and also the sensitivity analysis—the testing of all those different components together. That did not take place—

- Q47 **Kevin Foster:** So you accept it is fundamentally bizarre to have a business case on the trains separate from a business case on the tracks, for a project that is fundamentally talking about benefits—what, actually, a passenger sees.

Philip Rutnam: No, I don't think that is a correct characterisation. When the business case for intercity express programme came forward, for example, that was joint with assessing electrification.

- Q48 **Kevin Foster:** Mr Rutnam, I might agree with you that it wouldn't necessarily be the same if, for example, we were talking about buying electric trains to run on a piece of track that was already electrified, or diesel trains that can pretty much run on any track; but it was pretty fundamental, wasn't it, that these two schemes were considered together?

Philip Rutnam: The schemes were considered together. I can point you towards a number of statements that the Department made in which it was quite explicit that the schemes were being considered together; a single business case that brought together all the different components of this programme, of which there are many, was not built.

- Q49 **Chair:** I just want to pursue Mr Foster's point for a second: you are an accounting officer; you have got to assure yourself that things are being done properly and are value for money. You said a moment ago that it would have been better if we had done an integrated plan. How do you assure yourself as an accounting officer? How do you create an integrated assurance system without an integrated plan? You can't, can you?

Philip Rutnam: I think that is rather the point, actually: that what the Report recommends—and I agree with it—is that when you have a programme like this, which has different components, the service patterns, the infrastructure and the trains, it actually needs to be managed as a whole across all those different dimensions with the interdependencies between those components managed dynamically as part of the management of the whole.

- Q50 **Chair:** So that you understand the interdependencies of all of them.

Philip Rutnam: And so that you can test, in all its complexity, what happens when one bit goes askew—what happens to the other components. So let me just explain what happened in this case. Of course the case for electrification was assessed—not perhaps in all the depth that it might have been, but it was assessed—and it was looked at alongside the investment decisions around the trains, but they were seen as two programmes that were linked, not one programme which needed to be managed as a whole. It is a rather subtle difference, but actually when you then come to managing the programme downstream, when things happen that you don't necessarily expect, it becomes fundamental.

- Q51 **Chair:** Paragraph 4.11 says "The Department would have had to pay



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£400,000 per day to Agility Trains to lease new trains that could not be used until the overhead electrification was complete.” It does not sound that subtle to me; so it’s fairly obvious, isn’t it, that there is an intimate relationship between the two and, indeed, between the whole programme of electrification of trains and of the new franchising arrangements. Why wasn’t that all considered? Mr Carne said if he had been starting again, if he had his day again, he would have done; but why wasn’t that done?

Philip Rutnam: It was considered, but the answers that were come to were not robust enough. The response to how we managed the obvious interdependencies between the track and the train was to recognise that there was an interdependency and that therefore the infrastructure needed to be ready sooner. An 18-month buffer was built into the programme so that the infrastructure was planned to be ready, broadly, 18 months before the trains were going into service. My point is not that we did not consider those things—we did consider them—but we did not capture it, and, actually, 18 months is not enough. Because it wasn’t being managed as an integrated whole, we didn’t think through all the different ways in which those interdependencies could be managed and the risk could be reduced. There are more ways of mitigating that interdependency than simply leaving an 18-month buffer.

Q52 **Kevin Foster:** Yes, I think we would agree with that. It has to be said in the Christmas season, Mr Rutnam, that this would be like buying a train set that didn’t include any track. It is fairly obvious how critically these things link together.

Are you confident that the schedule we now have for the completion of the electrification is on schedule and will be delivered? You quoted December 2018.

Philip Rutnam: For the infrastructure?

Kevin Foster: Yes.

Philip Rutnam: We are obviously very heavily dependent on Network Rail.

Q53 **Kevin Foster:** Okay, I accept that—we will come to them in a second. You have given the date of December 2018; are you confident that that’s the date we will stick to?

Philip Rutnam: We are pretty confident, but we are under no illusions that this is a very large, complex and demanding task. Since we appeared before the Committee just over a year ago to discuss Network Rail’s enhancements programme in the round, we have seen some very beneficial, positive developments, both in the management of Network Rail’s infrastructure investment programme and specifically on this programme. Milestones are now being met. For example, I could speak about the test track from Didcot to Reading, which is a critical part of the programme. That was delivered to the time set in the Hendy re-plan of September 2016. There are a range of reasons why we are confident.

Q54 **Kevin Foster:** How can you know that the electrification programme is on



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schedule when Network Rail has not yet completed the risk analysis for the project?

Philip Rutnam: As the Report says, we are still dependent on information that is less rich and less deep than we would like. We are dependent not least on the judgment—I think we always will be—of senior Network Rail managers, which is welcome, but we want to see more quantified assessment of risk, schedule and progress in the programme. There are a range of reasons why we have the confidence I have talked about.

Q55 **Kevin Foster:** Mr Carne, how confident are you that the programme is now on its current schedule? We can see that it certainly hasn't made its original schedules, so let's stick with the current one.

Mark Carne: I would characterise the project in three phases, which it is important to understand. The first phase was the design, planning and cost-estimating of the project. As the Report identifies really clearly, there were many shortfalls in that phase.

The second phase was the re-basing of the project, which was from 2014 through to the end of 2015. That was when we fully understood the scale, complexity and difficulty of the project, and really put it back on an even keel. When I was before the Committee last time, last year, I said that the electrification would cost £2.8 billion and that we would be finished by December 2018. Today, a year later, I can still say that it will cost £2.8 billion and that it will be finished by December 2018. That is not only talk: I can show that, over the past year, we have really hit many important milestones.

The third phase of the project is about delivery, and I can tell you that we are absolutely focused on delivery. Yes, we delivered the test track bang on time, which was a crucial milestone. We delivered the electrification of the Severn tunnel, which was a brilliantly innovative piece of engineering, carried out in six weeks to the day. We have all the works on the Patchway tunnel—I could go on and on. We've got this massive re-signalling project—the biggest ever—in Cardiff at Christmas. I'm confident that it's going to go well. I think we've got an organisation and a team today that are delivering. Does that mean that this programme doesn't have risk? Of course not. There are still very significant risks that we have to manage.

Q56 **Kevin Foster:** I accept that. When do you expect to complete your full risk analysis of the project?

Mark Carne: First, I want to really emphasise that we have a very good understanding of exactly where we are in terms of the delivery of this project. I can give you chapter and verse on how many piles we've driven and what the piling rate is and so on.

Q57 **Kevin Foster:** Let us have a quick example then. You just talked about the test track at Didcot. How close were you to the deadline for that? Was it well met? Was it well before the deadline? Or was it just before the deadline?



Mark Carne: We hit the deadline.

Kevin Foster: You hit the deadline? That wasn't quite my question. How close were you?

Mark Carne: We were quite close.

Kevin Foster: So, 10 minutes? 10 days? 10 months? How close?

Mark Carne: I don't know exactly. I know that we were almost there at the beginning of September, but we didn't run the first trains until the end of September.

Q58 **Kevin Foster:** Obviously, one of the key parts, which we have talked a lot about, is signalling. Clearly, there is a major part of the Bristol area that is being re-signalled. If that was delayed beyond Easter 2018, what impact do you think that might have on the project? How confident are you that that project will be completed on time?

Mark Carne: Every single part of this programme is absolutely on the limit; this is not a programme with a lot of slack in it—we all know that.

Kevin Foster: What I am conscious about is this particularly key part that the Report refers to.

Mark Carne: The Bristol area re-signalling is a critical part of it. We will be doing bits of that over the next few months. It is a very important part of the project. We will continue, by the way, with all of the re-signalling work on the parts of the track that we will no longer electrify.

Q59 **Kevin Foster:** I do not want to get back on to the point that we covered to quite an extent on the bits of deferred track. I am conscious that this particular project, if it isn't done by Easter 2018, means that the electrification is knocked back again, as I understand it. How confident are you that you will actually get that done?

Mark Carne: I am confident about that. As I'm sure you will remember, I think that we had, at Christmas 2014, a delayed re-signalling hand back on the approaches to Paddington, which led to an enormous amount of work by Network Rail to examine all of the activities associated with these complex re-signalling jobs. Since then, we have delivered every one. These are major projects that we are doing. I am confident, but I am also not complacent. I am not sitting here and say there is no risk—there is risk with these sorts of projects—but we have a good team of people today and they are very focused on making sure that this project is delivered.

Q60 **Chris Evans:** There was great fanfare around the announcement that there will be electrification to Swansea. We are now told that that project may or may not be completed until 2024. Obviously, that is a major line for businesses. There has also been a story in the Financial Times in the last week saying that journey times will actually increase by 20 minutes, because the new stock will cause significant damage to the rail lines. What assurance can you give to customers and businesses who rely on that line that there is an end in sight for them, and that they won't be



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delayed? I think, in the *FT* piece, Network Rail denied that there would be an increase in travelling times during that period.

Philip Rutnam: Perhaps I will comment on Cardiff to Swansea first of all; it is obviously an issue for the Government. The Government are still committed to the electrification of Cardiff to Swansea. The Government have said that they support that project. The project continues to be developed, but as Mr Etheridge has said, and as you would expect, we will keep assessing the business case of major projects to make sure, in the light of the latest available information, that we know about costs and benefits and that it continues to make sense. That is the position on Cardiff to Swansea.

When Sir Peter Hendy reported in 2015, he recommended, and the Government agreed, that the project should be deferred out of the present control period, but the Government continue to support the project. I am not sure which of my colleagues wants to pick up the question on journey times?

Mark Carne: We are on track to deliver journey time reductions to Bristol of 17 minutes and of 14 minutes to Cardiff. Obviously, if the electrification were delayed beyond December '18, it wouldn't be possible to achieve that, because the benefit of electrification allows that to happen.

Q61 **Chris Evans:** So you have no concerns about the new stock being significantly heavier than the old stock?

Mark Carne: No. In fact, quite the opposite: the new stock is lighter than the existing stock.

Q62 **Chris Evans:** So why does the *FT* report that there is going to be damage to the railway lines? Could you talk that through? Is that just a spurious piece of journalism?

Mark Carne: I'm afraid I can't comment on that specifically. The bi-mode trains are heavier than the fewer electrified trains, but I don't think that is a material factor in this.

Q63 **Chris Evans:** What I'm getting at, as a Welsh MP—this is my last question, Chair; I don't want you to indulge me too much—is that in Wales we are getting crossed wires with the funding of this. Is it the Welsh Assembly or is it the Westminster Government? We recently had a speech at the business club in Cardiff, which again gave us mixed messages about the funding of this deal. Further, it will impact on the electrification of the valleys as well.

Philip Rutnam: It is quite complex. I will try to pick that up. First, on journey times, from December '18 the position for Swansea should be the same as the position for Bristol. Although electrification will not have been completed between Cardiff and Swansea by December '18, there should be no impact on journey times—at least, no material impact. It goes again to the complex range of effects that electrification has. The end-to-end journey time from London to Swansea should be essentially the same whether electrification has been done from Cardiff to Swansea or not.



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Q64 **Chris Evans:** May I have one final question, Chair? What does the current business case say about the strength of the case for the Cardiff to Swansea line?

Philip Rutnam: I don't have a figure, I'm afraid.

Q65 **Chris Evans:** Could you write to the Committee?

Philip Rutnam: We can certainly follow up to the Committee afterwards with what information we can share. You were also asking about the funding. The Government's position, which was agreed some time ago with the Welsh Assembly Government, as I recall, is that the Government is making a contribution of £125 million—part of its £500 million part of the Cardiff city deal—towards the Welsh Assembly Government's plans for modernisation and upgrade of the valley lines. That is now a Welsh Assembly Government project, rather than a DfT project.

Q66 **Chair:** Mr Rutnam, can I return to something you said earlier? You were talking about how you appraise cases, and you said that one of the benefits of electrified trains is the lower operating costs. Although they are quite small, they continue in practice for as long as the train is running, but you don't include them in the appraisal for quite that long. For the sake of argument, if there is—I don't know—a 4% benefit, in terms of lower operating costs, when do you cut it off? If you cut it off at 23 years, 29 years or 31 years, it makes a difference to the overall benefits case, doesn't it? You can finesse it as much as you like.

Philip Rutnam: You are quite right. The standard approach to our appraisal of transport projects is to look at the effects over 60 years. I think we very rarely look at the effects beyond 60 years.

Q67 **Chair:** Is that because the expected life of the vehicle—the asset—is 60 years?

Philip Rutnam: No; the expected life of the vehicle is less than that. In your appraisal, you would typically assume a replacement vehicle, and there will need to be more investment in the infrastructure as well, so there is a renewal cycle associated with the asset. The appraisals are generally done with cash flows over 60 years. The reason for 60 years is really to do with the level of uncertainty that we face with very long-term investments. With demand, we take a more constrained view. We don't project demand over 60 years, because we think demand, in particular, tends to be volatile.

Sir Amyas Morse: On the same point as the Chair, I am curious to know whether you think 60 years in the modern technology world is a realistic number, from the point of view of future-proofing, as opposed to anything else. I am aware that there are technologies being tried at the moment that would mean much more extensive battery operation and things of that sort. That would be quite disruptive, I imagine, to these evaluations. No doubt you think about all that.

Philip Rutnam: Sixty years is the total period of the appraisal, but, as I was trying to explain earlier, there are some things we know, or at least



think we know, and many other things that we don't know and need to take account of in the decision-making process. We typically try to assess them through some type of sensitivity analysis. On very big projects, we often look at scenarios—what really might be the state of the world 20 years hence. We have a range of techniques for trying to build in and reflect uncertainty and risk—by no means perfect, but a range of techniques. The point you make about the rising level of technological change, in as much as it affects transport, is well made, and I am expecting to see that reflected as we develop business cases in the future through those techniques—scenario analysis, sensitivity analysis and the like.

Q68 **Chair:** It's as long as a piece of string, really, isn't it?

Philip Rutnam: I would not use that phrase. What I would say is we need to make decisions on the basis of the best information available but also a sensible view of how things might change—things that we cannot necessarily anticipate. We also need to bear in mind—especially in discussions like this—the cost of not making decisions. It would be quite easy to be paralysed by uncertainty and to think, "We mustn't spend any money on upgrading the railway, because maybe autonomous vehicles will arrive and resolve all our transport problems," to take a rather extreme view. We don't think that being paralysed—that would be exactly the wrong approach. We need to continue making decisions but do our best to make sure that they are informed by a wide range of views, sensitivity analysis, scenarios and the like.

Sir Amyas Morse: I would hate it to be thought that I was pointing in the direction of not making decisions. I am just pointing in the direction of prudent rates of provision.

Philip Rutnam: Indeed.

Q69 **Chair:** That brings me on to my next question, about contingency, which I was going to ask Mr Carne. Before I do, Mr Rutnam, you said something quite interesting: "on the best information available." Obviously, what the best information available is depends on how much work you've done at the beginning. We still do not have a full critical path for the whole programme—for the electrification, the trains and the franchising—so you do not yet have a 100,000-foot, top-down view of the entire programme, which means you cannot easily analyse all the risks associated with it yet. How long before you get to the point—this is a separate question from Karin Smyth's question about when you are going to deliver—where you have a full critical path and sight across the entire programme?

Philip Rutnam: There are critical paths for all the individual components. This is such a large programme of change that it will involve something like 12 major changes to services—improvements in services—across this region, and there are critical paths for the delivery of each of those, which integrate: infrastructure, trains, service change and so on. They are all in a continuous state of development, but they exist. What we need to do with our delivery partners is integrate those into one critical path that sits



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above those components, and I am told with confidence that that should be done by March.

Q70 **Chair:** March 2017?

Philip Rutnam: By March 2017—in the early months of next year.

Q71 **Chair:** We will look with interest to see when that is done. I am sure we will be revisiting this subject at some point. On the subject of contingency, Mr Carne, you said that this programme does not have a lot of slack in it. Paragraph 3.17 of the NAO Report states: “The project for electrification between London and Cardiff currently has £109 million less contingency than the amount Network Rail believes it needs to be prudent.” If the contingency should prove inadequate, who pays?

Mark Carne: Obviously, the difference between the exposure and the current estimated cost is constantly being re-evaluated. At present, the programme has about £225 million of contingency and we see an exposure of around £274 million. That gap has actually come down since the time of the NAO Report, so the risk is reducing. We constantly monitor that.

To your point, in the event that costs increase on this programme—we now have to operate within a funding limit. I have for Network Rail £15.7 billion to deliver the—

Q72 **Chair:** Are you saying that previously Network Rail had no regard to funding limits, because it could go and borrow as much as it liked?

Mark Carne: No, that is not really a fair way to put it, but I think the fact—

Q73 **Chair:** You make it sound like it is a new world in which you have a funding limit. It does rather characterise what went before.

Mark Carne: Chair, it is very definitely a new world. In the previous regulatory regime, before we were reclassified, in the event that a project cost more we had the ability to go back to the regulator, and if the regulator agreed that the project legitimately cost more we would just add the extra cost on to the debt we had. We had flexibility in the management of those project costs. That was one of the contributing factors, in my opinion, to Network Rail proceeding with this project with an immature design—we thought we had a mechanism to manage the risk associated with cost changes via this regulatory process. That was withdrawn when we were reclassified as a public body.

Now we have £15.7 billion, and I have to deliver that portfolio of projects for £15.7 billion. If one project goes up, hopefully it can be offset by reductions in other projects, and if not, other decisions have to be taken. We have seen an example of that, which we have discussed today, in the decision to defer the electrification in Bristol. That is a portfolio decision because costs elsewhere in the portfolio have changed. In order to manage the overall portfolio within the sum of money, it was decided by the Department that it was better to spend the money elsewhere than on



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these projects. The idea is to continuously look at the portfolio and ask, “How can we deliver the best possible passenger benefits with the money we have available?”

- Q74 **Chair:** Paragraph 3.17 puts the contingency in terms of a percentage of the estimated cost of the remaining work—19.2% of the estimated cost of remaining work, compared with 26% when Network Rail’s board reapproved the project in April 2016. What is that figure now?

Mark Carne: It will be roughly the same as that. By the way, that reducing contingency level is entirely normal. As you get nearer to the end of a project, the amount of contingency that you need gets less and less, until on the day you finish you have none. That is a normal process.

Sir Amyas Morse: To make sure we are being accurate about this, I take it that at this stage, you would not represent to the Committee that the gap could not increase. In other words, everything is not so well known and understood that it is simply a matter of managing it down to zero. It is possible for it go back up again.

Mark Carne: Very definitely, yes.

Sir Amyas Morse: It is important for the Committee to understand that.

Mark Carne: Absolutely. We are constantly managing the exposure of that project and comparing it to the contingency. In the event that a risk was to seriously materialise and we suddenly saw the costs going up, there might come a point in time when one would need to make some of those portfolio decisions to move money to help fund that. At the moment, I do not believe we need to do that. I think the level of risk we have and the level of contingency is about in balance and appropriate for a project at this stage of delivery and maturity. But it can change, which is exactly your point, and we are constantly looking at all those risks, to assess them.

- Q75 **Kevin Foster:** Mr Rutnam, does what we just heard about working within a financial envelope mean that the £330 million cost of delays in this project will mean the Department has to cut spending elsewhere?

Philip Rutnam: Which costs?

Kevin Foster: The £330 million cost of delays we have seen on this project, which is the figure cited at the start of the Report. Does that mean we will potentially see cuts in spending elsewhere in your Department’s budget?

Philip Rutnam: No, it does not. We are talking about different pots of money here and different budgets. Mr Carne has been talking about the £15.7 billion envelope within which Network Rail needs to manage its enhancement portfolio in this control period. The costs that exist in the up to £330 million estimate included in the Report for consequential impacts on the Department associated with these delays sit elsewhere. There are two principal elements within that figure of up to £330 million. One is associated with the decision we have taken to make all the trains we are



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buying for this part of the country bi-mode. The other is the effect on the revenues of Great Western Railway, the franchisee associated with running the trains, because electrification is happening a bit later and the service change is happening a bit later.

Q76 Kevin Foster: Will they bear that cost themselves, or will that cost be with the Department?

Philip Rutnam: Both those costs sit with the Department, rather than with Network Rail. As you would expect in a large complex organisation like the Department, we have budgets that include certain amounts of contingency. These costs are also spread over a number of years, so I am not anticipating that we will need to make any reductions in other areas of the Department's spend associated with these costs crystallising.

Q77 Kevin Foster: Really? Excuse me if I am a little bit sceptical when we are talking about, fundamentally, £330 million of increased costs on a budget that is already significantly over the first budget that it was originally given and that was agreed on. I sat in that last hearing we had; we had received the letter telling us the increased costs of the electrification about two days before that session. Are you really arguing that £330 million of extra costs can go into this project because of the delays and the ongoing costs you have outlined of having bi-modal rather than partly purely electric—I accept that part of Great Western's fleet was going to be bi-modal anyway—but that is not going to have an impact on your overall spending elsewhere?

Philip Rutnam: Those extra costs actually don't impact on Network Rail's budget at all—

Kevin Foster: I am not talking so much about Network Rail now, I am talking about your budgets at the Department for Transport.

Philip Rutnam: And in our budgets we have a budget that is essentially the best part of £10 billion. That is mostly capital spend, but it includes a resource spend, current spend, associated with, for example, franchising—a complex set of payments between us and franchisees—and there is a contingency within that budget line that is intended to cater for adverse events crystallising. As you would expect, the Department's budgets are complex and things are changing all the time, but I am expecting to be able to accommodate those extra costs without having to reduce services or expenditure elsewhere.

Q78 Kevin Foster: Let's say I was a Treasury Minister listening to that, I might be interested to hear that you were able to absorb the £330 million cost of a delay to a scheme that was already majorly over its original budget, and I might then be interested in looking at your finances more widely.

Philip Rutnam: £330 million is a total figure, but the costs are actually spread over a number of years.

Q79 Kevin Foster: Yes, I get that—the cost of most railway projects are spread over some time, given the benefits there are in that—but this is



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still £330 million that, presumably, has to come out of your Department's bottom line.

Philip Rutnam: I know that the Treasury is very keen for Departments to manage their budgets so that they can absorb costs rather than either cut services or seek a claim on the reserve. That is exactly the way the Department approaches its budgets. Of course I do not welcome these extra costs—I really don't welcome them—and we would much rather they had not arisen, but we seek to and are able to manage our budgets so that when an adverse event occurs we can manage it, rather than find we are thrown into some state where we have to cut something pound for pound as a consequence. There are many things that change in the budget of a Department like the Department for Transport.

Q80 **Kevin Foster:** Okay. As you touched on it in relation to the trains issue, can you explain why you were even considering spending more to finance Agility's costs to convert the trains rather than paying for it directly?

Philip Rutnam: That is a decision that hasn't yet been reached.

Kevin Foster: It hasn't yet been reached, but you are considering it.

Philip Rutnam: We have not yet decided whether the costs are to be spread and recovered through the rental charge—which is how the rest of the charges associated with the IEP programme are recovered—or recovered as a capital sum. It is not something we have yet concluded and we are looking at both options.

Q81 **Kevin Foster:** Okay, I accept you are still looking at both options, but my question was about why you are even considering that as an option. Will you briefly outline why you feel that option should be considered versus the direct approach?

Philip Rutnam: In making that choice, we will look in particular at the value for money of the alternatives. I don't want to go into a lot of detail here because it would depend on, for example, the cost of financing that is available to the Agility Trains consortium versus the Government cost of finance, but as with at least some if not many other projects financed privately, there could be reasons why in this case it would be value for money.

Q82 **Kevin Foster:** The trains themselves are now going to be bi-modal and there is some reference to diesel engines perhaps being able to be removed in future. Do you ever think that that is likely to happen?

Philip Rutnam: That is something we will look at in future, to be honest. We are focused above all on bringing about what I described earlier in improvements to services, completion of the infrastructure improvements which are described in this Report—the sorts of improvements to services that I was talking about earlier, to Bristol or to Cardiff and Swansea and for December 2018.

Q83 **Kevin Foster:** Given that what has driven most of this overall is that the current HST sets are of a 1970s vintage—I can see Mr Carne nodding—



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with the last one constructed in I think about 1981 or 1982, and if we can get all these benefits with bi-modal, if you were looking at it today, with the costs of this electrification and all the issues that have come up, let us say with a similar line, with trains of this vintage, would you still go down the path of looking at electrification? Given that the passenger benefits, as you keep telling us, can still be given by bi-modal but without this capital investment, would you perhaps change your approach if you could go back to the start?

Philip Rutnam: We certainly would look at electrification, and I think we would be very supportive of electrification, but there is always a balance to be struck between the exact scope of electrification and choices on fleet and service pattern. We are buying bi-mode trains, which will be delivered for the Great Western Main Line, but the Intercity Express trains that are being delivered for the East Coast Main Line are electric—

Q84 **Kevin Foster:** Which is for a pretty obvious reason—it is an already electrified line.

Philip Rutnam: But that is also to do with the service pattern associated with the extent of electrification. Bi-mode trains have many benefits, but so does electrification. The key to investment planning is to get the right trade-off, the right balance between the two.

Q85 **Kevin Foster:** I agree, but you will perhaps understand, Mr Rutnam, why I ask the question I do when you have spent most of this meeting telling us, in particular in relation to the deferral questions, that passengers are not going to notice the difference but there is an operating cost difference. That would beg the question of why you would do any of these projects.

Philip Rutnam: Those were answers to questions specifically about two relatively short stretches of track, from Thingley Junction and Bristol Parkway to Bristol Temple Meads. If you had been asking me what are the benefits of electrifying from Maidenhead to, say, Swindon or Bristol Parkway, I would have given you a completely different answer, which is that there are very significant benefits to electrification there, not only to reduce operating costs and environmental emissions, but to improve the passenger experience with faster journeys, better acceleration and deceleration and so on. I am sorry that it is complex, but the benefits of electrification and the case for electrification vary depending on the bit of track or infrastructure that you are talking about.

Q86 **Kevin Foster:** That is pretty obvious to someone who represents a constituency west of Dawlish—I obviously recognise that there is a very different argument there about any prospect of electrification given its proximity to seawater. One point that came to my mind was why would you spread the cost, given the interest payments, if you can afford the £330 million in the way that you say you can?

Philip Rutnam: The issue around the financing choice for the bi-mode upgrade will be to do with value for money. Above all what we will be



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looking at is which option is likely to give us better value for money over the life of these vehicles.

- Q87 **Kevin Foster:** We have touched on Cardiff and Swansea already, but would electrification and the costs of it produce more benefit than just carrying on with the bi-modal set that you imply you can still get most of the benefit from by just running to Cardiff on diesel?

Philip Rutnam: I think we tried to answer that in response to Mr Evans earlier. That is something that we will be looking at when we refresh the business case for the entire programme over the course of the next several months.

- Q88 **Kevin Foster:** Mr Rutnam, I think the cost of delays is quite significant because, representing a constituency that is on the Great Western line, I look at the amount the delays have cost, and it is similar to the amount that will be needed to shore up the Dawlish section of the line permanently. That puts some of this into perspective. What would you say to encourage me that in future we will consider things in a more joined-up way, so that we end up with networks that run together, particularly given that the current fleet stock, the Class 43s, has always run as a pooled resource between the lines between Swansea and London and London and Penzance? Now this new fleet will. Would that not have been a more logical thing to look at from the start, as well as at some opportunities around electrification?

Philip Rutnam: Mr Carne might want to comment on this as well. There are two points that I want to make about what we have taken from this episode. First, the success or failure of projects such as this depends more than anything else—I would say 90%—on the quality of the planning and preparation. Before a single cubic metre of soil has been moved, you have determined the success or failure of the programme. Getting the planning and preparation phase, including the governance around that and the stepped approach to approvals, is critical to success. That is one lesson.

The second lesson is that when you have a programme such as this, which involves a number of different components, you need to take an integrated approach, not just to the business case, which we talked about earlier, but the governance and the programme management. The rail industry in this country is fundamentally very successful, but it is complex. The Department has a critical role to play in ensuring that, with our different partners in the industry, we take an integrated approach to programme management, planning and governance.

Those are two lessons that are strongly reinforced in DfT by this experience. I am describing them within the organisation as organisational principles; they are things that I expect to see reflected again and again and again in the way that we approach decision making and planning.

Mark Carne: Maybe I could make a couple of points. First, we are currently evaluating the trans-Pennine route upgrade. I have been extremely clear throughout that I am not going to say how much it is going to cost or how long it is going to take until we have done the proper



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up-front design and really considered carefully the specification, the right interaction between modern trains and the track and how to design the system to achieve the best possible outcome for passengers.

What I have said is that we will come up with an answer by December 2017. In a year's time, when we have done the work, we will be able to come to the Department and say, "This is the best way that we think that this project can be delivered." We will have a very high level of confidence of delivery. To be honest, I am glad we took that approach because it is another difficult project. Taking the time to do the design up front is important.

Secondly, you will be pleased to know that you will have electric trains running past Dawlish but they will not be running on electricity, because the new 80-300 trains that GWR will be running will be electric to Newbury and diesel from there on. That shows that when we are looking at upgrades on infrastructure in future, with these kinds of trains we can be smarter about the way we think about track and train. Partial electrification of pieces of the railway can deliver—

Kevin Foster: Talking about Devon Banks, for example.

Mark Carne: Devon Banks, for example. It can deliver real benefits to journey times but you don't have to electrify the whole thing. That is where I think things have moved on on this project.

Q89 **Kevin Foster:** If I could come briefly back on that, that makes the point even more strongly that from the off we should have been ordering bi-modal trains not just the electrics, given the whole network.

Mark Carne: No, it reinforces the key point that you have to design such projects as a system, as an integrated system of track and train. The Report is very clear that that there was a failure to do that. They were treated too much as separate entities and were not joined up properly. What we are trying to do now is say we are not going to do that again. We are actually addressing this today. We are thinking about it as an integrated system that comes up with the best possible way of achieving passenger benefits.

Q90 **Chair:** In the light of the Secretary of State's announcement on 8 December, are you hopeful that that integrated approach is going to be given more sponsorship from the top right across the network from now on?

Mark Carne: I very much welcome the principle of closer working between the train operating companies and Network Rail. That is something that I have pushed for and championed from the moment I took this job because the passengers expect to see the railway serving their needs. They don't care whether it is Network Rail or—

Q91 **Chair:** Do you welcome further vertical integration of the kind that is hinted at in this announcement by the Secretary of State? It was on 6 December.



Mark Carne: Very much so. We have championed the alliance in the South Western Trains franchise with Stagecoach. We now have a deep alliance with Abellio in Scotland, where we have one organisation delivering both the infrastructure and the train service. That is something that we are doing already and are championing. It doesn't have to be about organisational structure either, in the form of deep alliances. It is also about the alignment of objectives between the train operating company and Network Rail so that we are all pulling together to achieve the best outcome for passengers.

Q92 **Chair:** It is really about the whole system owning the whole problem.

Mark Carne: Yes, exactly that. If you are trying to improve train performance or passenger experience of trains, you can't just look at it in your isolated ways; you need to look at the system as a whole and say, "What can we do together to achieve the best outcome and where is the best way to spend money to improve passenger experience?"

Q93 **Chair:** The phrase, "the whole system owning the whole problem", is not original—it came from Jon Rouse in DCLG, although he was talking about adult social care and integration with the health service.

There is a logical consequence to what you said and to what Mr Rutnam was saying about having greater integration. I remember meeting Mr McAllister, your predecessor's predecessor—it might have been three predecessors ago—about 10 or 12 years ago. The first thing he complained about was the lack of vertical integration. Isn't the obvious consequence that you could integrate further? You could perhaps give it a new name—"British Rail".

Mark Carne: I am not going to stray into that particular territory. What I would say is that there have been huge advantages in my view over the last 20 years in British railways as a result of having private companies operating the train services. The fact that the number of people travelling by train today is twice what it was at the time of British Rail is no accident. It is a huge testament to the private sector investment and creativity that the train operating companies have brought. There are real skills in running trains and there are real skills in running infrastructure; they are, in a way, different kinds of businesses, but ultimately they serve the same purpose, which is to create a great experience for passengers. It is about finding ways of bringing those two pieces of the jigsaw puzzle together and aligning the incentives. We have fantastic people in our railway. How do we get them lined up so that they are relentlessly working night and day to achieve the best outcome for passengers?

Sir Amyas Morse: I can't help reflecting that we have fantastic people travelling on the railway as well.

Can I just ask both Mr Carne and Mr Rutnam, do you think that Network Rail now have the capability and costing data to get it right first time? If you are committing to a project now, are you getting it more or less right first time? Are you at that point or are you still working towards it? Have you got that workflow correct?



Mark Carne: I am not going to give you a yes or no because that is of course a very complex question. Let me be very clear. Two years ago, we set up an enhancement improvement programme because we recognised that our cost-estimating capability was not good enough, and this experience really highlighted that. We are now about 89% of the way through delivering that enhancement improvement programme and I am much, much more confident about how the way in which we are now using rail standard measurements can predict costs. However, I come back to my point: you can only give a proper cost when you have done enough work on the design to know what it is you are costing.

Sir Amyas Morse: That's true.

Mark Carne: Resisting the pressure to give premature costs is still the biggest challenge we face, because lots of people want us to commit to things before we are really ready. Given the right opportunity to do the work in the right way and to cost it properly, I am very confident that we can now live within the cost estimates we give.

Sir Amyas Morse: And in the cost-estimate structure that you have, are you revising the whole of that structure in view of your recent experiences?

Mark Carne: Completely.

Sir Amyas Morse: You are not still with old cost estimates?

Mark Carne: To be fair, I think that is a really important point because the culture, not just in Network Rail but in the rail industry where we had the ability to borrow money, led in my view to poor discipline around capital management in the industry as a whole. We have made enormous strides to improve that. I think living within your means is a core discipline of any company and I find it an extremely healthy discipline to have. Are we completely there? No. Have we made enormous strides? Absolutely.

Q94 **Chair:** What you have just said is very illuminating in the sense that for most, shall we say, private sector companies quoted on the stock exchange, the ability to borrow money is not something that is considered a bad thing. In fact, the more you are able to attract investment and people wanting to lend to you, it is seen as a good thing and you have a higher investment rating. You make it sound as if, in fact, the reality was that Network Rail, by being neither fish nor fowl, sat in the strange space where it could attract as much capital as it needed because of what? An implicit assumption that the Government were standing behind it, even though it wasn't really—

Mark Carne: Thank you for that. It is a very helpful observation. First, I was talking about the capital management within a project—not changing the outcomes, but accepting different cost outcomes. That led to an indiscipline, if you like, in Network Rail about the level of accuracy that it needed to predict costs because we could borrow more money. The second point that you are really alluding to is that it is good to borrow money if you can create more opportunities for more passengers.



Q95 **Chair:** You were at Shell for many years, weren't you, Mr Carne?

Mark Carne: I was indeed.

Chair: When you were at Shell, you wouldn't have said in a committee or sub-committee meeting, "Well, we can always just borrow a bit more money if we need to," would you?

Mark Carne: No, absolutely not. Capital discipline is also at the heart of capital allocation—being really transparent about the benefits of every individual project so that you choose to back the ones that give the biggest benefits. That is the key part of capital allocation in a private sector business. We should see more of that transparency in the rail industry. Learning to live within your means once you have committed to something is also a part of capital discipline.

The third element is how to attract more capital. Well, you attract more capital by creating more opportunities and more projects. I passionately believe that it should not just be the taxpayer that funds capital projects in Network Rail. Where we can see that a new railway system or an improvement to a railway system will create growth in the economy, new jobs and new houses, I believe that those beneficiaries should help contribute to the cost of the railway.

Q96 **Karin Smyth:** You strike absolutely to the heart, Mr Carne, of our view of this in the wider Bristol and Bath—forgive me, colleagues—economy. Our feeling is that because Network Rail was reclassified at that particular point in time, this has now led to the decision on the deferment of this part of the track in order to contain costs elsewhere without looking at the wider economically beneficial factor. That has really caused great anger and dismay in that important regional economy. It is a very short-sighted move. Now, I am not putting these exact words into your mouth, but the decision to reclassify has led us to where we are today, hasn't it?

Mark Carne: No. Reclassification has meant that we have to make capital allocation decisions of the type that have impacted on Bristol. However, as Mr Rutnam said, that decision has a very small impact on the journey experience for passengers in Bristol. Bristol is a booming city today, with record house prices. I think it has the highest house price growth in the country.

Karin Smyth: That is not always good for our constituents.

Mark Carne: I am sure that there is a strong linkage between that growth in the economy and better transport links—taking 17 minutes off the journey time, running twice the number of trains and having 25% more seats on every train.

Q97 **Karin Smyth:** But it is the decision now to defer to some unknown date in the future that has been implemented by the inability to partly—

Mark Carne: It is part of the five-year funding cycle. In the next two years, as the programme for the next five years is developed, this part of the electrification will have to be considered in the light of all the other



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priorities of the Government. It is not for me to decide, but I think it is only right and proper that it should be considered and balanced against the other possible uses of public funds and the benefits that they may give.

Chair: We are going to have to stop in a minute for a vote. I was in Bristol the other day, actually. It is an absolutely wonderful city. I was invited to speak there on the provisions of the Self-Build and Custom Housebuilding Act 2015, which I try to mention in every hearing. So long as it is not better than Norfolk, I think many people would agree that Bristol should have the best. We are expecting the Division bell at any moment, so just be warned that we may have to stop rather abruptly. We have more business to do, so we will come back.

I wanted to ask about wear and tear. *[Interruption.]* I think this is probably a question for you, Mr Etheridge, but you have been saved by the bell. I was going to ask you about the bi-modals having more wear and tear, but I will leave you to ponder that and we will come back.

Sitting suspended for a Division in the House.

On resuming—

Q98 **Chair:** Mr Etheridge, I just wanted to ask you this: Mr Rutnam said earlier that among the various benefits of electrification were reduced journey times, lower operating costs, less pollution and reduced wear and tear on the track. That was with fully electric trains. The bi-modal ones cause more wear and tear on the track than fully electric ones. What is the financial benefit—or rather, what would have been the financial benefit—of reduced wear and tear on the track if you had gone for the fully electric option? Now that there is going to be more wear and tear, because they are bi-modal, what's the reduction in the benefit? Or is it an added cost?

Brian Etheridge: I am not sure I can quantify that exactly, in the way that you set out. I am sure we could give you a note on that if necessary.

Q99 **Chair:** You might not have it in front of you, but do you produce such numbers and put them into your business case?

Brian Etheridge: Yes, absolutely. The business case will include the overall cost of the project—

Q100 **Chair:** Including the maintenance, and the maintenance of the track?

Brian Etheridge: What I understand is that the bi-modes are heavier, as you would expect, than the electric trains, because they have diesel motors on them. However, they are actually lighter than the old HST trains, so there are still improvements to be made from where we were.

Q101 **Chair:** So, you put in a number, but it's a different from the HST and a different number from the fully electric?

Brian Etheridge: Yes. That is the complex nature of business cases. The other calculation we would have to make is how many miles they run over,



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what the service patterns are, how often they are being used and so on. All of those things go in to make up the overall business case.

Q102 **Chair:** So, it comes back to the old question of how valuable benefit to cost calculations are. At the end of the day, although you have to come up with something to produce some form of ranking—some sort of hierarchy for capital allocation, in the way Mr Carne suggested—even if you're not trying to bias it, and even if you're trying to be as rational and neutral as you can, it is heroically unlikely that it's actually going to be accurate, isn't it?

Brian Etheridge: I don't think it's not accurate; I think it is as accurate as Mr Rutnam says, with the information that—

Q103 **Chair:** At that moment in time. What I am talking about is, in the eventuality over the subsequent 15 to 25 years, whether it turns out that that way is as long as a piece of string.

Brian Etheridge: The two points I would make are: first, I understand your point about accuracy, but what it does give you is a comparison about different schemes, so you are able to make a judgment about what your priorities are and what the greater benefits would be. Secondly, on a point that we rehearsed slightly earlier, again for the reasons you suggest, it is important that we keep refreshing the business cases so that we know more things and we better understand some of the things that went into the early business cases and are in a position to refresh them.

Q104 **Philip Boswell:** I have listened with interest to most of what has been said. When you hear things like, "How long is a piece of string" and the comments on lessons learned, anyone listening would be excused for thinking that this is the first major project that Network Rail and the Department for Transport have done.

I have a question for both Mr Carne and Mr Rutnam. We are four or five years down the line from changes, according to the key facts. I understand that you have not yet run a fully risk-integrated schedule for the electrification for infrastructure projects. You therefore cannot possibly be confident in the current cost and schedule guesstimates—I will call them guesstimates based on previous experience. Mr Rutland, I understand that you said that each component element may have been risk managed or properly scheduled—but that remains to be seen.

Without a fully integrated overview programme that is properly resourced, you cannot be sure of being able to deliver any or all of these individual projects as you cannot possibly foresee potential bottlenecks, in terms of fit and proper engineering, design, construction and project management resources. Why has it taken from 2009 to 2012 to 2013 to December 2017, when you forecast delivering this key deliverable in March 2017?

Philip Rutnam: I think the greatest interdependency between the programmes is between the infrastructure works and the introduction of the new services with the new trains and the new timetable. Inasmuch as your comment relates to the availability of a risk analysis of the



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infrastructure works, I shall ask Mr Carne to comment and then I will talk about the programme as a whole.

Mark Carne: First of all, I recognise the points you make. It would obviously be sensible, on a project of this size, to have a fully integrated—

Philip Boswell: Fundamental, I would suggest.

Mark Carne: Yes, but I would say that each of the individual programmes has that. Part of the problem here is that this was never conceived as one programme; it was a whole series of projects, and each of those projects has that level of analysis.

What we now have to do is pull them together. We have a good handle on the planning for each of those elements of the programme and, my goodness, I feel an awful lot more confident about our ability to deliver against those programmes than I did a year ago, when we still had to demonstrate that the technology we were bringing into the railway to install the electrification was even capable of meeting the kind of rates that we were talking about. I remember going out and seeing the piling system—I think we were putting in four or five piles a night—and thinking, “Goodness me, this is a real problem.” I was down in Wootton Bassett last week and we banged in 17 piles, even with a restricted window because of a late-running passenger train.

Those sorts of things really start to give one confidence that this is now a programme that is capable of being delivered, but of course there are some risks. I still have a large number of bridges that we need to work on where I need consents. Those consents are difficult to achieve because these are very often listed buildings, so I have to deal with English Heritage as well as the local communities and councils. Every one of those has the potential to be on the critical path. It is a highly complicated programme with hundreds of elements, all of which could, if they went wrong, be on the critical path.

Q105 **Philip Boswell:** I appreciate that, and all of these are pertinent issues, but none the less this is not new; these are well understood planning and co-ordination issues. We are now four or five years further down the line, and the question still stands: why are you only doing this now? Why have you not done it before?

Mark Carne: I think we are doing it now.

Philip Boswell: You are doing it now, but why have you not done it before?

Mark Carne: What I would say is that the lack of that critical path analysis has not had a material impact on our ability to deliver this project. That has not been the problem with this project.

Philip Boswell: Apart from the cost and the time.

Q106 **Chair:** But it has. I draw the Committee’s attention to paragraph 3.8 of



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the Report: "Network Rail's failure to put in place an adequate plan to obtain all the consents it needed from local authorities in good time has led to higher costs. It needed to obtain more than 1,800 separate consents, such as permission for works that could affect protected species or listed buildings. Network Rail now believes"—which raises the question of why it did not believe it before—"that it might have been more efficient to ask the Secretary of State for Transport to grant planning permission for the whole scheme."

I understand that there is provision under the Transport and Works Act 1992, which I have a copy of here, to do just that, but it would have required Network Rail to do a bit more preliminary work of the kind that Mr Rutnam was saying you should be doing anyway in order fully to understand the scheme. Mr Boswell's question is why it was not done.

Mark Carne: That is a really important point. I am absolutely of the view that trying to manage a project of this scale and complexity with a piecemeal approach to the consents, as we have had to manage this project, is not the right way to do it.

Q107 **Chair:** But you do not need a degree from Harvard Business School to figure that out. Any layperson could see that looking at 1,800 planning consents is a nightmare and that, if there were any way around it, it would be worth a six or 12-month wait to figure out what you were going to do before you did it in order to avoid that.

Mark Carne: And I totally agree with you.

Chair: So why—

Mark Carne: I cannot answer why it was not done. At that point in time in the project, in the early phases of it, I suppose the people believed that they would be able to do it. Did they underestimate the difficulty and complexity? I don't know. What I would say is that, my goodness, a key lesson from this sort of project is you really would be far better off to get a single or larger consents for larger pieces of the track; but it does mean that you do have to accept considerably longer in the early phases, because you can't get a consent on a listed bridge, for example, unless you can describe exactly what you are going to do. You can't just go and say, "Well, can I, you know, lift the bridge up by a metre or so?" They will say, "No, hang on a minute. What are you going to do? How are you going to do it? How long are you going to shut the road for?"

Q108 **Chair:** I think we all understand that. It is tantamount to saying it is a good idea to know what it is you plan to do before you do it—that's all; which most people would think is pretty sensible.

Mark Carne: And I would totally agree with you on that. I think that is one of the key lessons of this project. That is one of the reasons why the costs increased so much—because the early cost estimates simply didn't reflect the complexity of this job, and it was only as the job progressed that the difficulties became apparent. The costs increased and the schedule increased. It would have been far better to have done it right up front.



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Q109 Philip Boswell: Gentlemen, that taken, do you concede that until recently both your Departments were out of your depth? You did not foresee this, and a competent professional ought to have seen this, in this role and this function. You guys clearly—both Departments failed to do so. Would you concede, therefore, you were both out of your depth—or the groups you represent?

Philip Rutnam: I would not use that phrase, but what I would say is that when the seriousness of the issues around this programme and, indeed, other parts of Network Rail's enhancements programme became clear, the then Secretary of State commissioned an independent review of why this set of problems had arisen—what were the root causes of this. What the review showed—the review was undertaken by Dame Colette Bowe, formerly chair of Ofcom and now an independent non-executive director on the Department's board—was exactly the point that Mr Carne has made: that the success or failure of these programmes lies in the early stages of proper planning, and that did not happen in this case; also that the accountability for programmes such as this was far too complex.

Under the structure, which we discussed, in fact, at the Public Accounts Committee last year, the structure was the Department set some very high-level outputs for what it wanted from the railway for each control period, and then entrusted to the regulator, the ORR, to go through the process of scrutinising Network Rail's plans, assessing the cost of those, deliverability and otherwise—and that tripartite structure was simply too complex.

Q110 Philip Boswell: I take that on board, but I must confess to having some experience of project management, particularly scheduling and cost management, and time and time again this Committee has seen Government Departments that have failed to properly risk and manage cost, schedule and quality of major infrastructure projects. Such projects typically require off-the-shelf scheduling software, which is all there. We have the ability with the technology, we have the ability of the people, to manage complex projects and groups of projects. This is nothing new. To have failed to understand that from the outset and not address it is a failing, without doubt, on both houses. These are project tools and software packages that handle thousands of activities, and the co-ordination in various layers of projects. They can be rolled up and rolled down, and what I do not understand is: what did you specifically get wrong in your risk management and scheduling across planning? Again, that is to both.

Philip Rutnam: Perhaps I will just say something to begin with and then Mr Carne may comment. First of all, I completely agree with your description of the way in which a major programme like this should be approached. I would expect, before an authorisation is given for a major programme like this, that we would have a quantified schedule risk analysis, a quantified cost risk analysis; we would have a clear and stable set of outputs that we want from the project and we would have a critical path analysis. Those did not exist in this programme and since the programme was reset we have been seeking to put in place—Network Rail



leading on that—as many of those components as possible, not just for the infrastructure but for the whole programme: infrastructure, trains and service. So I completely agree with your description. In the answer I gave earlier I was trying to explain why that undoubted failing arose. The Department certainly bears some responsibility for not being as effective a client for this programme as we should have been, but that took place in a structure where the role of acting on behalf of taxpayers was essentially entrusted to the regulator. We have now changed that. We have created a much simpler relationship where the Department is client. We are responsible for being clear about what we want Network Rail to deliver by when and we are responsible on behalf of taxpayers for making sure that it gets done to time and quality. So we have a much simpler bilateral relationship, rather than the trilateral one I talked about earlier.

Q111 Philip Boswell: I get that to some degree, but, in terms of responsibility, I can understand why the Department for Transport may not have a top planner capable of managing such a complex project. But during the procurement process, in your stage-gate approval process, in relation to the Department as well as the company, you should be able to rely on Network Rail to provide the heads up and to manage these issues. Is that where most of the responsibility sits?

Philip Rutnam: What I expect the Department to be able to do—we have some very good project planners—

Q112 Philip Boswell: Then why didn't they see this?

Philip Rutnam: What I expect the Department to do is to be able to be a very effective client and sponsor of major change programmes. In other cases that I could name, we have all the things that I have described in place, and our responsibility is very clear, including on a number of other programmes that Network Rail has been delivering for many years. But on the enhancements programme, the bulk of the enhancements programme, because it was considered as a portfolio in the round alongside other parts of the regulatory regime that were overseen by ORR, the Department's role was really at one very large remove. We set some very high level outputs, and the rest of the system was intended to run between ORR and Network Rail. The mistake we made was underestimating not just the scale of the work, but the strength of the system. Or, rather, we overestimated the strength of the system and the level of assurance we could take from it. It was fundamentally much weaker and less reliable than we thought.

Q113 Philip Boswell: Okay, thank you. You mentioned critical path analysis and the lack of it, or at least a competent integrated critical path analysis. You concede that this is core to the success or, in this case, not of this project to date. A lot of people believe it will get there eventually. We are sure of that, although it may cost a bit more. Critical path analysis is vital, as we know, as is the proper use of float in any such a schedule, as well as the proactive and reactive weekly re-runs of rolling schedules, to adequately anticipate and critically react and properly manage the known unknowns and unknown unknowns of complex



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projects such as this. There is a well-known saying in project management circles, particularly in planning circles: failure to plan is planning to fail. Why, Mr Carne, did you fail to plan properly?

Mark Carne: I think there is a number of different aspects there. First, part of the problem was not about a failure to plan; it was a failure to understand the scope of the project and the details of what was actually required. It was not just about planning—

Q114 **Philip Boswell:** Sorry, Mr Carne, that would mean it is a project management function rather than a planner's responsibility. It is the risk management, then, that let you down.

Mark Carne: I am just trying to explain it in the broader context. Did we have the planning tools? Yes, of course we have got the planning tools that you describe. We have got all of the software. We have got a delivery partner in Bechtel, which is one of the world's leading project delivery organisations, so I have got a whole Bechtel organisation in this project team. So yes, we have got all those tools. What I am trying to say is that it was not the lack of tools that led to this problem. At the very early stages, it was the lack of clarity around what was actually required to be done that then fed into the plans.

Q115 **Philip Boswell:** So it was a project management failure. Was it Bechtel's problem? Was it Bechtel's fault? Was it within their brief to get this right?

Mark Carne: I am not pointing a finger at Bechtel at all. I am just explaining that we have a project delivery partner to enable us to carry out all of those project planning activities that you have described. What I am saying is that with a project of this complexity, it does take time to understand what activities you have to undertake. Take a relatively simple job like the electrification of the Patchway tunnel, which we have just done—my colleagues will kill me for saying this is simple. On a piece of paper, you just put some overhead—not wire but a bar through the tunnel, and away you go. But when you actually get there, you realise that you actually have to lower the track as well, and then when you start to lower the track, you have to take out all the ballast and you find that Brunel didn't build the tunnel quite like you thought he did and in fact the foundations of the tunnel are not as big as you thought they were, so you have to put thousands of pins into the side of the tunnel in order to hold the tunnel back. All this is in a very narrow tunnel that is a mile long, or something of that nature, where you can only get one vehicle in and out on the track at any one time. These are enormously complicated jobs. It is really hard to cost-estimate and project manage that until you know the details of what it is you need to do. The fundamental problem here was that we made commitments before we had a handle on the details.

Chair: On this point, can I bring in the C and AG for a moment?

Sir Amyas Morse: I have noted the prevalence of the past tense in your answers—both of you—and I want to make sure that that is justified. As far as I understand it, Network Rail has not yet completed a quantitative schedule risk analysis on the current schedule for the electrification



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programme. That's right; it's in the Report. You said yourself you are at 89%. This is meant to be supportive: have you actually given yourselves space to really get on top of this? Are you making it more difficult for yourselves than you need to? Are you actually in a position where you can really get on top of this planning and get to a point where you really should be fully in control, or do you need to give yourselves a bit more space to do that? I just ask because it would be a bit tragic if you were so burdened with trying to make progress and recover ground on it that you weren't able to get your planning base fully into where it needs to be.

Mark Carne: So, a couple of points. The 89% refers to the enhancements improvement plan, which has a number of different elements in it, rather than just the planning aspect of this.

Sir Amyas Morse: I accept that.

Mark Carne: I would say that we actually took the pause to make sure we got a grip of this programme last year. So, 2015 was the time when we said, "Hang on a minute." If you start a big project really badly, it is really hard to get it back under control, and 2015 was actually when we said, "Hang on. We need to take a bit of a timeout here and really work out what it is that we're doing." That led to the rescheduling at the end of last year, which we are now confident that we can deliver. I would agree with you, however, that the level of planning and interdependency between all the different elements is not as transparent as I would like it to be, and—

Sir Amyas Morse: And the level of time contingency that you still have.

Mark Carne: And therefore it is sometimes quite difficult to fully appreciate the level of time contingency. Surprises happen on these sorts of programmes, and if you do not understand what your contingency is, you are likely to get caught out. We are still working very hard on improving that planning. We will have the integrated critical path analysis showing the dependencies between all the different parts of this programme next month—in January—and I think that will put us on a stronger footing. I take your point. I certainly don't want to suggest that all is well, because your Report clearly highlights that things can be done better, but goodness, it's a lot better than it was.

Sir Amyas Morse: I am not denying that.

Q116 **Philip Boswell:** The problem remains. We see three players now: the Department for Transport, which, as Mr Rutnam has confirmed, maybe has some good planners; Network Rail, which certainly in a previous life had some very good planners, and doubtless has good planners as well; and Bechtel, which I have worked with before, which has good planners. Is this a project management issue? Where does the buck stop? Who was responsible for making sure the brief from the Department for Transport to Network Rail to Bechtel was accurate? This is public money. We are paying for all these good planners. Why didn't they plan? Why didn't one of them do their job? There are three entities here—all, I believe, with the capability to do this. Who let us down? Who let the public down?



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Philip Rutnam: The Department is clearly responsible for what the Department has done in its role. The Department's job was first to set what were known as high-level outputs—what the railway needed to deliver. That included very clear statements about electrification. The Department also had responsibility for some further detail beneath that, some of which is discussed in the Report. I accept that some of that detail should have been resolved sooner. The design, development and delivery task, including any relationship with Bechtel, is clearly a matter for Network Rail.

Philip Boswell: Mr Carne, on the same issue.

Mark Carne: The fundamental problem here, if we go back a bit, was that Network Rail certainly did not make clear enough the high level of uncertainty that existed in the project at the time that commitments were made. I am absolutely certain that—

Q117 **Philip Boswell:** Sorry, Mr Carne, this is a rail project, and the Department for Transport did not identify risks in rail projects to Network Rail and specialist Bechtel consultants. Should they have to?

Mark Carne: I'm sorry, could you say that again?

Q118 **Philip Boswell:** We have the Department for Transport engaging Network Rail and Bechtel to deliver a project specialising in railway infrastructure. Surely the duty of care sits with the professionals—or people who purport to be professionals—in the construction, engineering and design of railways. Surely the duty sits with Network Rail and Bechtel.

Mark Carne: It sits with Network Rail. It is Network Rail's accountability to give the Department a robust schedule and budget against which it can then make the appropriate decisions. It is clear we failed to do that and to highlight the high degree of uncertainty that existed in those costs at that point in time. I am the first to acknowledge that that was not done well enough.

Q119 **Philip Boswell:** So what function did Bechtel—

Mark Carne: No, it is not about Bechtel. Bechtel are a partner working inside our project, helping us as a delivery partner, but they had no part in—

Q120 **Philip Boswell:** So an "on behalf of" function.

Mark Carne: They are part of Network Rail.

Q121 **Chair:** Just to be clear, you are saying that Network Rail could and should have done more to challenge the Department for Transport's unrealistic expectations and make clear why they were unrealistic.

Mark Carne: I don't think that is quite what I am saying.

Q122 **Chair:** I am adding a bit, but not a lot. Plainly the expectations of the DfT turned out, based on the knowledge they had—admittedly rather partial knowledge—to be unrealistic.



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Mark Carne: No, the Department specified their high-level output statements. Like it or not—I don't like it—Network Rail said we would do it. We said yes and signed up for it. We said, "Yes, we can deliver it in that timeframe and it'll cost that amount of money." Both those assumptions turned out to be wrong. There are many, many reasons why they were wrong. They were extremely preliminary, at the very earliest stages of development. That is why, for example on TransPennine, I will not put myself in that situation again. It is quite wrong to put the Department in a place where it takes these sorts of decisions with such immature information. So it was a failing at that stage.

Q123 **Chair:** But the Department should also have been aware of that, should it not?

Philip Rutnam: Clearly there is learning for the Department too, in terms of—I don't think we are going to make this mistake again—just accepting plans from Network Rail and believing them without necessarily having all the assurance that you would want as the customer. We want to know that we will get what we are paying for, essentially, to the timetable we are asking for. If it takes longer for Network Rail to develop its plans to a sufficient level of confidence to give us that assurance, that is something we are going to have to work into our planning and decision making. That is a much better relationship, I have to say. It may feel uncomfortable at times, but it is an honest, open and better relationship than the complex trilateral relationship with the regulator that I talked about earlier.

Q124 **Chair:** Are you familiar with the National Audit Office Report "Assurance for major projects"?

Q125 **Philip Rutnam:** I am pretty familiar with it.

Q126 **Chair:** It was published on 2 May 2012, so four years and seven months ago. We took evidence on it later that year, and it was a very interesting hearing, all of which is germane to the questions that Mr Boswell was asking. Mr Carne, are you familiar with that Report?

Mark Carne: I am.

Chair: Mr Boswell, do you have further questions?

Q127 **Philip Boswell:** Yes, I do, in relation to a few more of the technical issues. Aside from clarity on scope and expectations, and project management and briefs, figure 16 in the NAO Report sets out weaknesses in Network Rail's management. Mr Carne, why were those basics not in place from day one?

What page is figure 16?

Rebecca Sheeran: Page 39.

Mark Carne: I think that at this point this project needs to be seen in the context of Network Rail's overall programme for control period 5, which was a hugely ambitious programme of projects, the like of which has never been delivered before in our railways past. The huge commitment to deliver that programme occurred at the same time as the reclassification



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that I have also highlighted. So the first two years of this control period were really about, as I said, rebasing that programme to put it on the firm footing that I believe it is now on.

I think there are many contributing factors. I don't believe that Network Rail entered into the control period with the full capability and the systems that it needed to deliver the programme, and I think it was—I have said this before—an overly ambitious programme. It was not supported by the kind of planning, depth of planning and understanding of the scope that one would expect for a programme of that scale. That is exactly why we are approaching major projects in the future with a very different eye.

Q128 Philip Boswell: Paragraph 17 on page 9 of the summary states: "Weak programme management information has undermined the programme board's effectiveness. Management information has not been of the standard we have seen on other major programmes. The information that the programme board has received about costs and schedule for the infrastructure programme has not been based on an earned value management approach, in line with best practice for managing major programmes. It has not fully informed the board about progress with delivery and has made it difficult to monitor risks. Network Rail has told us that it is developing earned value management measures, but it has not yet put these into practice". Mr Carne, what prevented Network Rail from using earned value techniques to help to manage the modernisation programme?

Mark Carne: We didn't have earned value management techniques on any of our programmes, actually, and that was one of the key themes—

Q129 Philip Boswell: Did Bechtel?

Mark Carne: Well, that was not adopted in this programme, but it is now there and we will be monitoring it. We are using that approach, certainly from January, going forward. In fact, all the top 50 programmes for Network Rail—we are obviously rolling it out, starting with the biggest and most significant programmes. We will be using this kind of technique as part of the overall integrated programme management system that we have now, so all our projects will eventually be on this system. It is a live system: we can look at any point in time at where a project is, what its schedule is, what its anticipated final cost is, what the big risks are and so on. So I would say that we have made significant progress in implementing the kind of project management techniques that I accept you would normally expect in any major capital-intensive industry of the type that Network Rail is.

Q130 Philip Boswell: To be honest, Mr Carne, I don't believe that a technique would make up for a lack of good management. Regardless of modern project management techniques or systems, project management has been around for a long time. Risks have been well understood in the past, with or without modern technology. But does Network Rail now have the appropriate resources to professionally manage these extensive electrification projects? Are they in place now?



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Mark Carne: Yes. We have a very strong team, actually, in our infrastructure projects organisation, delivering this £15.7 billion programme. We are investing £100 million every week on projects. We build an Olympic stadium every month on a live railway—that is the equivalent scale of construction activity that we do. So of course we have project management skills. We have brilliant project management people right across the country. You name where you would like to go and I can show you some brilliant project management people in Network Rail delivering fantastic projects. But of course there are always things that one has to do better—

Q131 **Philip Boswell:** But they were not on this project between 2012—

Mark Carne: They were. The people who are delivering this programme are the same team who, three years ago, were the heroes who sorted out the washed away Dawlish railway line and fixed it in eight weeks. This is really a top team of people working in very difficult circumstances to deliver this programme.

Q132 **Philip Boswell:** So it is the A team now. Was it the Q team at the start of the project?

Mark Carne: I would just say that it was an overstretched programme, too ambitious and inadequately thought through, with insufficient detail on the scope and the planning in the early stages—not just this project but other projects as well. That is the key lesson that we have to learn. As a project delivery person yourself, you will know that the key thing you must get right is the scope definition at the front. The interesting question for me is not, “Well, let’s learn that lesson again” but “Why do we have to learn that lesson again?”

Q133 **Chair:** Yes. That is the really interesting question.

Mark Carne: Yes, so what are the pressures—

Chair: The answers are all in the last chapter of my book, by the way. Mr Rutnam has already read it.

Mark Carne: I shall read it with great interest.

Q134 **Chair:** You say you have got a great team. While we are on this subject, paragraph 3.16 refers specifically to a “continuing shortage of skilled signalling engineers”. I appreciate that some signalling engineers will work for independent bodies in the supply of services to Network Rail and you will probably have some in-house, but who is responsible for making sure that we have got not just enough skilled signalling engineers but enough of all the skilled people you need, including top-quality project managers?

Mark Carne: We are with the supply chain, and we work with the supply chain in that area. Let me take signalling engineers as a very specific case in point. If you take signalling testers, for example, you need them at the moment of commissioning signalling systems, and it just so happens that we tend to do all of the commissioning of signalling systems at the same



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time, which is at Christmas, new year and times like that. So we are acutely conscious of exactly the number of signal testers there are in the country that have the competency and skills that we need, and we make sure that they are appropriately distributed around the country to enable us to deliver each of those programmes.

When we have identified, as we have done in the past, a national shortage in those disciplines to execute the programme of works that we have, we work with the supply chain to ensure that they recruit and develop the kinds of skills that we are going to need. By and large, that has worked pretty well. So we have got the signalling testers; overhead line engineers is another one. In several really critical disciplines we have to manage that national resource.

By the way, it is not just about people; it is also about all of the equipment that we use. Let me give an example of project management, if I may. This Christmas and new year we are going to have 25,000 people out delivering the biggest programme of works in the history of Britain's railways. Pretty much every wagon that I have got, every crane that we have got and every piece of equipment we have got is out on the tracks. Every single one is allocated specifically to a project. We have a minute-by-minute project plan covering over 200 work sites right across the country so that we know precisely where each piece of equipment and each person needs to be to deliver that programme.

It is that kind of intimate detail in the programme that gives me the confidence that we will deliver it. Now, things can go wrong, but actually we are in a good place to deliver that huge programme of works.

Q135 Philip Boswell: Okay, we look forward to what we will see in March 2017. A final question for Mr Rutnam on what has been a bit of a recurring theme through the questioning in relation to signalling engineers. The Chair and several of my other colleagues have touched on it: Brexit implications for the Department. It might not jump out at most people looking at the Department for Transport, but considerations potentially include trade barriers, imported stock and tractors, tariffs and infrastructure professionals in signalling engineering, engineering, planning, construction and project management. What percentage of the workforce will be EU citizens, for example? Is this something that you have calculated? Is that going to have an impact on the schedule looking forward?

Philip Rutnam: We are very conscious of the skills issues and the availability of skills, in just the same way that Mr Carne has spoken of.

Philip Boswell: Because you can see where it goes wrong when you don't have the right skills.

Philip Rutnam: We are also conscious that we have this interest in relation to not just Network Rail's programmes but those of Transport for London, for example, and Highways England, High Speed 2, Crossrail and a range of different programmes and organisations which we are funding

one way or another and where we have an interest in successful delivery. We are very conscious of the need to enhance the supply of skills.

We have very large investment programmes coming up: the national road network and the new high-speed rail line, for example. To add a little bit to what Mr Carne said about skills more generally, the Department has led with our partners, such as Network Rail and the other organisations that I have talked about, an infrastructure skills strategy. That essentially means that if you are being funded by the Department, we expect that the supply chain will be required to make commitments in any contract let to invest in apprenticeships and targets for enhancing the diversity of the workforce in terms of gender balance, ethnicity and so on, right through the infrastructure skills supply chain. This is something that we have had well in train for over a year now.

You are right that some of the workforce who work on these projects will be EU citizens. It tends to vary a bit by location. It is higher in central London than it will be further away from London. The figure that I get from the construction sector generally for the proportion of its workforce that is made up of non-UK EU citizens is in the order of 10% to 15%, but it varies between different projects. Of course, there is a wider discussion to be had about the ability of non-UK EU citizens who are in the country already to stay beyond Brexit. I will not comment on that, but I would like to reassure you that we are very well aware of the skills challenge, given the importance of the infrastructure we want to deliver, and specifically of the link to Brexit.

Q136 Philip Boswell: You mentioned you have had this plan in place for one year. An engineering degree takes four years; chartered engineers take seven years. In 2019, what are you going to do?

Philip Rutnam: We have had that particular plan in place for a year, but there has been good progress already, and in fact it builds on a number of things that were already in train. Looking at underground construction and tunnelling, for example, we are building on the Tunnelling and Underground Construction Academy which Crossrail has put in place, which is a resource now available to the entire—

Philip Boswell: Crossrail?

Philip Rutnam: Crossrail, sponsored by DfT as well as TfL. That is supplying experts in underground construction who will be as important for HS2, given the amount of tunnelling that project involves, as they are for Crossrail. It builds on other initiatives. Right now, the National College for High Speed Rail is in preparation in Birmingham and Doncaster. Again, it will supply skills into not just high-speed rail but other rail projects as well.

Q137 Philip Boswell: In that case, can we see an integrated resource plan that includes Great Western Railway, HS2 and Crossrail resources? It sounds like it is going to be awfully busy for signalling engineers and tunnelling experts.



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Philip Rutnam: It is going to be busy. I cannot offer you an integrated resource plan, certainly not for signalling engineers; I would say that that is a matter for Network Rail. I can offer to write to the Committee more generally about what we are doing on skills, the commitments around 30,000 apprenticeships and the progress being made on that, for example.

Q138 **Philip Boswell:** Again, we are a long way off; 2019 is imminent, and we need apprenticeships and engineers. One final question: what would you say are the key issues around Brexit that affect these projects and your Department as a whole?

Philip Rutnam: In relation to these projects, I have to say I don't see a first-order impact, other than perhaps the question of the skills that you have raised. That is obviously something that needs to be thought about quite carefully. Is your question just about these projects, or about the Department more generally?

Q139 **Philip Boswell:** The Department as a whole, but specifically these projects.

Philip Rutnam: For the Department as a whole, the impact of Brexit on transport, to be honest, varies significantly between different sectors. In an area like aviation, early in the 1990s the development of the single market for aviation through the single European sky programme had a significant effect on the market structure, and cheap air fares and business models like easyJet and Ryanair are obviously significant. So the way in which we secured the benefits of aviation going forward will be a significant issue in Brexit. But if I go to another area, such as rail, there is, to be honest, limited physical interface, obviously, between UK rail networks and other EU networks in Ireland and the channel tunnel. There are some issues with standards and the development of standards, which are important but perhaps not quite as central as the aviation issues. It is varied between different sectors.

Q140 **Philip Boswell:** But none of this is affected by things like skills, importation and standards on equipment, materials and contractors providing resources from outside the UK?

Philip Rutnam: Those are the sort of issues that we will need to make sure we give careful attention to: the continued availability of skilled labour to deliver the very important programmes we have. Of course that needs thought.

Q141 **Nigel Mills:** One quick question: do you procure rolling stock in euros or sterling? Are all the contracts safely in sterling?

Philip Rutnam: Could I write to you about that? I think generally procurement is in sterling, but exchange rate risk may be taken by the customer in some cases, which amounts to the same thing. Perhaps I could write to you about that.

Q142 **Nigel Mills:** To switch back to Great Western, will you remind me what the latest benefit-cost ratios are? I have 1.6 in mind, but I may be misremembering.



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Philip Rutnam: The latest benefit-cost ratio from the business case that we developed was 2.4. The NAO has done an assessment that suggests it may now be 1.6. We don't yet have a figure that we would want to offer because we are still working through the refresh of the business case. The Report refers to 1.6, but there are quite a few projects that have a strong reputation and very significant benefits that are not at 1.6. For example, the benefit-cost ratio for the Thameslink programme—an enormously important programme to relieve crowding north-south through London, improving services and so on—is about 1.4.

Q143 **Nigel Mills:** I probably won't ask about HS2 at this stage.

Philip Rutnam: I am happy to volunteer it and, as you mentioned it, I can't resist. The latest HS2 business case refresh, which was published around the time of the phase 2 route announcement was given was 2.7:1.

Q144 **Nigel Mills:** Have you looked at what the benefit-cost ratio is for the remaining spend on the Great Western project, rather than the project as a whole? I am trying to work out whether, if you get completely bi-modal trains, we should just abandon this as a bad job and stop where we have got to.

Philip Rutnam: Far from it. I believe both those figures—2.4 and 1.6—are looking at all the costs, including costs that have been incurred. I strongly suspect that if you exclude sunk costs—money that has been spent to date—and look at it on a forward-looking basis, the benefit-cost basis will be much higher.

Q145 **Nigel Mills:** You seem to be saying that we could get most of the benefits without electrifying. The implication would be: why bother to keep electrifying now we have these different trains?

Philip Rutnam: It all depends on which bit of route you are talking about. There are still significant benefits, as I was trying to explain earlier, associated with operator cost reduction, air quality and things like that.

Q146 **Nigel Mills:** So you have done the exercise, which says that even with all the error runs we have had it is clearly worth while continuing and finishing it at least as far as we are still planning to finish it?

Philip Rutnam: We strongly believe so. I do not know whether Mr Etheridge wants to comment.

Brian Etheridge: As we described earlier, we will refresh the business case in the new year. We will look at everything we now know, including the costs we have spent so far. We will have to make a judgment, as you would expect us to do and, as I think I explained earlier, we will be constantly refreshing our business case so that we remain on top of the business benefits issue.

Q147 **Nigel Mills:** Had you known at the start that the benefit-cost ratio would be 1.6, would the project still have ranked so highly as a priority, or would other, more deserving projects like those in the east midlands have gone ahead first? I am a little biased, I grant you.



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Philip Rutnam: I can only say that that is a hypothetical question. Our focus is on bringing this project to a successful conclusion and delivering the benefits we discussed earlier. I am pretty confident that when we do our refresh of the business case it will continue to come out strongly.

By the way, the business case for these things really should not be reduced to a single number. First, there is an uncertainty in that. I personally prefer to talk about ranges or some kind of analysis that doesn't revolve around a single number. Secondly, we also have to recognise that there is a strategic case associated with improving connectivity—the kind of wider impacts Ms Smyth was talking about earlier—which again is not always reflected in the numbers.

Q148 **Nigel Mills:** But it is quite a fundamental question, isn't it? Presumably, when you choose which projects to give priority to, one of the key factors is which ones deliver the most benefits for the cost, especially when you are cost-constrained and capacity-constrained. Would 1.6 have still given this scheme the go-ahead, with the priority it has to effectively use up a whole chunk of the five-year funding that is around for everything?

Brian Etheridge: When you look at the strategic case, you can see that there are some aspects of the route that have some of our most crowded trains coming into London. For the reasons that have already been discussed, this is also a route where in the next few years we expect significant growth, and probably growth outstripping that on some other routes. It is a question of having to bring all those things into balance. I think just saying, "Let's pick the top best numbers," is seductive, but there is never a point in time at which you can freeze the world and say, "Yes, that's the way we'll do it." There are issues. This is an ageing fleet—I think it has been mentioned that it is 40 years old, so it has literally come to the end of its life. There are a number of other strategic factors which, combined with the business case, make this a very good case for investment.

Q149 **Nigel Mills:** I get that the benefit-cost ratio should not be the only or maybe even the main decision point, but had you known all along that it was 1.6, not whatever it was at the start, would that have put it further down the rank? Is that what you are saying, even though it may not have changed what you did?

Brian Etheridge: The honest answer is that I don't know—I don't know what was around at that time—but, again, you would still have been left with a very ageing fleet that needed replacing.

Q150 **Nigel Mills:** So we will spend the money because we're here.

I have a slightly different question. Say you had a line now on which the rolling stock was very close to the end of its life, a franchise to retender and a major modernisation programme lined up; are you now confident that you know how to handle those things in the right sequence so that you don't order rolling stock without knowing what tracks it is going to run on and so on?



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Brian Etheridge: Yes, because I think we would do them in a different way. Mr Carne has already alluded to the approach we are taking in schemes that are now very much in their preparation stage, as against the scheme we have here, which is in flight and needs to be delivered. Going forward, the approach will be that, first, we won't specify to Network Rail whether it should be electrification or new rolling stock; we will specify the outcomes we are looking for. In the first instance that could be the relief of crowding, additional seats, improved journey times or whatever. We would very much like back at that stage—this is the case with the trans-Pennine upgrade—a proposal from Network Rail that includes options. We can then make a judgment about those options based on both the cost and the benefits we get from them and the risks that they pose to delivery, and then make an informed decision in the round about how we would take that forward. The new processes we have in place mean that there will be gateways that we have to go through before we can go to the next stage.

Nigel Mills: I think you are about to start tendering for the operating company for one of your other big electrification projects: the Midland Main Line one. We know we need different rolling stock from 2019, I think it is, when the HSTs are not suitable for passengers with disabilities. I am not entirely clear that you have worked out whether to tender for new rolling stock now and pay for it, and presumably have to buy bi-mode. If we are not going to get electrification done in the foreseeable future, why pay for bi-mode for the whole way up?

Perhaps you can assure me that you have lined all these things up and thought, "We do know what we are doing before we commit to a franchisee to have electric trains when we don't think they will, or before we start buying rolling stock we don't think we will need or spending more on it than we ought to have done." Have you worked all that through now so that we are not going to get into the same mess again?

Brian Etheridge: Yes. Clearly, one of the key relationships is the extent to which infrastructure can deliver within the lifetime of a franchise. One thing we are committed to is trying to line up much better and much further in advance our infrastructure programme compared to the franchise competitions that we see coming along, so that we can make a better judgment about what to include and when, so it lines up with those key decisions about future franchises.

Kwasi Kwarteng: I appreciate that there are many new MPs here. I was on the Select Committee on Transport in the previous Parliament. The last time you and I met was during the West Coast Main Line fiasco about four years ago. For me, a lot of this is déjà vu in terms of the Department misjudging and severely underestimating costs. I understand that in this instance it was Network Rail, but having been on the Transport Committee for three years from 2010-13, all of the problems that you have outlined in the past two hours seem to me to be chronic problems related to infrastructure and particularly to rail.

I don't want to get into the weeds of what particular things went wrong



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but, from a broad strategic point of view, where do you think your approach could improve? Because these are chronic problems, as I have suggested. I appreciate that members of this Committee probably are not aware of some of the difficulties that you have had as a Department in the past five or six years.

Philip Rutnam: That is a very good question, if I may say so. The same analogy has occurred to me. At a very high level, the difference I would observe between the West Coast fiasco and this, is the time over which things have unfolded. With West Coast things were got wrong and the fact that they had been got wrong was exposed very very quickly, in a short number of weeks and months, with very significant consequences.

In this case, it seems that at a very high level some similar mistakes were made such as lack of planning and assurance, all of those things, but it took really until 2015 for the scale of those problems and the fact that they were not capable of being managed down, to be exposed. One was a problem spanned over three months; this is something that has unfolded over three years, and had consequences. There is even an interesting point about both involving key decisions in the period leading up to 2012. There is an interesting analogy between the two that has definitely struck me.

I would be positive—you would expect me to be—about things we have done since 2012 in the Department as well as with partners such as Network Rail, to get to the root causes of issues such as this. Within the Department we have greatly strengthened and clarified accountability. We have a very clear structure of accountability for our role as client and sponsor of major projects and programmes. We have done an enormous amount to develop our project and programme expertise and profession, and our commercial expertise. We have enormously expanded our approach to assurance.

Unfortunately, those changes were too late to catch this one. They have, however, been really important in the way in which we have approached the reset of this project from 2015 onwards. Although it is not perfect, the improved performance since 2015 owes a lot to Network Rail but also certainly owes something to a greater maturity and depth of challenge within the Department.

Karin Smyth: I think we are not sensing a massive improvement since 2012 to 2015—the transcript will outline some of that—but I want to say something positive in response to Mr Carne. Our outrage, frustration and feeling of being short-changed is because we have lived and breathed this project in south Wales and the west country. That includes some of the really quite magnificent engineering works that you and your team have undertaken, particularly in Box Tunnel and the Severn Tunnel. I think we should recognise that. We have watched it on our televisions and read about it, and it inspires generations of new engineers across the west country and in south Wales. That is why it is so important to us. I pay credit to that engineering expertise in this country. We need more of it, but we want the benefits very quickly and we hope that this will help to



get us there.

Q151 **Chair:** Well, I hope so. This is to both Mr Rutnam and Mr Carne. *Project Magazine* did a special on the Olympic Delivery Authority learning legacy, in which David Birch, head of programme control for the Olympics, was quoted as saying that the outstanding feature of the Olympics was that “We worked hard to generate and recognise one source of truth.” How near are you both to being in a position where together you are making robust data-driven decisions, where you have a very high degree of confidence in the quality of the information that you are using to base those decisions on?

Mark Carne: First, we are in such a different place from the one we were in a year ago. I give credit to Mr Etheridge, who chairs the programme board on Great Western. This did not really exist before, but we now have a programme board where, exactly as you describe, we must have one version of the truth, where the different elements of the programme come together and are explored, tested, challenged and worked.

Q152 **Chair:** That is a good first step, but you also need the right quality of decisions going to that programme board, and you are not necessarily there yet.

Mark Carne: Absolutely, and that programme board is then accountable and responsible for making some of the difficult choices that need to be made in trade-offs when you are living within the constraints that we have to have. In order to make those trade-offs, they have to have quality information—the right kind of information.

Q153 **Chair:** How near?

Mark Carne: Let me speak bluntly. In 2014, the cost of this project was going up by about £100 million a month. We just didn’t have a grip on it at all. In 2015, we really got to the bottom of the challenge and set it on an even keel, I think. In 2016 we have been delivering against that plan, and we will continue to do so until December 2018 when we have electrified the railway to Cardiff. But working collaboratively with the Department today, we are in such a different place with both my team and the Department’s team. We are not quite at the point where we have just one version of the truth; we still have the occasional argy-bargy about what the truth is, but we do it in a constructive and collaborative way today, rather than hunkering down in our own bunkers.

Q154 **Chair:** Mr Rutnam, how near are you to having one source of truth?

Philip Rutnam: My answer would be very similar to Mr Carne’s. I could comment, but Mr Etheridge lives and breathes this stuff every day, so I think he should speak.

Chair: Fair enough.

Brian Etheridge: I think this has changed enormously over the last year. I don’t think there is anything hidden from us. There is a culture now within Network Rail that knows that the quicker we expose challenges and



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the quicker we foresee problems coming up, the better our chance of resolving them. The great benefit of the programme board is that we can resolve them with everyone who is influenced by this—I immediately accept that we do not have local people in the room, but everyone who is involved in this is part of that decision-making process.

The Report is very clear. We take it absolutely on the chin that there are better ways in which we can use the MI to better effect, and we will put that in place. I feel that there are the behaviours, the culture, the openness, the transparency and the preparedness among everyone to solve these problems. Hendy resetting the programme did not make all of the problems and challenges wash away; he merely gave us a new baseline to work to, which we are doing. We are still on a journey. We have made significant progress in the last year. I find the Report very helpful in giving us some pointers to things we clearly need to do as a priority for next year.

Q155 **Chair:** Thank you. I would like to finish then. Mr Rutnam mentioned HS2, and on 15 November the Secretary of State made an announcement about the preferred route for Phase 2b. Will you just quickly address a couple of questions about that, Mr Rutnam? Can you explain why we do not yet have a firm decision about Sheffield?

Philip Rutnam: The position is that the Secretary of State was able in law to make a firm decision of all aspects of the Phase 2b route save for Sheffield, where there is a clear proposal—a proposal that is a very clear preference on the part of the Government, but that needs to be subject to a statutory consultation, or to a consultation and I think it is statutory. I cannot prejudge the outcome of that consultation, or further decision making, but the Secretary of State's preference around the route in Sheffield is very clear and reflects, I believe, on the whole, strong local support.

Q156 **Chair:** When do you expect to make a conclusive decision on the northern connection of Sheffield?

Philip Rutnam: About the northern connection of Sheffield, or about the route to Sheffield more generally?

Q157 **Chair:** It is actually about the area north of Sheffield. That is to say the—

Philip Rutnam: There is the issue of the connection north from Sheffield Midland station to HS2—again, north of Sheffield.

Q158 **Chair:** It is—the main change to the eastern leg relates to the location of the Sheffield city centre station being served by HS2, running into Sheffield Midland using a dedicated high-speed spur.

Philip Rutnam: Correct.

Q159 **Chair:** And a junction at Clay Cross, which connects to the existing network, which is to the south of Chesterfield.

Philip Rutnam: Correct.



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Q160 **Chair:** Will you just explain the proposals for the centre of Sheffield and the proposals for the north, so that we understand them clearly?

Philip Rutnam: The previous proposal for Sheffield was to take the main route of HS2 through Meadowhall, where there is the Tinsley Viaduct to the M1, and the Meadowhall shopping centre, and to have a very large elevated station. That met with a lot of local opposition. It also raised some very significant cost and engineering issues.

The new proposal for Sheffield is exactly as you have described. As the route comes north from Toton, between Derby and Nottingham, there would be a spur to the west that will be new infrastructure, and—

Chair: A loop to the north.

Philip Rutnam: And would join the existing Midland Main Line near Clay Cross. It would also allow HS2 services to serve Chesterfield, using the existing station, and to serve the existing Sheffield station, which is known as Sheffield Midland, in the city centre. That is the proposal that the Government have put forward.

I am afraid that the answer to your question—when will we make the final decision—I am afraid I do not know.

Q161 **Chair:** The statutory consultation presumably has a period.

Philip Rutnam: It will have a period, then there will be a decision-making period, and I am afraid that I just do not know exactly when that will be, but we can write to you on that.

Q162 **Chair:** You would expect it to be during the first half of 2017.

Philip Rutnam: I would certainly expect it to be the first half of 2017, but when in terms of months I do not know, I am afraid.

Q163 **Chair:** Okay. When can we gain assurance that the efficiency savings identified will actually be delivered?

Philip Rutnam: The HS2 project was obviously subject to an NAO report earlier this year—indeed, we had a hearing about it—and I would identify two different elements of the efficiency programme. First, there is obviously an efficiency programme in relation to Phase 1, which is subject to continuous assurance. We are already on our sixth iteration of the quantified cost-risk analysis, schedule risk analysis, critical path analysis and budget line. That will be going through further development in the first half of next year. Secondly, for Phase 2, particularly Phase 2b, there is a larger efficiency challenge, as you would expect at this early stage of a programme. I am afraid that I do not have in my mind exactly when the next milestone will be in relation to the reporting of Phase 2b—

Chair: Perhaps you will write to us about that.

Philip Rutnam: I could write to you about that too.

Q164 **Chair:** You mentioned earlier that the benefit-cost ratio had gone to 2.7;



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it was 2.2. Is the reason it has gone up solely new measurement techniques, or are there additional benefits?

Philip Rutnam: It is a complex range of things, as so often with transport projects. It is a mix of updated views on demand—for example, the base year for the demand forecast has rolled forward, because we now have 2014-15 data, instead of just projecting for 2014-15, and that accounts for some increase—and what else? You will recall previous exchanges in this Committee about improving our estimates of the value that passengers attribute to journey-time savings. We have done that through novel and very helpful research techniques. Those values have gone up and that accounts for a further increase. Offsetting that, there are methodological changes to do with the way in which we make assessments of certain types of value, so there is a series of pluses and minuses. I think the biggest single plus relates to demand—base year and projections of demand—and then the biggest change in the other direction is methodological. Again, if it would be helpful for me to provide a bit more detail in the same letter—an HS2 letter.

Chair: Please do. That would be very helpful, and then we can put it in our report.

Thank you very much for your attendance today, gentlemen. You will gather from our questions that the Committee has considerable concerns about the Great Western Railway and scepticism about what has been done hitherto. I do not think it is an exaggeration to say that. You have provided some reassurance, but I do not think you have satisfied us because of the nature of the track record. We very much hope you are right that the position is now very different from, as Mr Etheridge said, it was even 12 months ago. We hope that is correct. We will doubtless return to this subject to check whether you are right. In the meantime, thank you very much for your attendance.