

Welsh Affairs Committee

Oral evidence: [The Cancellation of Rail Electrification in South Wales](#), HC 403

Tuesday 21 November 2017

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Members present: David T. C. Davies (Chair); Tonia Antoniazzi; Chris Davies; Geraint Davies; Glyn Davies; Paul Flynn; Simon Hoare; Ben Lake; Anna McMorris; Liz Saville Roberts.

Questions 1 – 55

Witnesses

[I:](#) Professor Stuart Cole CBE, Emeritus Professor of Transport, University of South Wales, and Roger Ford, Industry and Technology Editor, Modern Railways Magazine.

Written evidence from witnesses:

[Professor Stuart Cole](#)

[Roger Ford](#)

Examination of witnesses

Professor Stuart Cole and Roger Ford.

Q1 Chair: A very good afternoon, Mr Ford and Professor Cole. Croeso. Welcome to the Welsh Affairs Select Committee. Obviously, Professor Cole, we all know each other quite well. Mr Ford, thank you for coming along and adding your expertise. I am just going to start off the questions by asking both of you why it was that the estimated costs of electrifying the line between Cardiff and Swansea have gone up by so much: from £156 million to £433 million.

Roger Ford: After privatisation, a lot of engineering skills were lost, management skills were lost, we forgot how to do electrification. In 2007, the Government's White Paper on railways essentially said electrification is obsolete; if it cannot be done in 15 years, it will not be needed. There was a long fight to get electrification back. A lot of electrification was authorised, and there simply was not the experience of how to do it. Past experience under British Rail was regarded as irrelevant by Network Rail and Railtrack and, as a result, it went ahead in a strange way. They decided they would do it with a factory train, so they designed this wonderful factory train first and then designed the overhead line, equipment and so on to follow. It is a failure of management and, in part, engineering.

Professor Cole: What Roger says is absolutely right. What has happened is that over the period of the design of the Great Western Railway electrification, the original work done by Network Rail was—and Sir Peter Hendy has said this himself—a desk exercise. Therefore, quite significant costs, as they turned out to be, such as the reconstruction of bridges, were not in much of that initial figure. That applies, of course, to the whole of the line from London to Swansea.

As a result, the costs have increased year by year. The Hendy review of those costs showed what had happened, and we now finish up with a cost which, in one set of figures, has been said to be £500 million for Cardiff to Swansea, but another figure from the Cabinet Secretary for Transport, Mr Ken Skates, has suggested a £700 million cost for carrying out this work.

I think what we will find is that from a desk exercise to an actual on-site analysis of what is there—and we are in some areas going through some quite difficult areas of geology—there are underground workings, many of which are not known about because the plans have been lost over the years. Whereas the current railway is settled, once the engineers start to go there to do their site analysis, they start to find elements in the geology and elements in the understructure of the land to be an expensive proposition.

Q2 Chair: This is not a blame game, but surely to go from £156 million to



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£433 million—I am not an engineer, but if I had been sitting in an office in Network Rail, I might have thought to myself, “This is not going to be straightforward”. Perhaps err on the side of expensive if you are not sure. Do you think they deliberately underestimated the costs?

Professor Cole: There is an interesting question. I would like to think not and that they did what they could with the information that they had. Of course, there have—

Q3 **Chair:** Did they not think to themselves that we do not necessarily have all the information, and therefore the costs might go up a bit? That is the normal procedure, isn't it?

Professor Cole: Indeed, and that might well be the way they ought to have done it. At least for several of those years, up to about three years ago, construction costs were rising by about 7% per annum. That might have been forecast, it might not have been, but there is a general idea that costs are going to go up every year, and that is what happened with the railway. That added to the position of the cost increases that we have been talking about.

Roger Ford: If I could add some numbers to that, Chairman, we quantify electrification on cost per single-track kilometre. In other words, how much one line of track costs to electrify, because you have two or four tracks. The original cost in 2009 was about 640. That was not too far out of line—

Chair: Sorry, 640?

Roger Ford: £640,000 per single-track kilometre. That was not too far out of line with the cost of the East Coast mainline, which British Rail electrified, which was something like £450,000 to £500,000. We know costs have risen since privatisation; health and safety is much stricter. That was in 2009.

In 2011, it had gone up to £860,000. In 2013, it had gone up to £930,000. Sometime in 2013-14, it had gone up to £1.4 billion, and the last figure from Sir Peter Hendy was about £2.9 billion. You can see that a lot of us were misled. I do not think the original cost was underestimated. The estimation was done on the basis of what it had cost the last time we did a big scheme, but Network Rail is not British Rail. As I say, you cannot overestimate the amount of expertise that was lost, and we have been desperately trying to catch up since.

Q4 **Chair:** I wonder if you can clarify this. The £430 million, which is now the most recent estimate, does that include the costs of straightening out the track between Cardiff and Swansea?

Professor Cole: No.

Q5 **Chair:** No. So it would be more than that, then. If we wanted to take full advantage of the extra speed of an electric train, that is to say, it would cost more than £433 million.



Professor Cole: Yes. There is the electrification is of the track as it is, which is a windy track with a maximum speed limit of 75 or 90 miles an hour along different sections. The straightening would be about £1 billion. It is a big scheme to—

Q6 **Chair:** It would be another billion pounds on top to straighten the track?

Professor Cole: Yes.

Chair: Okay. Thanks for clarifying.

Q7 **Glyn Davies:** In a way it is in the same ballpark, but you seem to be explaining why it has gone up. You were asked the question about how it has gone up, and you have explained to us. When I heard the audit office telling us about it last week, I was astonished by the speed at which it had gone up. If I was sitting where you are, I would be pretty condemnatory about how we had got ourselves in a position where the costs have increased to a phenomenal level. My assessment of this is that there has been a really shocking increase. I cannot understand how on earth it could possibly have happened. Am I being a bit unfair?

Professor Cole: You refer to the National Audit Office report. They came out quite clearly with what had happened—that it was originally, as I mentioned, a desk exercise, and we knew that right from the beginning. The costs, as Peter has indicated, have gone up for a variety of reasons, and many of those reasons are put into the report from the audit office.

One of the issues is the time it has taken from the original planning period, which was back in the 2000s, to where we are now. We are talking about something like the best part of 20 years ago from when costs would have gone up. You can start off with a figure and then it will increase because, as I said, construction costs have gone up each year, and we have not kept up regularly so that the increases in costs were being published as they went along; rather, in some cases there were quite big gaps between one figure being published and then another being put out.

Q8 **Geraint Davies:** I thought the primary reason for the cost increase, other than the ones you have mentioned, was, first, that they did not know there were all these bridges there, and, secondly, they bought the trains before they laid the track. These are quite fundamental management errors, aren't they, that you would have thought they would have got right, irrespective of doing a desktop exercise before an onsite valuation?

Professor Cole: Sorry, what was the second point, Geraint?

Geraint Davies: I am just saying that with these basic blunders, namely ordering the trains before having done the track and not knowing the bridges were there, you could have worked those out even if you were at a desk.



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Professor Cole: That is absolutely right. The Chairman's question was about the infrastructure, but you are quite right. The train order originally was for diesel trains, and that was then changed subsequently when it was thought we could electrify the whole of the line all the way from London to Swansea. That decision having been made, the order was then put in for electric trains but, as we progressed, clearly all of the Great Western Railway would not be electrified. For example, that whole area from Bristol or Newbury, maybe, westwards to Penzance was going to need some kind of bi-modal train. The subsequent order then was for, more or less, 50/50 bi-modals and electric-only. In March 2015, early 2015, it became clear that some parts of the planned electric line were not going to be electrified, and a decision had to be made, I remember, by September 2015 on whether all the trains would be bi-modal or whether there would still be this split.

Q9 **Chair:** They changed their minds twice, then?

Professor Cole: Yes.

Q10 **Tonia Antoniazzi:** The National Audit Office criticised both Network Rail and the Department for Transport for their programme management failures. Who should take the greater share of responsibility for the cost and overruns of the delays?

Professor Cole: An interesting one. It is difficult to say, because Network Rail at that time—was it Railtrack, perhaps?

Roger Ford: Railtrack was up to 2001; electrification came back on to the agenda in 2007. The electrification became popular and became Government policy in 2009.

Professor Cole: So it was Network Rail that was in place. It was a private company. It had been set up, to some extent, as a reaction to the way Railtrack was running its business, and it had been given the task of making the railway safe, because there had been a number of accidents prior to that.

It is difficult to allocate between the two, because it was a private company; it was doing what it was told to do. Everything it did was being funded by the DfT, which is why, ultimately, it was brought back into the public sector, because everything about it was being paid for. Although money was being borrowed from the markets, the interest charges and repayments were coming from the various Governments; Scotland and the DfT, primarily.

Q11 **Tonia Antoniazzi:** To what extent, then, do you think lessons from this case have been learned for future rail projects?

Roger Ford: Not many, in my view. We still have the same management organisation. Costs are still fairly high. The problem is that we need to start again on electrification and look at it from first principles: how do you do it? How are you going to do it? It really was a lack of experience



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and a failure of management, which was recognised after the Hendy review. They brought in a new team and various experienced people to help, but it is still struggling to get anything done. I would have thought that Swansea would be quite a good place for a new look at how we electrify mainlines. That is something that the Welsh Assembly might consider.

Tonia Antoniazzi: Yes, we will be. Thank you.

Q12 **Chris Davies:** Mr Ford, you have just mentioned that between Cardiff and Swansea would be a good place to look at how we electrify the line. Because we are politicians, not engineers, can either of you gentlemen briefly explain how you go about electrifying a line? What work is involved?

Roger Ford: The first thing is that when you electrify the line you usually do it as a total route upgrade, and you may well re-signal at the same time. It is quite a straightforward process: you work out where you are going to put your masts and the positioning, and then you bring out trains, drill a hole in the ground, put the foundation in, put the masts up. I make it sound very easy, but it is a lot easier than it has been on the Great Western. For example, they authorised the East Coast mainline in July 1984, and it was completed in 86 months. That was about twice the length of the Great Western scheme. It had 28,000 foundations versus 19,000. We have been going over 100 months and we still have not finished.

There has to be a better way of doing it, and that could be done by possibly bringing in the private sector electrification people, like Siemens or Carillion, and starting afresh. The way we are going on with the various equipment, it is not delivering at that sort of pace and the best hope is probably a fresh start: look at it and bring in contractors and engineers and so forth. That is probably the best way.

Q13 **Chris Davies:** Professor Cole, do you want to add to that?

Professor Cole: There are also other lessons to be learned, as Roger suggested. The audit office said this scheme required 1,800 different permissions to build; that is planning permission, for example. To build anything, you have to have planning permission. I cannot remember how many authorities there are, but when you look at the number of planning authorities that sit between London and Swansea, there are probably 20 or more local authorities, plus any other schemes that might be called in by either the Welsh Minister or the English Minister. Consequently, that kind of process takes a long time. In deciding how you would manage this project, maybe that extent of work programme was not taken into account fully. Certainly, one of the points made by the audit office was that there was planning and management at the time that may not have been as good as we would have liked it to have been.

Chair: You are being a bit kind to them there, Professor Cole.



Professor Cole: I am being kind, yes.

- Q14 **Chris Davies:** Can I have one little follow-up there, Chairman? My colleague mentioned the the bridges and the lack of thought and foresight over the bridges. Mr Ford, you did not mention bridges, for example, in your simplified version. Are we looking at redoing the weight limit, or straightening, or what are we talking about as far as all these costly bridges are concerned?

Roger Ford: The issue with bridges is providing the clearance above the track for the electric wire that the trains draw the current from. If a bridge is low, you obviously do not have the room there for it and you have to raise bridges. That is not new; on the East Coast they had 157 bridges to deal with. That can range from either lowering the track, so you give more room, to taking the bridge, jacking it up and putting any new bed on. I think there are 161 bridges on the Great Western scheme.

On the suggestion that they did not know the bridges were there, I think they knew the bridges were there, but they did not move with sufficient alacrity to work out which bridges needed doing. For instance, we have this bridge at Steventon near Didcot. It is a grade I listed bridge, and it has taken time. It can be done, but consent has not yet been obtained, so trains are going to have to slow to go under it. Bearing in mind the scheme was authorised in July 2009, one would have thought that as soon as the engineers got out they would have had a list of priority bridges where it was really essential to raise the bridge where we do not have an easy way through it. Once again, it comes down to lack of experience.

- Q15 **Chris Davies:** With your indulgence, Chairman, may I follow up very quickly? I will stay quiet for the rest of the meeting, I promise. Taking into consideration everything that you have said, to electrify Swansea to Cardiff, with all these planning permissions, bridge heights etc., in your estimate, how long should that take?

Roger Ford: I cannot see why it should take much longer than three to five years.

- Q16 **Chris Davies:** Three to five years, okay. Professor Cole, the same?

Professor Cole: I would agree with that. If you think about it—

Roger Ford: May I come back? I have someone here who knows far more about this than me, and the answer is two.

Chris Davies: I thought he was just giving you a message.

Professor Cole: I would not compare it with the M25 around Newport, which has taken something like 23 years, as Mr Flynn will be aware. If you think of a scheme as it ought to be built, if all the planning has been done beforehand, construction should not take longer than that. The planning, of course, depends on how many objections there might be and how long that process takes, and that could extend the total term. That



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should all have been done beforehand and should certainly have all been completed a long time before the construction began.

- Q17 **Liz Saville Roberts:** Two questions from me. I represent a constituency in North Wales. I would be very interested if you had any comments about the lessons to be learned and how best to approach the challenge of electrifying the North Wales line.

Secondly, you have talked at length about the complications associated with planning and how we have seen the costs go up over four times since the 2009 original costs. Would there be a way, if this matter were to be devolved, that it could be facilitated with other powers that we already have devolved in Wales?

Professor Cole: There is a strong case for devolution of all transport powers and funding to the Welsh Government from Westminster. If we are to get any kind of integration of road construction, rail construction, bus services feeding in and a whole range of other transport issues, then there are powers to be transferred. In this particular case, the Scots were given the offer, as were the Welsh, in 2006 to have responsibility for rail infrastructure. The Scots decided to accept it, and consequently there was an increase in their block grant to cover that. The money that would have been spent by DfT was transferred to the Scottish Government.

The Welsh Government at the time turned it down. Now I notice Mr Skates is asking for that power to be returned and, of course, commensurate funding in the block grant. That would seem to me to be the way to go forward. That gives the Welsh Government the opportunity to decide which way they spend the money. Do they spend it on new motorways, on road improvements, or do they spend it on rail improvements? Not just something major of this nature, but also smaller schemes, such as the scheme for Aberystwyth and the double-tracking at Gowerton, for example, which was paid for by the Welsh Government even though it was not their responsibility. The responsibility at the moment for infrastructure in Wales is with the DfT.

Did you ask a question about the North Wales mainline?

- Q18 **Liz Saville Roberts:** The lessons that we could learn with the aspiration of the North Wales line being electrified.

Professor Cole: Wales loses out from the HS2 development; that is my presupposition. Unless the North Wales mainline is electrified, then even North Wales will not get very much advantage from HS2, because that electrification means that HS2-type trains, as in France, can run on ordinary track. That is what happens in France in many cases, the further you get away from Paris. That means that we have a much better and faster service in North Wales to other major cities, such as Manchester and Birmingham. It then requires more electrification of that area.

The second issue associated with that is, again, the so-called north-east Wales metro, but certainly the upgrading of the railway in north-east



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Wales, which in my view fits into the electrification of the North Wales mainline, with an electric service from Chester—Chester to Liverpool is electrified already—going down to Wrexham and back up to Liverpool. That gives you a circular service that, for commuters, becomes an ideal operation for commuting into Chester and Liverpool.

- Q19 **Chair:** Mr Ford, if this idea of devolving powers and money to the Welsh Assembly Government were taken on—and I am asking you rather than Professor Cole for your opinion on this—do you think that they would have the necessary expertise, which I feel is somewhat lacking in Network Rail at the moment, to take this on and not to find that they have forgotten about bridges and tunnels and things?

Roger Ford: It has been mentioned that Scotland grasped devolution, and Transport Scotland has a very ambitious electrification programme, which is going ahead with the odd hiccup due to changes in regulations from the Office of Rail and Road. Transport Scotland is going ahead successfully with electrification. They are using contractors and they are working with Network Rail in Scotland. A characteristic at the moment is that Network Rail is devolving the responsibility for projects to its routes—so the Welsh route to Welsh rail—and I see no reason why it should not take responsibility and replicate what is happening in Scotland.

- Q20 **Geraint Davies:** Mr Ford, you mentioned that it might be better, first, to learn from experience, but also you specifically mentioned Siemens and Carillion. Do you have an idea of how much the cost would be now from Cardiff to Swansea, because it seems to have gone up? Given the learning, if we did do what you say we should do as best practice, what would the cost be?

Roger Ford: As I said, the figure for Great Western at the moment is about £3 million per single-track kilometre, which is ridiculous. They have just let the contract for Bedford to Corby, and that has come down to £1.8 million, which is still much more than I think it should be, but at least it is much more realistic. It is a definite improvement, £1.8 million per single-track kilometre. Costs are coming down, and that is with the Carillion Powerlines consortium.

- Q21 **Geraint Davies:** What would that translate to for the Cardiff-Swansea bit?

Roger Ford: I do not know; I did not do my homework. I do not know how many single-track kilometres it is between Cardiff and Swansea, but I can provide that figure if you want.

- Q22 **Chair:** If I may gently put this to you, though, you were obviously opposed to privatisation, yet here you are suggesting that perhaps the private sector ought to be brought in because they do a better job than this semi-nationalised rail company that we have at the moment.



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Roger Ford: I was opposed to privatisation, but I report the world as it is, and now we have this situation.

Q23 **Chair:** The private companies are better?

Roger Ford: The private sector manufacturing company knows what it is doing and, to a certain extent, it is dependent on the customer. Of course, the customer is now nationalised.

Professor Cole: This goes back to your earlier question, Chairman. Are the skills there in Transport for Wales? At the moment, they are not, other than through the consultants who have been employed. What I have said over the last two years is that Transport for Wales needs to set up the same skill base as Roger said they had in Scotland, and that enables Transport for Wales then to move forward with the kind of plans that the Scots have. That skill base needs to be put in place so that the work can be done properly with public sector contractors, because that is where those kinds of skills lie.

Roger Ford: Do not forget that when electrification restarted, the contracting teams, who had been so successful in the late 1980s, had evaporated, so the contractors themselves have been rebuilding their skills and expertise, setting up training schools. By the time they have had this experience in Scotland and the north-west and so on, they would be able to bring a polished production to Wales.

Q24 **Anna McMorris:** The Transport Secretary, Chris Grayling, said that the new bi-modal trains would travel from Swansea to Cardiff just as quickly or in the same time as they would on a fully electrified route. At the time of this announcement, Professor Cole, you said that the lack of this investment in electrification would prevent companies from investing in Swansea and further to the west. Do you believe this to be the case? Do you believe the length of time travelled between Cardiff and Swansea would be the same for bi-modal trains as for fully electrified?

Professor Cole: Because of the maximum speed on the track of between 75 miles an hour for some sections and 90 miles an hour for others, there is a small potential reduction in journey time for an electric-only service, with the wires up running electric-only trains. The figures that have been quoted are between five and six minutes, so it is not small, but it is relatively so compared with, for example, what has been promised between Cardiff and London, which is 15 minutes. It was originally a bit more than that, but 15 minutes is what is being promised at the present time. That is only gained in acceleration; maximum speeds are the same.

If there were electric trains only with wires, then there would be a small saving in journey time, but it would not be the kind of saving that perhaps we might get from a different shaped track. That is where the saving would be. There was initially a problem with the power facility, and that has been overcome so that any additional journey time will not be now incurred. It will be about the same, or maybe marginally more,



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but I do not think we can expect more than a couple of minutes, perhaps, taken off the journey time. Sorry, the second part of your question was?

Q25 **Anna McMorris:** Did you think it would be the case that journey times would be reduced or stay the same—as the Transport Secretary said at the time of making the announcement, and I presume still thinks this way—with bi-modal trains as with a fully electrified track?

Professor Cole: There will be no major journey time saving, as I said, or a very small journey time saving, using the bi-modal approach between Cardiff and Swansea. In electric saving, the figures that have been quoted are a five minute or so reduction in journey time.

The other issue here, though, that is just as important—and I know Mr Davies and I have discussed this in the past—is the image of Swansea and west Wales as a place to invest. If an international investor reads that the electrification of the line stopped at Cardiff, the first question would be, “Why did it stop at Cardiff? Why are the British Government not prepared to invest west of Cardiff? There must be something”. It becomes a criterion in their minds about, “Are we investing in the right place if this other investment is not taking place?”

That has been one of the concerns all the way along, that anywhere west of Cardiff—Bridgend, Swansea and into south-west Wales—the image as an investment opportunity is perhaps lessened as a result of that. It is all very psychological, but that is the kind of thing that makes many companies decide where to invest.

Q26 **Anna McMorris:** You think, then, that spending £400 million, which is the figure we have at the moment, would have been good value for money in terms of getting that back in investment and companies coming further west and to Swansea?

Professor Cole: The benefit-cost ratio, which is what has been generally used by all three Governments in Great Britain, is a similar system. The Treasury would be keen on schemes where there was a ratio of 2:1. Just take the benefit figure as a measure, as an index. Originally, the London to Swansea BCR was 2.6:1, so that is quite high, well above the Treasury’s minimum. The Treasury would even take 1:1 as acceptable, even though it would not be their favourite scheme if they were drawing up a list of priorities for investing. I worked on the analysis myself with the team who were doing the work. When Valley Lines was added into that analysis, the BCR went up to 4.6:1 because of the numbers of people travelling up and down the electrification of Valley Lines.

When you look at what it was originally, it becomes very difficult to see how this new figure produced by Mr Grayling in a letter to Lilian Greenwood, the chair of the Transport Select Committee, appears to have gone down to 0.28:1. I really do not see where that figure comes from. The comparative figure of 2.6:1 that I mentioned for full electrification London to Swansea is now at 1.07:1. I do not see how you can drop that



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far—costs, as we know, have increased, but then the values of benefits would have increased as well.

Q27 **Chair:** Ben Lake would like to come in, but these are not Chris Grayling's figures, these are the National Audit Office figures, and that is 1.6:1. It is hard to gainsay that, isn't it? This is an independent organisation. Are you saying that they may have got it wrong?

Geraint Davies: They are just reporting what was reported to them by the Department for Transport.

Chair: They are, but they do not have to report what the DfT says, do they? They analyse the evidence and decide for themselves. They say, "We estimate that this would reduce the benefit-cost ratio to about 1.6:1". That is what the National Audit Office say in their report, paragraph 7. Are you saying they are wrong?

Professor Cole: No. I was referring to the letter from Mr Grayling to the chair of the Transport Committee. I would go along with 1.6:1. I calculated it at 1.9:1, given the limited information that I have. It is well into the Treasury's base figure of 1:1 to 1.6:1. It has started to get near the things like Crossrail, which was 1.9.

Q28 **Chair:** Before I call Ben Lake, can I ask you about something else, Professor Cole? You have said that companies want to see electric lines. I know that inward investment companies are going to be pleased about the Severn Bridge tolls being reduced and scrapped, but I have never yet come across anyone in business who has said to me, "We have to have an electric line". They want a railway line and they want broadband and they would quite like no tolls—this I accept and this I have heard. I am going to take you up on this since you have mentioned it in your written evidence and here: could you give me the name of any company that has ever said to you, "We want to see an electric line before we invest"?

Professor Cole: I cannot give you the name of any particular companies off-hand but, in general, when lines have been electrified, more people have used them.

Q29 **Chair:** Would you also accept, though, that certain companies who have invested in Wales have said that they would welcome the end of Severn Bridge tolls?

Professor Cole: Yes, that is certainly true. I have spoken to the haulage companies, like Owens of Llanelli, for example, who have definitely said that, and I have no doubt there are companies with which you are more familiar.

Q30 **Ben Lake:** A quick question; I am conscious that I am betraying my ignorance here now. When it comes to the £400 million costing, has that factored in the cost of straightening some of the lines, and how much of an effect will that have when it comes to maximum speed? You talked about the speed limits of 75 and 90 miles an hour. Are such factors



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limiting the speed? Am I right, or are there other considerations with regard to built-up areas?

Professor Cole: There is no problem with built-up areas. The limitation on speed is the number of bends in the track. If those were straightened out, or some of them were straightened out, then you would start to progress to a reduction in journey time of 15 minutes, maybe more, along that route. It is very much to do with maximum speeds. These trains have better acceleration than the 125s, but only marginally with the diesel attachment as bi-modals. As electric trains with electrification, then that acceleration would be better, but to get the maximum benefit for people in central and south-west Wales, there needs to be a straightening of the track, or maybe even part of it, so that that speed can go up to maybe 100, 110, 120 miles an hour for certain sections.

Q31 **Glyn Davies:** That is not in the current costing at all?

Professor Cole: No. That was as the Chair asked.

Geraint Davies: Sorry, Chair, I am simply going to point out that in 2012, when I put together a group of stakeholders in Swansea, including business and universities, many businesses—including Admiral, incidentally, and from recollection Tata as well—said they lobbied the Government to have an electrified system in Swansea and west Wales because they wanted to be part of the electrified European network and to bring inward investment. Their influence as businesses was pivotal in changing David Cameron's and the Government's minds to electrification. I say that because you said "Name a business", and I am naming Admiral on the record.

Chair: Okay.

Q32 **Glyn Davies:** I am really interested in this point that perception can change business investment practices and make Swansea more attractive. Is there an example somewhere where a line has been electrified, which would obviously have made a place more attractive, but where it has not made the journey quicker? You make a really good point, and it is a point that in previous jobs I have done would have resonated with me, but to give that point force you would need to look at somewhere else where you can make an example of how this perception has made a difference. Clearly, if the journey time is cut significantly, that makes the difference. Where has the perception arising from electrification made the difference—where can we go and look?

Professor Cole: Most companies are looking for, as you quite rightly say, reductions in journey time, which will be achieved to Cardiff. Many companies have set up back offices in Cardiff, companies like Eversheds, Lloyds Bank, Allied Irish Bank, because they have a journeying back and forward in a day possibility to get to their head offices—generally speaking, in central London. That, to them, is a distinct advantage; the journey time is important. The electrification will make Cardiff more competitive; perhaps not quite as competitive as Sheffield will be if HS2



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is completed all the way in terms of journey time, but Cardiff has many other advantages. It is a popular—

Glyn Davies: It is Swansea I am thinking about.

Professor Cole: Yes. Swansea is that much further away, so it is, therefore, less competitive in terms of journey time anyway. Anything that makes it more competitive in terms of journey time does involve straightening out the track to attract companies to go there. As Mr Davies has said—I remember the seminar that took place—companies were saying, “We would like to see electrification, because we want to be associated with this kind of modern European investment. That is what we want to look like as a company”. I think it shows itself certainly in terms of journey time, and that is what we are not getting for Swansea, except in a very small amount, as I said.

Roger Ford: Might I suggest that we should not get too hung up about journey time reductions when talking about electrification? Mr Grayling said of the Midland mainline that it would cost £1 billion to go to Sheffield and only save a minute. As I said in my submission, the electric railway is cleaner, you need fewer trains, it is cheaper to operate, it is more reliable, there is less track wear, and you do not get diesel engines puffing fumes. I was at a conference today on rolling stock procurement and leasing, and everybody kept on talking about clean air and air conditions. You do not want diesel bi-modes filling Swansea station with fumes.

Q33 **Chair:** These only produce a fraction of the emissions of the old diesel trains.

Roger Ford: I would question that statement, because the engines in the old diesel trains are new MTU engines and the engines in the bi-modes are new MTU engines. I have to check that claim.

Q34 **Paul Flynn:** When the Channel Tunnel was opened, President Mitterrand made an impassioned speech about the fact that the journey times through France were much quicker with nationalised French industry than with the privatised British industry. He congratulated the engineers on their thoughtfulness to allow the passengers more time “pour admirer la campagne de Kent”; to admire the beauty of the Kent countryside. A lot of the points you made in support of this would be very much the same points that Lord Adonis made—the list of advantages. Could you tell us how many millions it will take between Cardiff and Swansea for every minute saved?

Roger Ford: Every minute saved? That is not the issue; the electric railway is—

Q35 **Paul Flynn:** No, but it is the question I am asking you. How important is time? I would always admire the beauty of the Glamorgan countryside. Our journey might be enhanced. We would have more time to do our emails.



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Roger Ford: Time is a by-product of electrification, but electrification is much more than saving journey times. When they electrified the London to Crewe route in the 1960s, that invented what was called the sparks effect: people went from the old steam railway to the modern one. If you looked at revenue and passenger rise, it went like that; it was called the sparks effect. Equally, when they brought in HST to Cardiff and Swansea, that improved, and that was the nose cone effect, but the sparks effect is much more powerful.

We need a modern railway where we can depend on any form of electrical energy we produce, whether it is nuclear, solar, wind, or water, with the plans that exist there, and I think that using journey time as the criteria is saying, "It is only about that, so why bother to put the wires up?", which I do not believe—

Q36 **Paul Flynn:** Lord Adonis, when he announced the electrification scheme, did mention passenger journey times first, which seemed to be insignificant; more seats, which means smaller seats as well, I think; greater reliability; and improved air quality and lower carbon emissions compared with their diesel equivalents, as well as being cheaper to buy, operate and maintain. Is that still true?

Roger Ford: That is about right. Yes, absolutely.

Q37 **Paul Flynn:** Why do you think the Government have taken the decision to go for the bi-modal trains?

Roger Ford: Because it is a cheap way out of an embarrassing problem of its state-owned Network Rail making a complete mess and putting up costs by a factor of quite a few. It is an easy political way out.

Paul Flynn: The last time we talked about trains on the Select Committee was in 1993 when a report was done by the late, greatly admired Chairman of that Committee, Robert Adley, who was very much against the whole of the privatisation proposal. It is one of the best reports, I think, that has come to this Committee in my time in Parliament.

Chair: I did a back-of-the-envelope calculation, Mr Flynn. I think it would be about £165 million per minute, based on 20 minutes saved in total between Swansea and London, at a cost of £3.3 billion. That is the 2.8 being quoted, plus the 500 or so on top.

Geraint Davies: If I may add, because this is relevant, the latest proposal—we have moved on—is an electrified Swansea metro, which would cut the journey time from Swansea to Cardiff by half an hour, halving it, compared with the saving from London to Cardiff of just quarter of an hour. In other words, you get triple the saving in time from London to Swansea and double the saving in time from Swansea to Cardiff, as you get from Cardiff to Paddington.

Chair: That is a good point, but probably not one for this Committee.



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Geraint Davies: I know, but it appears that the conversation is as if we are still talking about all the benefits that are included in electrification going ahead we get, but also, on top of that, we are halving journey time. People are making out those benefits are not available, and they are.

Chair: We are not saving very much time on this Committee at the moment.

Geraint Davies: No, I know. We only have another half an hour.

Q38 **Ben Lake:** Following on from the point you raised, Mr Ford, that it is not just about journey times, Hitachi has told us that the bi-modal trains would be cleaner, more efficient, lighter. Should we really be welcoming their introduction on the Great Western mainline?

Roger Ford: For a start, they are not lighter. A diesel high-speed train weighs about 408 tonnes—sorry to be a trainspotter, but it is my job—and a nine-car bi-mode, which is roughly the same, weighs 432 tonnes. I don't know where the theory that bi-modes are lighter has come from.

Q39 **Chair:** How much does an electric train weigh?

Roger Ford: The electric train would be lighter, yes, of course, because it does not have to carry around 9 tonnes of diesel and fuel under every coach.

Q40 **Chair:** How much lighter? What is the weight?

Roger Ford: On a nine-car, with four engines, it would be about 36 tonnes lighter—34, 35, 36 tonnes lighter.

Q41 **Chair:** About 400, then?

Roger Ford: About 400, yes.

Q42 **Paul Flynn:** The Government have said battery technologies and alternative fuels will drive future innovation. What are the alternative fuels? Are we going to have wood-burning trains perhaps—ecologically sound? Are these serious policies that the Government are building our hopes on?

Roger Ford: They are easy solutions. Batteries do have a role. For instance, if you want to, you can have a branch line that is 30 miles long; you can have a little battery train moving up and down all day, recharging at each point. Alstom has a hydrogen fuel cell-powered train with a range of about 400 miles, but you have to get the hydrogen to it. How do you produce the hydrogen, which costs a lot to produce, and is nice and safe and green? They are okay for small things, but when you want to move 400 tonnes at 125 miles an hour, batteries and hydrogen are not the solution.

Q43 **Paul Flynn:** We would be taken with an explosive gas train, going along at 90 miles an hour, into Swansea. When do you think the first battery-operated train will drive into Swansea station?



Roger Ford: They could come off a local line. On branch lines, yes, they are fine for alternative operations but, as I said, for big trains, going fast, carrying hundreds of people, their batteries do not have the capacity to power them for the range necessary.

- Q44 **Glyn Davies:** This is one that you can answer pretty quickly. The Welsh Government, I think in the form of Ken Skates, have assessed that the savings on not going ahead with electrification are about £700 million. I do not know whether that is right. I just want to ask you whether that is an accurate figure and whether there is a case for ring-fencing that in some way, and if it is going to be ring-fenced, ring-fenced for what? Just to transport or ring-fenced for rail? By not electrifying the line to Swansea, it is a saving. Has it been calculated at £700 million?

Professor Cole: In his letter to Mr Grayling, which is what, I guess, you are referring to, Mr Skates says that there is a saving to the Department for Transport/Network Rail, which are the same organisation, of £700 million. That is an increase over the £450 million to £500 million that has been the generally accepted figure.

- Q45 **Glyn Davies:** That is what I was asking—whether you could help justify that as being an accurate assessment of what the saving might be, because I thought it was bigger than it should have been.

There is a secondary point that you in particular, I think, have touched on: the idea that it should be ring-fenced. Obviously within the Welsh Government, but ring-fenced to what? To transport, where it could be spent on roads around Newport, or to rail?

Professor Cole: If it is the letter that I think you are referring to, what he says is that there will be a saving estimated at £700 million to electrify the line to Swansea. That is higher than any of the figures that I have seen previously, but I guess his civil servants have calculated that figure. That money, though, is a saving for DfT and would not necessarily go back to the Welsh Government. I think the DfT promised—I cannot remember the exact figure—maybe it was £120 million or something to contribute to the cost of electrification to Swansea. There was a lot of discussion going on. There were peculiarities, such as that the Welsh Government would pay for Cardiff to Bridgend and the Department for Transport would give just over £100 million towards that, and then they would pay for Bridgend to Swansea.

The whole process has had so many comings and goings in it that it becomes quite difficult to work out what the final figure for this electrification scheme is going to be, but £450 million to £500 million appears to be the figure. I have no idea where the Welsh Government got their figure from, I am afraid.

- Q46 **Liz Saville Roberts:** I am very grateful, Professor Cole. You gave quite a comprehensive answer on devolution previously. What I would like to ask you now is this. There has been something of a feeling that there is a way of interpreting rail infrastructure investment in the sense that Wales



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has lost out in the past. How could further devolution improve investment specifically into our railways? I know you were discussing the wider transport links earlier on.

Professor Cole: Sticking to the railways, if the power for investment in rail infrastructure was transferred to the Welsh Government, with the commensurate amount of money in the block grant, then it would be in the same position as Scotland, and Scotland, as Roger has said, is moving forward far more quickly with its electrification programme than we are. It also gives the Welsh Government, as indeed it gives the Scottish Government, the opportunity to decide how they will spend their money, because it comes in a block grant and the theory of the block grant and the practice of the block grant is that the recipient then decides how they are going to spend the money. It could come from all sorts of other areas. The money can be shuffled around between education, health, social services, roads, railways and so on.

If there is a transport budget, though, then Ken Skates as the Minister has that budget. He can then decide where he is going to spend that money, and that is what the Scots are able to do. They decided they would go more towards electrification, reopening the Borders Railway, that kind of investment, rather than perhaps spending as much as they might otherwise have done on roads. In Wales, the Welsh Government only have the option of spending money on roads.

Q47 **Liz Saville Roberts:** Just as an aside, I understand Network Rail has a new director—whatever the job title is—in charge of the budget, Andy Thomas. Would it be worth us meeting him, as a Committee, somewhere along the line?

Professor Cole: Is that the Andy Thomas who has taken over as head of the Wales division, as it were, the Wales route?

Liz Saville Roberts: Yes. He started in September this year.

Professor Cole: He is the local responsible officer for maintaining the existing railway. If it is about the existing railway, then yes. This is not quite that. This is an enhancement of the railway, which will be determined by the Department for Transport and Network Rail centrally at their head office, although Andy would undoubtedly be involved in the discussion.

Roger Ford: But that may not necessarily be the case for much longer. Already this devolution of power to the Network Rail routes means that they will be responsible for renewals. The difference between renewals and enhancements is if you renew a signalling system, you enhance it anyway. A major development will be enhancements moving into the routes as well. It certainly would be worthwhile speaking to Network Rail.

One other point: there is a big hunger among institutions to invest money. They have a lot of money, they want to put it somewhere, and they like putting it into infrastructure. As we know, High Speed 1 was



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owned by the Canadian pension scheme. The possibility of private funding should not be overlooked. The signalling between Paddington and Bristol is being modernised with a new traffic management system, where the company responsible is putting it in and will be paid on the results of the improvement it brings to the regularity of the trains. The potential of private investment in infrastructure should not be overlooked.

Chair: Geraint Davies, shall we go to your question now?

Q48 **Geraint Davies:** On the Swansea metro, yes. Leading into that, you will both be aware of the proposals from Mark Barry for a Swansea metro and, as you also know, a key benefit from that would be to halve the journey time from Cardiff to Swansea from an hour to half an hour, within the context of an electrified network reaching across the Swansea Bay city region and westwards. What chance do you think that has of coming to fruition and at what sort of cost might that be delivered, given what you said about the private sector and everything else?

Roger Ford: I am afraid that is above my pay scale; I will leave it to you.

Professor Cole: How can I put this kindly? Mark Barry has come up with a scheme, which is a set of ideas, and those ideas have been around for a long time. The piece of railway line along Fabian Way was where Brunel originally wanted to go, because he did not want to go to Neath. Then the good burghers of Neath decided they did not like this very much at all and so the railway line made that detour, which has added about 10 minutes or more to the journey time to Swansea. Taking Neath out is a political issue, which I prefer not to go into. I am sure they have very good arguments for keeping their intercity railway.

Much of what Mark is saying, really, is a few ideas. It is not a metro, let's get that clear to start with. It is upgrading parts of the railway. A metro is much more comprehensive than that. A metro involves not just upgrading parts of the railway, but also thinking about things like park and ride, integration with bus services, and so on.

What we have is a few ideas on how you might improve the railway, but I also doubt the 30 minutes because unless there is going to be a major investment in track, then we are not going to get that kind of saving between Swansea and Cardiff.

Q49 **Geraint Davies:** If I could stop you there so we are clear here, the original idea by Brunel was to have a straight line, and the amendment was basically because of the need for coal in Swansea, to pick up the coal and bring it down with the copper and all this sort of stuff.

There are two essential ideas, aren't there? One is straightening the line to speed it up and make the 30-minute saving and, secondly, to have a multi-modal metro integrated system. My understanding is that that is being consulted on, or looked at, by the Welsh Government as regards the value and so on. As you say, it is ideas. On the basis of what is



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known, do you have an idea of the cost of straightening the line to start with, to put it back to Brunel's original line?

Chair: We are straying a little bit from our inquiry.

Geraint Davies: Well, no, this is about whether it is worth doing electrification, because if you have a straight line you get all this speed, and then the electrification of the network comes through as an integrated transport system.

Professor Cole: The logic would be to straighten the track and then put up the wires, rather than putting up the wires first and then having to take them down again because they would be obsolete.

Geraint Davies: No, you could straighten the track and then do the wires.

Professor Cole: You don't have to straighten all of the track. It depends how much time you want to save and how much money there is available to spend and when.

This figure of £1 billion—which has been quoted by engineers and, I guess, is a back-of-the envelope kind of calculation, because there has been no detailed analysis of it—if that is the cost, then what comes out from that is a journey time saving of about 15 minutes, maybe a bit more. Taking out the Neath loop saves you another 10 minutes, which brings you somewhere near to the half an hour.

Geraint Davies: Yes, I know. That is what I wanted to know, yes.

Professor Cole: I do not understand it to be in Mark Barry's paper, the straightening out of the track, but that is an essential part of reducing the journey time to Swansea.

Q50 **Geraint Davies:** Yes, exactly. Finally, presumably you will be aware that if Wales got its fair share of HS2, we would get about £2 billion, but are you also aware of KPMG reports that show that with HS2 going ahead, and with nothing else happening from Swansea's point of view, we will lose something like 20,000 jobs from south Wales through displacement of investment and a loss of £600 per person in wages over time? Given that the time from London to Manchester will be halved to one hour and eight minutes and it will stay at two hours and 45 minutes from London to Swansea, one has to ask: what would you opt for? What are your feelings about whether Wales should have that £2 billion or whatever and the time savings we have been talking about?

Professor Cole: As I have said on a number of occasions, HS2 does very little for Wales, nothing for south Wales. In fact, it is a negative for south Wales because many other cities become a lot more attractive, not only in journey time, but in this very new, very smart technology. North Wales, as I mentioned earlier in answer to Liz Saville Roberts's question, will only benefit if there is electrification of the North Wales mainline. But when you look at the map of high-speed trains, it is a long way away



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from that area between Newport and Swansea to provide any benefit for us and, indeed, will result in disbenefits because other cities will become more attractive.

I have not read the KPMG report fully, so I cannot comment on what the basis of their figures was. They are a reputable company and, therefore, one is prepared to accept those figures.

Q51 Chair: I would just say gently, though, that we are not really doing HS2 here, thank heavens, so with all due respect I take your point, but perhaps we should—

Glyn Davies: It is fair shares for Swansea; that is what we are talking about.

Professor Cole: There was a proposal for a high-speed line. I worked on the team writing the report about seven or eight years ago, which the Welsh Government commissioned.

Q52 Chair: Can I ask something about the electrification of the line between Swansea and London? I have been thinking about your answers, Professor Cole and Mr Ford. If we did straighten out the track, or even if we just decided to go ahead and electrify between Cardiff and Swansea, we would have the cost of either £433 million or £1 billion on top if we straightened the lines as well, and a saving of around five minutes. Would there not also be another cost? To make the most of this we would have to cancel the bi-modal trains and switch to electric, so we would be changing our minds about the trains for the fourth time and presumably there would be some kind of penalty to pay there as well, wouldn't there?

Roger Ford: The Department for Transport, in its genius, signed up to the intercity express programme trains, so they are paying for them for the next 27.5 years, which is not really the way you ought to buy trains, but that is the way they work in the Department. However, it is claimed that you can take the diesel engines out and run them as electrics. Now it is quite easy, you can take the diesel engines out, but it affects the balance of the trains, so it might not be quite that simple.

Chair: I bet it would not be.

Roger Ford: But seriously, that is the option, to take engines out.

Q53 Chair: So now we have a bi-modal train with a removable diesel engine?

Roger Ford: Yes, it is a modular bi-modal train.

Q54 Glyn Davies: Do these trains carry on going? Will we still need bi-modal trains to go beyond Swansea or not?

Professor Cole: Let's say electrification only goes to Swansea. Let's make that assumption. Bi-modal trains have the possibility then of going onwards to Llanelli, Carmarthen, Pembroke Dock.

Q55 Glyn Davies: Not if you take the engines out. Not if you remove the



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engines they wouldn't, would they?

Roger Ford: Being really off the wall, you could take the engines out and replace them with batteries, and then you could just run under battery to Pembroke Dock if you wanted to. It is not a long way.

Professor Cole: One of the options that has been put forward by Alun Cairns, the Secretary of State, is to split the new bi-modal trains at either Cardiff or Swansea, and then run to Pembroke Dock with a five-car set out of the 10-car set. So a 10-car set coming into Cardiff would split; one half would go down the Swansea district line to Llanelli, Carmarthen and so on into Pembrokeshire, the other would go to Swansea, and then they would join up again. If the train workings could be made to do that, then that is a possibility to increase the number of trains going to west Wales directly from London. There is one Carmarthen train every day at the moment; that might increase to three or four trains, not only to Carmarthen, but also to Milford Haven and Pembroke Dock.

Chair: Okay. We are running quite a long way over time now. I would like to thank you both for a very interesting discussion. You have given us lots of ammunition for questions to both the chief executive of Network Rail and the Minister when they come in. Thank you very much.