

MINUTES OF ORAL EVIDENCE

taken before

HIGH SPEED RAIL COMMITTEE

On the

HIGH SPEED RAIL (LONDON – WEST MIDLANDS) BILL

Monday 13 July 2015 (Afternoon)

In Committee Room 5

PRESENT:

Mr Robert Syms (Chair)
Sir Peter Bottomley
Mr Henry Bellingham
Geoffrey Clifton-Brown
Mr David Crausby
Mark Hendrick

IN ATTENDANCE

Mr Timothy Mould QC, Lead Counsel, Department for Transport
Mr Timothy Straker QC, of Counsel

Witnesses:

Mr Ray Payne, The Chilterns Conservation Board
Mr Bruce Blaine, Peter Brett Associates
Mr Paul McCartney, Peter Brett Associates

IN PUBLIC SESSION

INDEX

Subject	Page
Introductory Remarks by the Chair	3
Introductory Remarks by Mr Straker QC	4
 <u>Chiltern District Council, Buckinghamshire County Council, Aylesbury Vale District Council, The Chilterns Conservation Board</u>	
Submission by Mr Straker	4
Mr Payne, examined by Mr Straker	8
Mr Payne, cross-examined by Mr Mould	32
Mr Payne, re-examined by Mr Straker	37
Mr Blaine, examined by Mr Straker	39
Mr Blaine, cross-examined by Mr Mould	62
Mr McCartney, examined by Mr Straker	71
Mr McCartney, cross-examined by Mr Mould	92

(at 14.00)

1. CHAIR: Order, order. Welcome, good afternoon, to the HS2 Select Committee. I'd like firstly to welcome the new members of the Committee, Mark Hendrick, David Crausby and Geoffrey Clifton-Brown, who bring some added experience from the House onto the Committee for the final run downhill, towards some kind of resolution early next year. Thank you, welcome gentlemen. So that's helpful.

2. Today we begin hearing petitions from the Chilterns. Over the next two weeks, we will hear from some of the main bodies arguing for an extended Chilterns Tunnel. They will no doubt be covering, not only the details of tunnel proposals, but the reasons why they say a tunnel is needed. So, we will cover a lot of background to do with construction issues and ecology as well. On the same point, we've asked that the County Council finish the outline of their case on non-tunnel issues, so that petitioners appearing in September know what we as a Committee are already aware of. Next Wednesday, after the House rises, I shall announce the preliminary view of the Committee on what we will have heard and over the next week and a half.

3. Before that, I have an announcement to make. It will not come as any surprise to the promoters that the Committee are deeply unhappy about the impact of the proposed Harvil Road construction site in Hillingdon, and the impact that would have on the community. We want the promoters to have a very hard look at options for mitigating this, including working with TfL and Hillingdon on possibly substantially or completely relocating that construction site away from Harvil Road to West Ruislip, with consideration given to alternative means of road access from adjacent and nearby sites. We may also be open to other mitigating options such as the haul road to Harvil Road, but we would want a review to be completed by mid-September 2015. We may have other things to say about Hillingdon in due course.

4. We note that a meeting took place between the Treasury, HMRC and the Country Landowners Association on 26 March 2015, on farming tax issues. However, the June response to our report suggests no further progress. We want to see some progress on this, failing which we will need to consider whether to invite officials to appear before us.

5. We note that the response to our report promised a report on noise mitigation at

Berkswell by July, so this is also an outstanding matter.

6. We begin today with Chiltern District Council, Buckinghamshire County Council, Aylesbury Vale District Council and Chilterns Conservation Board, represented by you, Mr Straker?

**Chiltern District Council, Buckinghamshire County Council, Aylesbury Vale
District Council, The Chilterns Conservation Board**

7. MR STRAKER QC: That is correct; I represent all those bodies, Sir. And if I can just, following on from what you've just said, Sir, say a word if I may about the skeletal observations that I will make on their behalf at the end of the tunnel session as presented by them? So what we have done is this – and some slides will be sent to HS2 in the course of today in connection with this matter – is to put down on slides, so that they can be spoken to briefly at the end of this session, the indications of what the councils' cases are non-tunnel issues. So, that is not intended to prejudice what they may come to say subsequently in the autumn, nor is it intended to be a kind of ball and chain around anybody else's leg as to what they might want to say when they come before you. But it's intended to be a help to you, Sir, as a kind of guide as to what may come to be said and not to be the substantive case in that way. I don't envisage, Sir, being much in excess of, say, half an hour in outlining that. That will come, we predict at the moment, on Thursday of this week, because our expectation is that we've got quite a substantial amount of evidence to get through. We will try and do that as quickly as we can, but depending of course, upon the HS2 response to that, will depend upon quite how the time taken goes.

8. Sir, having said that, if I may be permitted just a minute or two, before calling Mr Payne who sits to my right and who will give some overview evidence about these matters, I'll just indicate who I will be calling and then say a word or two about the character of the case on behalf of the tunnel. First as I have indicated, Mr Payne. Then, Mr Bruce Blaine, from whom you've heard before, who deals with engineering matters touching upon the feasibility of the tunnel. Then, Mr McCartney who deals with what may be described as external costs, socio-economic matters. Then, Bettina Kirkham who deals with landscape matters. Followed by Catherine Murray, dealing with historic buildings. Finally, Kath Daly who deals with, and is the chief officer, of the

conservation board. So their references give some indication of the ground that we're going to cover. It's right to observe first of all that there's no dispute, but that a tunnel can be built across the Chilterns, and just so that you have immediately, Sir, the geography as to what we're dealing with, if P7372 is put on display? There will be shown the area of the Chilterns outstanding natural beauty with which we are concerned. You can see that which is within it at the moment proposed to be a bored tunnel, the grey and the black dash, and thereafter, it's not in tunnel and it's the thereafter with which the argument before the Committee will focus.

9. Sir, it's important to have in mind the importance of the Chilterns, an area with which you'll be familiar of course; and it's also important, if I can ask for this to be put on the screen – A1178(17) – to have in mind, that in England, pursuant to legislation passed of course through Parliament, there are but two Conservation Boards in the country, and they deal with the Chilterns, which can be shown here; and the Cotswolds, to the west. That is all that Parliament has seen fit, so far, to indicate should have Conservation Boards, and it's a signification of the importance attached to this land.

10. So the other document I would like to show at the moment is A1180(66), and Sir it may help as well – we've got paper copies of this which it may be useful for the Committee to have as well, because this is a document around which it may safely be predicted there will be some discussion in the course of the hearing of this case. What has been endeavoured to be done is to try and work out as best can be done – and all these figures are subject of course to the caveat of the word 'about' – to work out as best one can what the true additional costs of the various options are. Sir, you've got there shown the government-preferred scheme, and there when one looks at that box there, there's a '£0 million' given. That's because what we're doing here is simply looking at what is an additional to putting the railway for that part with which we are concerned in the Chilterns at the surface level. So one is looking at that additional cost. One's then got variance on the tunnel proposals as promoted before the Committee – or as suggested to the Committee. Because it's no part of my case to say, 'Dear Committee, please say it must be this particular tunnel', but rather to say, 'Let there be a tunnel'. So there's a difference in constructing a tunnel from constructing a surface scheme, and taking that figure from HS2, one gets to £532 million, which is a HS2 figure.

11. Then there's a 'but', which has to be put into this little exercise, because it

obviously costs more to buy the land if one is buying a railway at surface than putting it in a tunnel. So you see the comparison there. Then, to continue that 'but', there are non-market effects. This is a very substantial 'but', because what this is designed to do and what this is intended to do is to reflect what is the thinking of the government, namely that one should take some account of what I shall call for present purposes, the distinction, the value of, the character of the land, which is being affected by the proposal. There's a curiosity about the world in which we live, which is this: namely, that the more distinguished a piece of land happens to be, and the closer it is designated, whether it is area of natural beauty or some other such designation, the more distinguished a piece of land is, and the greater its contribution to national wellbeing in consequence of its designation, the less it is actually worth in terms of pounds and pence.

12. SIR PETER BOTTOMLEY: The smaller the cheque?

13. MR STRAKER QC: Yes, exactly so. But the bigger the distinction – and that's a consequence of the fact, of course, that if the land is distinguished as AONB or some other categorisation. I beg your pardon. I had hoped that the one on the screen was going to be the one – because we've worked on this piece of paper for some time, and the one on the screen is the old version, and you've got, I trust, Sir, a piece of paper with the new figures upon it?

14. SIR PETER BOTTOMLEY: Our CLT is 532, and yours is 485?

15. MR STRAKER QC: That's right. That's the land cost. We haven't altered the figures; we've tried to simplify this as much as we possibly could, because what we wanted to do was simplify, simplify and then simplify again if we could. The point that I was endeavouring to make was the distinction of the land reduces the value, and so that has to be reflected. Because if one's doing a comparison and saying, 'On the one hand there's a cost to be thought about here', one's got to do it fairly, and so one has therefore to attribute a figure, and the government has indicated that ought to be done, and so that is the exercise which has here been done. So, one sees in that piece of paper which has been handed in, and the slide will come to be replaced in due time, as the label gives it, 'Non-market effects'.

16. Then there are direct economic effects, which are part of the 'but'. That is

£170 million, and that touches upon the sort of interruption to life which is caused by the arrival of and the construction of HS2 at surface; the sorts of things which when one looks at the benefit of the scheme overall of HS2, one talks about the savings in time. But here, the adverse consequences as to time, that obtain.

17. That leads then to the bottom line here given, where one sees the consequential likely additional costs which is set forth, and so you see that if one does what we would respectfully contend is a fair comparison, actually the net cost to the country of HS2 at surface here, is greater than putting it in a tunnel. Now, no doubt there are variants on these figures, because as I have said, they're all subject, quite apart, to the word, 'about', to the fact that they include within them certain estimates. So that, for example, the cost of building the scheme at the surface has in fact, been reduced by HS2 by something in the order of £100-150 million within 18 months. That has had a consequential effect. But the true additional cost can be seen to carry that, and when one has got that in one's mind, one can begin to realise, I suggest, that the initial throw of the hands, 'Oh, it's terribly expensive to put in a tunnel', is an exercise which is wrong to do and that a more mature consideration leads to a more mature answer.

18. SIR PETER BOTTOMLEY: You're essentially arguing that monetised estimates is a value of the promoter's scheme – the monetised effect of the value of what they do is greater than the cost saving of doing the tunnel? Land acquisition, plus a way of valuing what would be lost, comes to a greater amount than the actual cheques they'd have to write to build it surface?

19. MR STRAKER QC: That's right. So, when one looks at, from the country's point of view, because everything one way or another comes out of something that can be labelled, 'The Treasury'. When one looks at it from that perspective, and says, 'Are we better off or worse off in having the tunnel or surface', the answer is, 'We are better off with the tunnel'. So, that's all I wanted to say by way of setting the scene, unless you would wish me to go further in that regard, because what I would wish to do next, Sir, is to ask Mr Ray Payne to give his evidence to the Committee and so therefore, ask that A1178(1) be put up on the screen?

20. CHAIR: Are we going to have all of your witnesses today Mr Straker or just some of them?

21. MR STRAKER QC: I suspect it's going to be some of them, Sir, and we're going to make as good a progress as we can, but in part, of course, I'm entirely in the hands of HS2 as to – I don't know how long they're going to be with any particular witness.

22. MR STRAKER QC: So we see the introduction, we go over to the next one please, 1178(2), and Mr Payne, we can see here, there's something of a distinguished history if I may say so, which attaches to you; you give some formal qualifications in the first bullet point. You record your appointment to the Chilterns Conservation Board by the Secretary of State for the Environment – but doesn't tell us when that was?

23. MR PAYNE: That was three years ago.

24. MR STRAKER QC: And you're a technical advisor appointed by the Union of International Architects Paris for international competitions in architecture and planning; and the next slide, 1178(3) tells us that you don't content yourself with Europe but also a peer reviewer for rail systems in New South Wales?

25. MR PAYNE: That's correct.

26. MR STRAKER QC: And that's been for a little while now has it?

27. MR PAYNE: That's been for the last year.

28. MR STRAKER QC: And formerly – I think that's probably misspelled there isn't it?

29. MR PAYNE: Looks like it, yes.

30. MR STRAKER QC: And I am sure you were formerly the Head of Construction Strategy, Olympic Delivery Authority, and for how long did that particular task last?

31. MR PAYNE: That was for five years.

32. MR STRAKER QC: And that was an appointment by whom?

33. MR PAYNE: That was an appointment by the Department of Culture, Media Sport, to the Olympic Delivery Authority.

34. MR STRAKER QC: Thank you. Then can we go to 1178(4) please? Where I

think you make your first request of the Select Committee?

35. MR PAYNE: Yes. The first request is one of three, Chairman, which the four statutory bodies are making, and this is for a continuous tunnel, as you see it here on the slide. The second and third requests build on this in more detail, until the third request, which is towards the end of what I have to say today, brings I hope, the Select Committee to the point of some conclusion.

36. These three requests are very simple ones; they are, I hope, to the point; and the first one which you see in front of you now, brings the case for a long tunnel under the Chilterns into focus. Slide 5 is a particularly interesting slide, because this refers again, as Mr Straker has already indicated, a Chilterns long tunnel. Later on, I shall be describing to you three possibilities which we have. We prefer one; but we would take the view that if pressed, then the four statutory bodies under certain circumstances would be amenable to any of those.

37. The purpose of the piece I'm going to illustrate to you this afternoon, is to introduce the logic of the argument that the four statutory bodies, for a continuous tunnel, have adopted. In doing this, I've stripped away as much of the detail as I can; concentrating on core issues and removed, as far as sensible, detailed drawings. It is going to provide you, I hope, with a clear perspective. In the main, I should say at the outset, that we do not disagree with the findings of HS2 Ltd or the approach, which is adopted, although we diverge considerably, as Mr Straker has illustrated, on the important principle of the nature of the protected landscape, that is the Chilterns AONB. Moving to the next slide –

38. MR STRAKER QC: This I think tells us who you are here for?

39. MR PAYNE: Yes. I represent, in this particular circumstance, the four statutory bodies illustrated before you. It illustrates two core principles, and I've tried to keep the four principles, and new arrangements which we have adopted, for pursuing this enterprise as simple and to the point as possible.

40. The first one is there is more than one continuous edge-to-edge continuous tunnel. There are three, in our view, for the moment. Hence, the use of the word, 'A'. Secondly, we prefer one but would not oppose the others, and I shall be coming to that

in more detail later on.

41. On slide 7, the reason for doing it this way is that it avoids the necessity for all four statutory bodies to appear before you separately to do the same thing. We are conscious of the dictum, Chairman, which you have illustrated and issued, concerning repetition, which we are not going to dwell on at all. On that point, if I may, I am reminded that Mrs Gillan appeared before you on 17 June and she described her appearance here as ‘scene setting’, and there is nothing in what she had to say that we as the four statutory bodies disagree with, and in that sense, we are assuming that her evidence before you is given, and we agree entirely with it. I’m not going to repeat any of that. The same applies to Mr Lidington, when he appeared before you on 30 September. He agreed – all agreeing with everybody else it seems – with what Mrs Gillan had to say and he associated himself with her arguments, and the four statutory bodies associate with her arguments and his in the main as well. I’m not going to repeat any of those at all.

42. I would say, Chairman, that speaking as a Secretary of State appointee, I think it is the first time I think I’m right in saying, that a Secretary of State appointee at a Conservation Board or a National Park has appeared to defend the position of one of these organisations, and had to implement the conditions of their appointment from the Secretary of State, which is to act in the national interest, which is what I’m sitting here today, attempting to do.

43. The next slide which is 8 in your pack, illustrates the scale and scope of the task in hand, at a little larger scale than the one which Mr Straker has already illustrated –

44. MR STRAKER QC: If we just pause here, sorry Mr Payne, for a moment, just so we get our bearings on what we can see on the screen?

45. MR PAYNE: Yes, indeed. The green wash over this part of the transit of HS2 across the Chilterns is illustrated here. It extends from here, if I can reach across to here. The thick red line is the government’s proposed scheme; it’s also the alignment of one of the other options that I’m going to talk about. The dotted line illustrates one of the two options which I’m going to talk about. And, perhaps less importantly, the boundaries of Chiltern District Council are broadly here and this blue line here. You can see that Aylesbury Vale has a sort of tongue of land, which they look after,

penetrating the Chiltern District Council land area, and it is for this reason that Aylesbury Vale is being represented here today. So we have an interesting arrangement of three boundaries – the Conservation Board boundary; that of Chiltern District Council; and that of Aylesbury Vale. And in the main, they are not coincident, one with another.

46. MR STRAKER QC: Then I think we can go on, can we, to 1178(9), the next slide, and there you pose the question, do you, as to why have you proposed an alternative?

47. MR PAYNE: Yes. The important thing from our point of view, is that in dealing with this particular problem, and embarking on this enterprise as I choose to call it, is that it hasn't been undertaken vexatiously by the four statutory bodies – it is being done with due consideration to the public purse, it has been quite an expensive exercise; and it is being done without reducing their collective commitment to their statutory obligations. So this has been fitted in, as I am sure you can imagine, with the daily round of managing these core organisations in a way which has enabled them to produce the evidence that is coming before you this week.

48. MR STRAKER QC: Then I think you give two reasons do you for answering the question, 'Why have you proposed?' and these we see on slide 10?

49. MR PAYNE: Yes, the two reasons are remarkably simple ones, and I will go through them in turn. Dealing with the red on first, illustrated in red, simply because that's the one I'm going to turn my attention to, Chairman, first. The nature of the protected landscape of the Chilterns area of outstanding natural beauty, and it is something which you will be aware of because the transit of the HS2 route is across one of the widest parts of the Chilterns – a matter which I know you're already aware of –

50. SIR PETER BOTTOMLEY: The bored tunnel goes just over half way does it?

51. MR PAYNE: Approximately, yes; and I will show you some slides in a moment, if I may – in fact, the next one – which illustrates that graphically rather than in detail on the map. A design solution for a continuous edge-to-edge tunnel had to be found otherwise all was lost, as it were; and very much in mind of the last question I've just been asked – and thank you for asking it, Sir – is the matter of whereabouts in very

simple terms the government's proposed scheme lives, which is illustrated on –

52. MR STRAKER QC: Yes, so if we go to the next one, there you have diagrammatically shown the answer to Sir Peter's question, and so one sees, I think on there, on the right-hand side, the south, M25; whereabouts the tunnel as proposed starts, I think? Then it runs into the AONB, so there's some 13km of tunnel, but 9.5 of it within the AONB, and then that which we are particularly talking about being 12km, within the AONB and the balance of the AONB, apart from the 9.5?

53. MR PAYNE: Indeed, that is the case. The purpose of this slide is to strip away some of the detail, the noise as it were, on some of the maps which perhaps the Select Committee have been seeing, and strip the thing down to its bare essentials. I have to make the point here, is that the distances on here are deliberately approximate. For example, there are many in this room who will contest that the green tunnel, so-called, of 1km long each, are probably not – a bit more or a bit less – that the termination points aren't to scale. For the purposes of my presentation to you this afternoon, this is an irrelevance. What it does do, is answer the question: How does it penetrate the AONB and what point does it terminate? What are its principal characteristics along its route? There, Chairman, I hope that has been illustrated to your satisfaction. It should be pointed out at this stage, I think, that tunnelling by and large, stripped back to its essential features, is not a particularly difficult subject to deal with. I won't go into any more detail, other than the fact that, so far as tunnelling is concerned, it is a comparatively easy operation; and one has to acknowledge, however, that some construction logistics issues at the termination points of any tunnel, create transient matters of interest to do with extraction and supply, but that is a matter which others will be dealing with later.

54. MR STRAKER QC: Thank you. Well, then let's go on to the next slide, 12 please? In which I think you ask the question how did you, the statutory bodies – those four bodies we've seen – proceed?

55. MR PAYNE: Yes, this perhaps is – the first one is perhaps of no consequence at all. But 15 months of quite a few people's lives have been spent dealing with this particular problem; and the result is coming before you this week, and perhaps next week. The thing that Members – you will all be familiar with – is the enormous amount

of public consultation with local action groups and others. This has been a substantial process, the like of which I personally have not seen before, and I have been involved in this sort of consultation before but nothing on this scale. Perhaps as importantly, consultation with members and officers of four statutory bodies which I much confess, has not been an easy process, because each authority will have its own agenda and each will have its own conclusions. Suffice to say, on this occasion, the four statutory bodies on the matters that I am going to describe to you, under Mr Straker's direction, and others that follow me, we are one on this point.

56. MR STRAKER QC: Thank you. Then we go on to the next one please – 1178(13) – where you've asked the question, 'What's been the approach?'

57. MR PAYNE: yes, the approach, Chairman, is as follows – and these are foolishly, one could argue, simple questions, for which there are clear and obvious answers. But nonetheless, we took the view that they do need some consideration; that they needed more care than the glib answer of, 'Yes' and 'No', or the reverse as appropriate? Should it be protected and does it adversely impact upon it? If I can deal with the first of these two questions first?

58. MR STRAKER QC: So we go to 14 where you just pose that question, 'Should it be protected?' then we can pass, I suspect, straight onto 15?

59. MR PAYNE: Straight onto 15, yes. The first point – and I won't dwell on any of these, because there's people in the room here who know much more about this subject than I do, certainly in detail. The matter of legislation, Mr Straker has already touched upon, and in front of you are the two primary Acts that govern this.

60. MR STRAKER QC: And then we get to the forms of designation, 1178(16), please?

61. MR PAYNE: Yes, the International Union for Conservation of Nature has recognised AONBs in general, and the two Conservation Boards in particular, as worthy of their designation. It was required by the National Parks and Access to the Countryside Act 1949, which is quite some time ago, and probably quite a reforming Act I imagine at that date; and then more recently, the Countryside and Rights of Way Act 2000, referred to, certainly now and in the following few days, as the CROW Act

2000 – not to be confused with birds, by the way!

62. MR STRAKER QC: Just pause there, before we leave this slide, the International Union for the Conservation of Nature, where is that based?

63. MR PAYNE: That is based in Paris, shortly to be moved to Brussels, and it is an organisation which has gathered together a variety of forms of designation of landscapes either protected or worthy of protection, and has a number of categories, none of which I can remember Chairman, but one, for example, deals with seascapes, which isn't concerning us here. But the point of having this particular slide before you is that it has been recognised internationally as a designated site.

64. MR STRAKER QC: Then we come to the next slide which has already been seen, it's a map of England, where we can pick out the Chilterns and working west, we can see the Cotswolds. The Chilterns and Cotswolds, having that point of interest which I observed?

65. MR PAYNE: Indeed, it's worth mentioning at this point, perhaps Chairman, that there are 31 AONBs in England; and there are 10 national parks, shown in brown; and only two Conservation Boards as Mr Straker has already mentioned. The interesting thing about Conservation Boards of which the Cotswolds is the second, and with which we have an increasingly close working relationship, though we are in many ways different from the AONBs generally. First, that AONBs by and large do not have their own independent governing authorities; the Conservation Boards do, which as I say, the Cotswolds and the Chilterns and two, the only two. And there is limited opportunity for the development for outdoor recreation in AONBs by virtue of the Act of Parliament. Interesting thing about that is the two Conservation Boards increasingly are moving towards dealing with that particular problem. The other big distinguishing feature is that the Conservation Boards have no planning rights at all; the interesting thing about that is that by virtue of the Act, we are required to have a Planning Committee along with an Executive Committee and various officers. So in a sense, it was a nudge towards the National Park model, but stopped short of having any planning powers.

66. MR STRAKER QC: Thank you, well we can leave, I suspect, can we, that plan there of the map of England and go to the designation of the Chilterns, 1178(18) please?

67. MR PAYNE: Yes, this is an introductory slide and nothing more, and I'm not going to dwell upon it. Natural England had six technical criteria for judging whether or not an area was suitable for this kind of designation. The first four on here are largely to do with the landform, the landscape, and the way it looks, feels, to those who visit it. That is a matter which will be dealt with by Mrs Kirkham when she appears before you. The last two are objectives in the landscape, in particular in this case, heritage features and buildings and so forth, and that will be dealt with in more detail by Ms Murray.

68. MR STRAKER QC: Thank you.

69. SIR PETER BOTTOMLEY: Wildness means...?

70. MR PAYNE: Wildness – thank you for asking that, Sir – is a matter which has many definitions and meaning everything to everybody, so far as I can tell.

71. SIR PETER BOTTOMLEY: That will do, right.

72. MR PAYNE: I do know for a fact that Mrs Kirkham when she addresses you, has a number of definitions for wildness, and I do know that the matter of tranquillity, which you didn't –

73. SIR PETER BOTTOMLEY: So I can understand, wildness I think we're going through managed and farmed landscape?

74. MR PAYNE: Indeed. The designation criteria do caveat the word, 'wildness' and I suspect that if Natural England were inventing this list again – I gather it's up for review anyway – I'm not entirely sure that the word 'wildness' would be uniformly used.

75. SIR PETER BOTTOMLEY: It's more appropriate in some other areas?

76. MR PAYNE: Indeed, yes.

77. CHAIR: Mr Straker, most people who argue for a tunnel have argued because of farms or villages, to protect their communities. Essentially your argument is the natural environment, is important. Are we at some point going to get – by tunnelling the rest of the area – how many farms and villages and individuals would be helped by that?

78. MR STRAKER QC: We do get that information, Sir, because we get information about precisely the effects upon land, land take and matters of that sort, to include the sort of points you've just mentioned.

79. CHAIR: Okay.

80. MR STRAKER QC: So if we leave that slide, 18, there, and go to the next slide? Which deals with the designation and when this occurred, and once again I think this is more background than anything else?

81. MR PAYNE: Indeed, it is. It's not to dwell on now, unless any of the Committee wish to do so. But, it – the Board – was created at precisely the same time, or within a month, of the Cotswolds, in 2004, under the same Statutory Instrument 1778, which governs and regulates a lot of what the Conservation Board does.

82. MR STRAKER QC: And then we can see the role, 1178(20)?

83. MR PAYNE: Yes, this is a matter which we are obliged to observe. There are those three items on here. It is a matter which Ms Daly is going to conclude with, probably on Thursday, and she will illustrate in more detail than I am at the moment, precisely what the Conservation Board is; its conservation and enhancing roles; and most particularly, fostering economic and social wellbeing in this context.

84. MR STRAKER QC: Then we get to the answer to this question we've been asking ourselves, about whether the Chilterns AONB should be protected, 21 please? The answer comes back, 'Yes it should'?

85. MR PAYNE: Yes, our view is it should and taken together with the legislation, the designation, the role of the Conservation Board, and perhaps most importantly, a point that Mr Straker has already mentioned, the overall balance of the government's proposed scheme, in the context of the protected landscape; and also I would like to add the separate pleas by Mrs Gillan and Mr Lidington on behalf of their constituents and others.

86. MR STRAKER QC: Thank you. Well, then we look at the government's proposed scheme, 22 asks the question of whether the proposed scheme adversely impacts upon it?

87. MR PAYNE: Indeed, and this is the second of my two rather simple questions. It's clear, it's unambiguous; and in its simplest form, it has two opposing views. You'll hear those during the course of this week, and perhaps the following one. HS2 and the government conclude that it does not; and the four statutory bodies, represented here today, plus also a body which is 800 or so petitioners, take the view that it does. And in a sense, the argument is becoming as simple as that. In this regard, Mrs Gillan referred to the Chilterns AONB as a national asset; and in your deliberations on the first request, which I mentioned right at the beginning, I would earnestly suggest that this proposition be considered.

88. MR STRAKER QC: Then we go on to 23, where we see – is this is the same as or similar to that which we saw diagrammatically earlier?

89. MR PAYNE: Yes, this, Chairman, is a reminder of the slide you saw previously and its format, and we can see on to –

90. MR STRAKER QC: 24?

91. MR PAYNE: And these are – I'm not proposing to dwell upon whatsoever – other than to illustrate – and you may have seen these already – the circumstances which the protected landscape finds itself in during construction and during operation. It should be said, in fairness, that the grey, if that is stripped away, the remainder looks comparatively modest, in comparison with land area; and you'll hear from colleagues later on today, Wednesday and Thursday, that this is not the case.

92. MR STRAKER QC: The grey being the construction boundary?

93. MR PAYNE: That's right.

94. MR STRAKER QC: And the mitigation earthworks being green?

95. MR PAYNE: Indeed.

96. MR STRAKER QC: Anything else to observe at this stage on that?

97. MR PAYNE: Not at this stage. The Committee, I hope, will be well aware of it.

98. MR STRAKER QC: We can go to 25?

99. MR PAYNE: We can go to 25 and then to 26, where in railway circles –

100. SIR PETER BOTTOMLEY: Just to keep clear in our minds? Were the promoter's scheme to be built without mitigation measures, presumably the cost of it would be significantly lower? So one has to assume that a fair proportion of the costs in the promoter's scheme are for mitigation?

101. MR PAYNE: Quite so, Sir.

102. MR STRAKER QC: Then we have 25, we see a different part of the line, and we can pick out similar features again. And 26, I think you've done the same and in the vicinity of Wendover?

103. MR PAYNE: In Wendover, yes. At a part of the railway, Chairman, which is in railway circles, becoming known as the 'Wendover Curve'.

104. MR STRAKER QC: And then we have 27 please, the conclusions?

105. MR PAYNE: Yes, the conclusions are briefly, as follows: yes, it should be protected; yes it does in our view adversely impact on it –

106. MR STRAKER QC: And we go to 28 then?

107. MR PAYNE: 28 and I would suggest, 29 can be taken when the Select Committee have had chance to review them.

108. MR STRAKER QC: Very well, 28, only protected landscape on the entire route, NPPF – the National Planning Policy Framework Higher Status – and 29, with similar designation, you record?

109. MR PAYNE: Indeed, it's a matter of record.

110. MR STRAKER QC: Yes. Then, 30 you record the adverse impact, and then we get to 31 where we're now looking, I think, aren't we, at the design solution?

111. MR PAYNE: Indeed, this is the second of the two reasons, the design solution point, because were there not a design solution to solve this particular predicament, then of course, the other matter would fall. So here, what I am going to suggest to the Select Committee is to look carefully at the following three slides –

112. MR STRAKER QC: 32 first?

113. MR PAYNE: But before that if I could return to 32?

114. MR STRAKER QC: 32, of course.

115. MR PAYNE: There are only three options that we are currently considering, and I apologise to the Select Committee for the nomenclature. It would have been much easier to call them 'A', 'B' and 'C', but these have sort of grown, topsy fashion, over the course of the last year or so. And I'm afraid we are left with them. The Chilterns Long Tunnel Option is the continuous tunnel, end to end, with the notion of having an underground fire fighting point as an emergency arrangement. The Chiltern Long Tunnel 'I' – there we have adopted the nomenclature adopted by HS2 Ltd. 'I' indicates an intervention gap as opposed to an underground chamber. And the CRAG Long Tunnel Option, T3I which – its genesis was in something many years – it feels like many years ago – has an intervention gap also. Our preference is for the CLT option.

116. MR CLIFTON-BROWN: Before you go on to the various options, could you tell me why the Chilterns or areas of outstanding natural beauty in general, are not given the same protection, for example, as National Parks? Why should they be protected in the same way as National Parks?

117. MR PAYNE: Indeed, and thank you Sir, for asking that question. We are but a short distance from a National Park. I have not read, unfortunately the debate which generated the CROW Act in 2000, and the Statutory Instrument which formed the two Conservation Boards is silent on the subject. There is a big difference, as I hope I have illustrated between a Conservation Board still, and a National Park, the primary one being its planning powers. The current situation is that the two Conservation Boards are to all intents and purposes, as far as the landscape and the manner of its organisation and management, very similar to Conservation Boards [sic]. I can say, at this point – it's no secret amongst the AONB 'family' as it's called, that National Parks seem to get a very large proportion of the available cash compared with, certainly, the two Conservation Boards. That is a matter which the management of the two Boards is actually addressing, simply because we can no longer rely on government funding extensively. The extent to which the two Boards would ever become National Parks I'm afraid is not a matter for me to decide; or perhaps even comment on it. It's perhaps a matter for

Parliament.

118. SIR PETER BOTTOMLEY: It's worth remembering that when the last set of National Parks was created, the South Downs one at least was very controversial, because giving Parish Councils all the way from Eastbourne to Hampshire the right to have views on planning in the middle of West Sussex seemed a bit unjustified. The essential point we've got is that the standard of the landscape, as presently created and managed in an area of outstanding natural beauty is equivalent to that of the National Park area?

119. MR PAYNE: Yes it is, Sir, yes.

120. MR STRAKER QC: Thank you, well can we then move from this slide 32, where you express the preference, having described the various options; to 33, as to what that demonstrates, i.e. that which you've just been talking about and the various options?

121. MR PAYNE: Yes. Just before, if I may, Chairman? Mrs Gillan sketched for you tunnelling options when she appeared before you. She also referred to the need for compromise. The fact that we have now three before us, and we are reasonably comfortable with all of those; we have taken the view that we can't have everything we need. We prefer one rather than the other; and as I proceed toward the end of my piece, I'm going to provide some much options which may be of interest to HS2 Ltd and most particularly to the Select Committee.

122. But what does it demonstrate? Firstly, an enormous effort over several years which may be of no consequence at all. But most importantly, that there are three viable options which I am going to talk about in a little more detail in a moment.

123. MR STRAKER QC: So we come then to 34?

124. SIR PETER BOTTOMLEY: Three viable alternative options?

125. MR PAYNE: Yes.

126. SIR PETER BOTTOMLEY: And there are four options, it seems to me?

127. MR PAYNE: Three viable, long tunnel technical options, yes.

128. MR STRAKER QC: 34?

129. MR PAYNE: Yes, 34 – there are three tunnel proposals before you, tunnelling works. So far as we are concerned now, there is no competition between them. There may be differences of opinion on the manner of their application and the arrangement of the various features, but otherwise we would be content with any one of those.

130. MR STRAKER QC: So we come I think do we now to the second request of your trilogy of requests, which is 35 please?

131. MR PAYNE: Yes. The second request builds on the first: the first you may recall, Chairman, ended with the word, ‘Provided’ in the second line? I have now added to that, and that HS2 Ltd should come back and read the rest, incorporate in one of these options or a variation of them. Because we suspect that, if this is agreeable, then the detailed development of one or the other of these will lead to a slight variation of it, and that’s something which we fully acknowledge.

132. MR STRAKER QC: Then 1178(36) please?

133. MR PAYNE: Before looking at them in more detail, just a note about how this was developed – and one has to say at this point that CRAG, which you’re going to be hearing from, I gather, tomorrow – the genesis of our long tunnels is in the Chilterns Ridge Action Group, and they are to be congratulated for paving the way for much of the work which the four statutory bodies have been doing, and the Chilterns Society, you’ll also be hearing from, because they have suggested a fourth option, which is a three-bore tunnel under the Chilterns which pays homage to the protected nature of the landscape by having within it no visible signs of a tunnel whatsoever. The four statutory bodies and in particular, the Board have taken the view that life is not quite like that, and that reasonable accommodation has to be made in order to host such an infrastructure work with intervention shaft, head houses, and the accommodation of the portal within the AONB and the four statutory bodies are, by and large, comfortable with that compromise. I have the approval, incidentally, of the Chiltern Society to make the statement which I have just made for your information.

134. MR STRAKER QC: Thank you. Then we go please to 37, the basis of the design?

135. MR PAYNE: Yes, I don't propose to dwell on that. There are the six characteristics which we've found most important to accommodate, reducing the impact on the settlements, particularly Wendover, was important to us. And, that echoes the point that Mr Lidington I think made when he was before you, when he described – and I quote – 'The particular circumstances of Wendover'. What we have tried to do in our proposed options is to deal with the particular circumstances of Wendover as he described it.

136. MR STRAKER QC: So I think we can travel, therefore, to 38, where you pose the next question: what and where and the differences between them?

137. MR PAYNE: Yes, and I would suggest, Chairman, that in order to conclude any views you may have about these options, you need to know what are the differences between them; and where are they? Because their location horizontally is not quite where the government's proposed scheme is now in one circumstance. Nonetheless, the position is that finding out what the differences are and where they are is particularly important to the third request, which the four statutory bodies are going to make soon.

138. MR STRAKER QC: So then we come, I think, to 39, where we begin to answer these questions that you've just posed. We can see the first one being the Chilterns Long Tunnel – so this is without the intervention gap?

139. MR PAYNE: Indeed, it is. And, the three slides that follow have at the bottom, the same government proposed scheme slide, with all its dimensional imperfections, which isn't the point of this argument at the moment. Above it, one of the three options to the same graphical arrangement. The Chilterns Long Tunnel is a continuous tunnel from the same point that the government's proposed scheme starts, near the M25, and terminates short of the AONB boundary, which is the point I made about the Board certainly making compromises about accommodating in perpetuity that particular feature, along with its ventilation shaft arrangements. It does presuppose an underground fire fighting point, which I know HS2 Ltd have suggested is not a proposition which they would find acceptable. If that is the case, then that is a matter which we would accept.

140. SIR PETER BOTTOMLEY: The figures may be slightly out, the promoters are proposing 13km in tunnel, of which 9.5km and a bit are in the AONB, and that would

leave 11 or 12 km out of the tunnel, most in the AONB. The Chiltern Long Tunnel accepts that 9.5-10km within the AONB and proposes about the same amount in the Long Tunnel, with a bit out of it?

141. MR PAYNE: Yes.

142. SIR PETER BOTTOMLEY: The promoter's idea is to have 2km – except for their half tunnel – 2km in tunnel re-cutting; and 8km out, I think?

143. MR PAYNE: Thereabouts, yes.

144. SIR PETER BOTTOMLEY: And the petitioners, together, for the Long Tunnel option are suggesting 9, 10 or 11km with 1km out, is that roughly?

145. MR PAYNE: Near enough, yes. In round terms, yes. The other important thing I would draw your attention to, Sir, is that the first, going north, 9km or so – about a third of its length – is on the same horizontal and vertical alignment as the government's proposed scheme. The middle third is on the same horizontal alignment, but a different vertical alignment. It is the last third that deviates vertically and horizontally from it.

146. MR STRAKER QC: Then we go to 40, where we see the contrast between the Chilterns Long Tunnel with the intervention gap, which is of 1km, I think I'm pointing my pencil at it correctly?

147. MR PAYNE: Or thereabouts.

148. MR STRAKER QC: And otherwise, what we see on the top of this slide is the same as we saw on the previous slide?

149. MR PAYNE: Indeed it is. The Chilterns Long Tunnel, in its original form, was designed to accommodate the eventuality that a gap would be required. It has the same horizontal alignment as the previous slide that you've seen; but it now accommodates the 1km or so – 900 metres I believe it is – gap for an open to air intervention gap. This is an arrangement which is a result of removing any notion of having an underground fire fighting point, which HS2 Ltd have decided against; and that is a point of view with which we would agree.

150. SIR PETER BOTTOMLEY: Agree, to mean it is better or agree it could be done?

151. MR PAYNE: They both could be done, but if the view is that it is not something which the promoter would support, then it is as a matter of compromise –

152. SIR PETER BOTTOMLEY: You'd deal with it.

153. MR PAYNE: Indeed.

154. MR STRAKER QC: Then a similar exercise has been done, I think, for the CRAG proposal, 41? CRAG T3I?

155. MR PAYNE: Indeed, this one follows, Chairman, the same horizontal alignment as the government's proposed scheme; and deviates vertically to make it a deeper tunnel and one which the inclination up and down is less onerous than the government's proposed scheme, and that is something which others are going to be talking about. It does have the 1km or so intervention gap, midway between it and the arrangements otherwise are broadly as indicated on that slide.

156. MR STRAKER QC: Then we can go to 42 where we see the options and here, in tabular form, I think you've recorded certain details about open to air gap, proximity to portal to northwest edge of Wendover?

157. MR PAYNE: Indeed, and those dimensions are approximate, obviously – the whole thing is approximate. The main principle here, which I'm trying to illustrate, is that moving it away from Wendover was one of the aims of the work which the four statutory bodies did in recognition of that particular settlement and the impact upon it. You'll be hearing from others about the location of the details of these portals.

158. The reason that there is a big difference between the distance on the CRAG T3I, from its measured point, which is the preferred measuring point by the residents of Wendover, northwest corner, the 450 metres and about 1,000 metres in the case of the other two schemes, is that it cuts across the fields at a diagonal. So it is the wrong side of the triangle as it were.

159. MR STRAKER QC: We can probably see that in the maps we're going to come to?

160. SIR PETER BOTTOMLEY: Okay, I'll wait.

161. MR PAYNE: We could turn to –

162. SIR PETER BOTTOMLEY: I'll wait, if we're going through –

163. MR STRAKER QC: Yes. 42, we've already had. 43 in tabular form sets out starting points and ending points of the tunnel. It sets out the bored tunnel lengths, so one sees the 24.2km for the Chilterns Long Tunnel, and the 13.2km for the bored tunnel length in the government's scheme. Then the route length divergence to convergence, so that in the two middle tunnel schemes, it's slightly shorter distances actually travelled?

164. MR PAYNE: Indeed, yes.

165. MR STRAKER QC: The number of tunnel portals is given, and the number of ventilation shafts being greater, of course, when one's got the longer length of tunnel, with the number of tunnel portals being reduced when one's got a longer tunnel?

166. MR PAYNE: Indeed. And the reason, Chairman, in the bottom line, 7(8), HS2 Ltd have taken the view that probably on the Chilterns Long Tunnel route, underground intervention point, fire fighting point, will require eight ventilation shafts rather than seven. And, if that is the case, then our view is, so be it.

167. MR STRAKER QC: Now, we come then to the maps which may help in connection with the question most recently asked, 44 first please? Here if you can talk us through this, I think, Mr Payne, if you don't mind? Possibly with the use of the pencil?

168. SIR PETER BOTTOMLEY: Is north of this to the top left?

169. MR PAYNE: North is, inconveniently, to the left and south is to the right, rather than the other way round. The thick red line, illustrated here, is the alignment with the Government's proposed scheme

170. MR STRAKER QC: The upper one?

171. MR PAYNE: The upper one, as one goes north or to the left, is the Government's proposed scheme and the CRAG T3i horizontal alignment. The bottom one, which is here, is the divergence in order to accommodate the geometry of the Chilterns Long

Tunnel and the Chilterns Long Tunnel I. It is that top leg or the left-hand leg that you see on this diagram, which illustrates the principal horizontal alignment differences that I referred to in one of my previous slides.

172. MR STRAKER QC: Is that which is saved that distance that one sees from beginning to end?

173. MR PAYNE: Indeed, yes.

174. SIR PETER BOTTOMLEY: And your measurement point is?

175. MR STRAKER QC: If we go to the next plan, please, 45.

176. MR PAYNE: Here is the measurement point.

177. SIR PETER BOTTOMLEY: At the end of the promoter's portal?

178. MR PAYNE: Yes, just about in there. There's a shaded part of the conurbation of Wendover and it is the northwest corner, which the residents of Wendover are quite keen is used as the measurement point. Formerly, they used to use Wendover station, but is the point that they've decided would be preferable and this is the one we've now used.

179. MR STRAKER QC: Here we see that the Chilterns Long Tunnel has moved over and slightly away from Wendover.

180. MR PAYNE: Yes. That was to accommodate our requirement to protect the residents of Wendover and, coincidentally, it also gave us the opportunity to incorporate into the landscape, purely by chance, I have to say, Chairman, rather than design – one would like to say it was preordained, but it wasn't – it was pure chance that we had an alignment that coincided with a remarkably useful piece of landscape that enabled us to accommodate portals within the escarpment, nearly, rather than outside it. That, as I say, was not by design; it was by chance that we happened to have it in that position.

181. MR STRAKER QC: If we move from that happy circumstance to 1178(46), please, we now have a further contrast between the Government's proposed scheme and the Chilterns Long Tunnel scheme. Here we're looking at sections, are we, of the route as proposed and the Long Tunnel route?

182. MR PAYNE: Indeed, and I don't propose, Chairman, to dwell on this. It's something that Mrs Gillan mentioned to you and I believe you asked a question on that subject. It is here for completeness and also to illustrate that the Chilterns Long Tunnel route and its vertical elevation in relation to the Government's proposed scheme are broadly similar, in most respects, to that of the CRAG T3i tunnel. In other words, it is depressed below the Government's proposed scheme arrangements and, from our point of view, it would be a satisfactory route.

183. MR STRAKER QC: Here we see the Government's scheme coming along the red line, and it's rising, rising, rising, rising and then emerges into – does that say 'green tunnel'?

184. MR PAYNE: Yes.

185. MR STRAKER QC: Whereas the Chilterns Long Tunnel stays a more consistent height.

186. MR PAYNE: Indeed. This was something that Mrs Gillan mentioned to you at length and I don't propose to dwell on it again today.

187. MR CLIFTON-BROWN: Can I just ask a question as a new Member? I haven't visited the area, so I haven't had a chance to see it. Going back to the previous slide, if a tunnel solution – and I say if a tunnel solution – is not adopted, the alignment of your route, irrespective of whether there's a tunnel or not, would appear to be better and it would appear to be farther away from Wendover. If a tunnel solution isn't adopted, is there any merit in trying to alter the Government's existing alignment?

188. MR PAYNE: That, sir, is a matter we've not considered.

189. SIR PETER BOTTOMLEY: Maybe Mr Mould can get one of his witnesses to give a reflection on that.

190. MR MOULD QC (DfT): Yes.

191. MR STRAKER QC: It's certainly the position that that alignment produces a better running alignment, Mr Payne. Is that correct?

192. MR PAYNE: Indeed, it is, although there will be mixed views no doubt on that,

but by and large that would be the case.

193. MR STRAKER QC: Thank you very much, sir. Can we then go to 47, please, 1178(47)? Here we see the surface features of the Government's proposed scheme.

194. MR PAYNE: This is included in the set merely by way of comparison, I would suggest, to the next slide, 48.

195. MR STRAKER QC: 48, we get to the Chilterns and there we've got the dots to indicate the ventilation shafts.

196. MR PAYNE: That's right. The ventilation shaft head houses run along the landscape in that form on the Long Tunnel routes and, broadly speaking, on the T3i route, but shifted over slightly at its northern end.

197. MR STRAKER QC: Thank you, and then 49, please. We get to a table with quite a lot of blanks in it and there's a moment of explanation, I suspect, Mr Payne, here in the sense that you were setting forth the model and then bits and pieces come to be filled in by others.

198. MR PAYNE: Indeed. Mr Blaine will be filling in some of these points, which I shall mention in a moment, and Mr McCartney will be doing something similar. The main point I would like to impress upon the Select Committee is that, in the first line, the 485 million estimated by HS2 Ltd for the Chilterns Long Tunnel and the 350 for T3i are figures that we accept. We have no argument with those at all.

199. The following arrangements on this table, we hoped and endeavoured in producing this to satisfy Mr Bellingham, when he was talking, I think to Mr Hurd, on this subject. He was fearful of going into costings in endless detail. I'm not sure that we can avoid that, but the purpose of this table is to endeavour to do just that and I think our recognition that, certainly for the purposes of this exercise, accepting 485 and 350 is a contribution in that direction.

200. MR STRAKER QC: There may be endless details, sir, but I'm sure that we can avoid endless detail. Now, can we then go to 50, please, where we see where the costs of the continuous tunnel option have been provided? In a sense, you've already remarked upon this, so let us therefore then go to 51, direct economic effects.

201. MR PAYNE: The Select Committee may be interested in having a brief review of what these things will continue. They are here on the slide in front of you. As always with these things, I suspect that the authors of any one of these such studies will have a difference of opinion. You're going to hear from us later about what our opinion is and that will be a subject of debate, no doubt.

202. MR STRAKER QC: Then we go to non-market effects and this is a matter where there can be some, I suspect, variance of approach because of what you've indicated here.

203. MR PAYNE: Indeed. It's a matter that has exercised Government and Parliament has been talking about it, on and off, for quite some time. The definition that's here is a fairly commonly used one. It is one for which there's an equation for which there are too many unknowns, in my estimation. The important thing about it all is that is we would endorse the notion of the overall balance in the context of a protected landscape, as Mr Straker's already illustrated in his opening remarks, is one that we would commend to the Select Committee.

204. MR STRAKER QC: That takes us then to 53, please, where you continue and you refer to here the Government guidance. Some of this goes back some time.

205. MR PAYNE: Indeed, it does. The green book appraisal, which has been evolving for quite some time, and the supplementary guidance on the subject, is one that many Government Departments use. We acknowledge that the Department for Transport uses its own methodology and not this one. That being the case, our view, which Mr Straker has illustrated again in his opening remarks, is that the exceptional circumstances that relate to the imposition of a large infrastructure project in a protected landscape are an arrangement that the Select Committee is encouraged at least to consider in these circumstances.

206. MR STRAKER QC: That takes us then to 54, where you continue with the point about Government guidance.

207. MR PAYNE: Indeed, and these are matters for reflection by the Select Committee, rather than any discussion by me now. There are others who are better able to do that. Defra has produced the Natural Environment White Paper, and one of its

headline commitments, which is on the next slide –

208. MR STRAKER QC: If we go to 55, please.

209. MR PAYNE: – was the formation of the Natural Capital Committee, which Members will know reports to the Economics Committee of the Cabinet Office. That has produced three reports now, all of which have advocated setting up and dealing with this vexatious, almost, problem of valuing the landscape and ecosystems and so on. I'm under no illusion at all, as many others are, that this is an extraordinarily difficult thing to do. It is beyond, I would suggest, Chairman, the timeframe that the Select Committee is operating under. What I would advocate, however, is a consideration of the following.

210. Whilst it is to some extent unknown – and one could argue it is largely unknown – I would argue that there is a number. What it is is a matter for debate, but there is an upper and lower limit to that and you're going to hear something about that later on this afternoon, I think. I would leave you with the thought that non-market effects, whilst they don't account in terms of signing cheques by the Treasury or who else, are a matter that society has to bear, because this protected landscape, as Mrs Gillan pointed out to you, is available to you all.

211. MR STRAKER QC: Thank you, and then we come to 56, please, which is costs.

212. MR PAYNE: The interesting thing about this is that, in our estimation, the costs, bearing in mind what I've said about non-market effects, which you're going to hear more about later on, mean that considering the whole enterprise of the surface transit across the Chilterns as an end in itself, in other words self-financing, is one point of view. Looking at it as a means to an end is the position that we are suggesting the Select Committee may wish to take, so there are at least two opposing views again and there is the matter of overall balance, which I've just mentioned, and also recognising the point that was made earlier by one of your Members, Chairman, about the number of dwellings, farms and so forth; it's remarkably low.

213. The point is, as Mr Hurd said when he appeared before you, value for money in the conventional accounting sense in these particularly unusual circumstances, for a protected landscape of this nature, you may wish to judge that that's not a particularly

sensible approach to adopt in this one circumstance.

214. MR STRAKER QC: Thank you. Then we look to the next slide, please. I think you here switch track slightly to come to the parameters for a Chilterns Long Tunnel.

215. MR PAYNE: Indeed, yes. I'm not entirely switching tracks because it's not built yet but, if it were, this would be the point where one does it. We acknowledge that some accommodation has to be made in these matters and it is part of my job here this afternoon to begin to flesh out what that could look like. In order to ease the burden, as it were, of your Committee, Chairman, in coming to a conclusion about the second request, the parameters for a long tunnel of some sort, using one of the three as guidance or a variant on it, depending on HS2 Ltd's point of view and your direction, are as illustrated on here.

216. The first bullet point here is self-evident. Retaining the location of the current maintenance loop is a strong preference we would have, certainly on behalf of the residents of Stoke Mandeville, which is outside the AONB area. Nonetheless, Mr Lidington, when he addressed you, made that particular point. The preferred location of the north portal, for us, is either the Chilterns Long Tunnel one or the intervention gap one. It sits nicely in the landscape. If that is not possible, then a suitable similar location is something now we would accommodate. The last –

217. MR STRAKER QC: 58, please.

218. MR PAYNE: The last two, we prefer an underground fire-fighting point. We understand the arguments against that, which HS2 have raised. In the event that that is not going to happen or it is a steadfast refusal in that respect, and it is a point of view that we respect, but don't necessarily agree with, then an intervention gap near Durham Farm, rather than Wendover Dean, is a circumstance that the four statutory bodies would be happier to accommodate.

219. MR STRAKER QC: That being approximately halfway along the proposed Chilterns Long Tunnel.

220. MR PAYNE: It is. It is up the slope towards the intervention gap that you saw illustrated in the CRAG T3i scheme.

221. MR STRAKER QC: Then you mention the removal of spoil.

222. MR PAYNE: Yes, we are keen that the last bullet point on this is something that is observed. As I said earlier, the only tricky bit about tunnelling is usually what comes out at the end and what goes back in to support it. Doing this with the community in mind is something that we would advocate. It is not an easy thing to do, having done it. It is fraught with all sorts of interesting difficulties but, nonetheless, for us, it is the mile worth going extra and it's something that we would commend to the Select Committee.

223. MR STRAKER QC: That I think leads you to your third request, where you've built upon the preceding two matters and built upon what you've just been saying to the Committee, if we go to 59, please.

224. MR PAYNE: Indeed. This, Chairman, is my concluding slide. Here you will see, up to the end of the word 'provided' in the second line, the first request. The second request goes to the word 'then' in line four. Adding to that, bearing in mind the parameters that we have just illustrated and other matters, designed in such a way as to take those into account before 'a Chilterns Long Tunnel' rather than 'the Chilterns Long Tunnel', in other words a variant of the three or perhaps even one of the three.

225. Mrs Gillan referred to the Chilterns being a national asset, and this is something, as I said, a view that we concur with. The NPPF gives it the highest status of protection together with National Parks, which is an interesting proposition. It goes a little way, perhaps, to asking one of your Members about why aren't we a National Park. I really can't provide an answer to you. I'm sorry, sir. That, Chairman, is my conclusion.

226. MR STRAKER QC: Thank you very much. Thank you, sir.

227. CHAIR: Mr Mould, do you have any questions for Mr Payne?

228. MR MOULD QC (DfT): I have one or two, thank you. I wonder if we can please put up Mr Payne's slide A1178(28). Mr Payne, you said at this point in your evidence that the promoter and the petitioners diverge on the important principle of the protection to be given to the landscape of the area of outstanding natural beauty. You recall that.

229. MR PAYNE: Indeed, sir.

230. MR MOULD QC (DfT): Thank you. In this slide, you draw attention to the National Planning Policy Framework, a planning policy framework that has been considered by this House, both in Committee and in the Chamber. You say that that framework affords the AONB the highest status of protection together with National Parks.

231. I wonder if we could just put up, so we're reminded of it, what the relevant paragraph of the framework says as to the approach to be taken by decision makers, in this case Parliament itself. That's at R1305(3), please. Part of it's (2). We'll stay with (2) just to note that paragraph 115, at the bottom of the page, we are here in a part of the framework that is concerned with areas of outstanding natural beauty, the conservation of the landscape and scenic beauty of which should be given great weight consistent with the policy that they enjoy the highest status of protection, in relation to landscape and scenic beauty. Do you see that?

232. MR PAYNE: Yes.

233. MR MOULD QC (DfT): If we go then on to the next page, page R1305(3), paragraph 116 is the relevant – that's set the approach that I think both you and the promoter pray and aid. I'll read it out. 'Planning permission should be refused for major developments in these designated areas, except in exceptional circumstances and where it can be demonstrated they're in the public interest. Consideration of such an application should include an assessment of: firstly, the need for the development, including in terms of any national considerations and the impact of permitting it or refusing it upon the local economy; secondly, the cost of and scope for developing elsewhere, outside the designated area, or meeting the need for it in some other way; and thirdly, any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.'

234. If I may just ask you one or two questions, the first of those considerations, that is to say the need for the development and those other matters in the first bullet, in the case of the HS2 scheme, that has been established by the decision of the House to give the Bill a second reading.

235. MR PAYNE: Indeed.

236. MR MOULD QC (DfT): The second of those considerations, we are, by virtue of the instruction given to the House, essentially confined in this Committee room to considering the Bill scheme and the relative costs of and scope for meeting the need as it passes the Chiltern in some other way. That is to say by extending the tunnel from Mantle's Wood to the edge of the AONB.

237. MR PAYNE: Indeed.

238. MR MOULD QC (DfT): The third is the consideration of any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which they could be moderated. That requires, does it not, a consideration not only of those effects, but also the extent to which there is proposed mitigation within the Bill scheme to seek to avoid or to moderate.

239. MR PAYNE: Absolutely right.

240. MR MOULD QC (DfT): Can we agree that, where the second bullet refers to cost – that is to say the cost of meeting the need for the railway to pass through the Chilterns in some other way – it is focusing on the costs incurred in, on the one hand, passing at surface from Mantle's Wood northward and, on the other hand, of extending the tunnel, either wholly or partly, through the remainder of the Chilterns?

241. MR PAYNE: Absolutely right.

242. MR MOULD QC (DfT): Can we agree that the third bullet, the approach that the promoter has taken hitherto, is to direct an assessment of those matters – that is to say detrimental effect on the environment and so forth, and the extent to which that could be moderated – to direct attention to that through the process of environmental impact assessment?

243. MR PAYNE: Indeed, yes. All that you say there is absolutely right.

244. MR MOULD QC (DfT): Indeed, in those respects, the promoter has followed the substance and the process of prevailing legislation and policy guidance on the assessment of major infrastructure schemes, has it not?

245. MR PAYNE: It has in this particular circumstance, yes.

246. MR MOULD QC (DfT): The point of divergence, as is reflected in – let me just go to it – A1180(66) – I’ll put the question when we have the slide up. The point of divergence is this, isn’t it? Whereas the promoter has stayed with an environmental assessment of the comparative impacts of, on the one hand, the Bill scheme at surface from Mantle’s Wood northwards and, on the other hand, a variety of tunnelling options that extend the tunnel either wholly or partly through the AONB – and is going to carry that out under the aegis of environmental impact assessment – your petitioners have sought to apply a monetary cost to that assessment.

247. MR PAYNE: They have, yes.

248. MR MOULD QC (DfT): We can see that, if we just look at two figures here, first of all, I’ll take it because it’s the tunnel scheme that you speak to primarily, the CLT, the Chilterns Long Tunnel scheme; if we take that figure, £532 million additional to the costs incurred in tunnelling, if we subtract from that the net costs saved on property acquisition, we arrive at a figure of around £485 million.

249. MR PAYNE: You could well do, but what I should add, Chairman, is that I’m not briefed to deal with this table below the word ‘but’.

250. MR MOULD QC (DfT): Right, I’m not going to tempt you, to any great degree, to deny yourself that self-denial, but what I am going to do is to ask you just to notice that, if you take that figure of – shall we say, broadly – £0.5 million additional cost of tunnelling on the top line.

251. SIR PETER BOTTOMLEY: £0.5 billion.

252. MR MOULD QC (DfT): £0.5 billion. Thank you very much indeed, quite a significant error there.

253. MR PAYNE: I wasn’t going to draw Mr Mould’s attention to it.

254. MR MOULD QC (DfT): And then you look at the material figure below the ‘but’, which plays against that, it is the £510 million, or the monetised value, if you will, ascribed to the Bill scheme of what are described as non-market effects.

255. MR PAYNE: That may well be the case.

256. MR MOULD QC (DfT): You can see that as a matter of simple –

257. MR PAYNE: As I say, I'm not briefed to go below the word 'but'.

258. MR MOULD QC (DfT): As I understand it, I've looked through not only your slides but also the slides of others who come after you, the figure of some £500 million additional costs of constructing the tunnel and attendant costs thereon – the top line – that is a figure that is essentially agreed between ourselves and yourselves, isn't it?

259. MR PAYNE: Indeed, yes. As I said in some of my remarks, those two numbers are a matter with which we have no disagreement.

260. MR MOULD QC (DfT): So the Committee can rely quite confidently on that figure.

261. MR PAYNE: Indeed, yes.

262. SIR PETER BOTTOMLEY: They're not disputed. They aren't necessarily reliable.

263. MR MOULD QC (DfT): Well, I take your point philosophically speaking but, on the other hand, Sir Peter, surely the Committee is looking to understand the difference between two opposing cases. For that purpose, with that caveat, I make the point. Whereas the £510 million that is ascribed to the non-market effects, that is to say, if you like, the disbenefits that would otherwise be avoided by the extended tunnel option, that is a figure that is not agreed and it is a figure as to the computation of which your presentation and that of those who come after you is entirely silent.

264. MR PAYNE: Indeed. Mine, deliberately so, and others will be explaining the origins of that 510.

265. MR MOULD QC (DfT): We shall look forward to it but, at the moment, there is nothing in the papers, which are before the Committee, which give any explanation as to how that figure has been arrived at, is there?

266. MR PAYNE: Not to my knowledge.

267. MR MOULD QC (DfT): Finally, if we can go please to page 1178(29), another of

your slides, you say that this AONB is the only protected landscape with a major infrastructure project of this nature imposed upon it. We ought to bear in mind, shouldn't we, by way of example, that the same area of outstanding natural beauty accommodated the construction of the M40.

268. MR PAYNE: Indeed it did, many years ago.

269. MR MOULD QC (DfT): For example, the North Downs area of outstanding natural beauty accommodated the construction of the Channel Tunnel railway.

270. MR PAYNE: Indeed it did.

271. MR MOULD QC (DfT): There is no reason, on the evidence before the Committee, to doubt that, in each case, the policy that is presently to be found set out in paragraph 116 of the National Planning Policy Framework, that policy no doubt expressed in a different document at the dates when those two schemes were constructed was the policy that was applied in order to reach the conclusion that, in each case, the construction of those schemes, albeit that it had some adverse effect on the area of outstanding natural beauty concerned, was nevertheless one that was, on balance, justified as being a national interest and as being a proper balance between costs and impact.

272. MR PAYNE: Quite correct.

273. MR MOULD QC (DfT): Thank you very much.

274. CHAIR: Mr Straker.

275. MR STRAKER QC: Thank you very much. If I may, just a couple of matters. First, if we can go to A1180(66), the piece of paper to which I referred in opening, where we see the figure of 532 million as a difference in construction costs, so that is looking at the extra cost involved in constructing a tunnel over the cost of putting it at surface, you'll remember that reference was made in my opening to a difference that has occurred between a figure now put forward for the cost of construction at surface and a figure previously put forward, that difference being something in the order of—

276. MR PAYNE: I am told between 100 and 150 million.

277. MR STRAKER QC: And the later figure being a lower figure than the earlier figure.

278. MR PAYNE: That's my understanding, yes.

279. MR STRAKER QC: The 532 has proceeded on the basis of the later figure.

280. MR PAYNE: Indeed.

281. MR STRAKER QC: If we can also look, please, in connection with how it comes to pass that one has a figure for non-market effects, could you put up, please, A1178(53)? Now, I appreciate that this is, so to speak, below your line, Mr Payne, in terms of the number on the page we were looking at, but 1178(53), we've got there 'non-market effects, Government guidance' and Her Majesty's Treasury certain documents and 'accounting for environmental impacts'. I just want your help as to the Committee, please, on whether that guidance on non-market effects is telling us as to how to go about a valuation of land that is being used for projects such as this.

282. MR PAYNE: I must confess, Chairman, this isn't necessarily my subject, but I can offer some guidance. Firstly, Mr Mould's summary of the events is absolutely right and it's something that the statutory bodies concur with. What the Treasury arrangements describe is a methodology that has not been defined accurately for evaluating these rather ephemeral matters to do with landscape and ecosystems and so forth. In that sense, there is enormous debate going on in that part of the economics industry, desperately trying to get PhDs, I suspect, in order to do this.

283. Nonetheless, the position that is generally taken and I suspect is being taken in this case, but Mr Blaine no doubt will be talking about that in more detail, is for example, and one that Mr Straker illustrated rather well in his opening remarks, and that is that, as the protected nature of the fragility of the landscape goes up, so its value commercially diminishes. We've taken the view here that that is interesting, but not necessarily the case. The extenuating circumstances in this particular case, notwithstanding that we agree wholeheartedly with Mr Gould's assessment, merits some other consideration, which is going to be before you later on this afternoon or on Wednesday.

284. Secondly, the matter of the value of land has been mentioned by a number of

authors on this subject, and it varies on a continuum from almost nothing, which I suspect most protected landscapes probably are, because they have no value, to a large number for productive land and so forth. Taking a number between those is a hazardous business; it's been done and you will hear more evidence on that later on. The position that has been taken, as I say as I understand it, is on the round somewhere on this continuum between nothing and whatever number it is value at. It is an arrangement that reflects to society at large what this value is.

285. Just to repeat my observations about Mr Gould's comments, what he has described is precisely what happens for many schemes, road schemes, certainly many railway schemes and so forth. Our argument here is that, in these particular and unusual circumstances, a different set of rules should be commended to the Select Committee.

286. MR STRAKER QC: Thank you very much. Thank you, Mr Payne. Thank you, sir. Sir, what I would like to do now, as forecast, is call Mr Blaine, who the Committee has heard from before and who the Committee will remember is an engineer with a variety of qualifications.

287. CHAIR: I note there are nearly 80 slides or 79 slides. Can we go through them relatively quickly, because I'm beginning to feel we're a bit over-slided and there are some which are otiose. We don't need to go through them.

288. MR STRAKER QC: Sir, we were very conscious of that in drawing this matter up. Obviously there's a stepped approach, which I'm conscious of, and we'll try to take those steps, sometimes leaps, at a time. I'm also very conscious of that when we come later on to some of the landscape slides. There's quite a considerable picture story to be told, which once again, in my mind's eye, I'm envisaging taking those steps quite quickly. That they are steps and they lead to a definite conclusion I'm sure the Committee will have in mind.

289. Mr Blaine, we've got your slides, which begin at A1179(2), where you introduce yourself and set out in short form your qualifications.

290. MR BLAINE: That's correct, yes.

291. MR STRAKER QC: On the following slide, you set out who it is you represent,

which we can pass through. We then get to the fourth slide, where you ask and answer the question.

292. MR BLAINE: Yes, that's right. We have been instructed to investigate tunnel solutions and we've undertaken a full study to look at various options.

293. MR STRAKER QC: Then number 5, still in answer to that question, confirmatory statements by HS2 Ltd are recorded, running back to Arup studies in 2012 and as recently as the review of long tunnels in June 2015. Is there anything to add in the middle, other than what we can see there?

294. MR BLAINE: No, just the extract from the statement, which confirms that it is a feasible solution.

295. MR STRAKER QC: Then you set out, number 6, how you've come to review routes through the valley. You've used design standards from HS2 and come, number 7, to select two preferred routes and agreed a preferred route with the CDC and other authorities.

296. MR BLAINE: That's correct, yes.

297. MR STRAKER QC: Then we get to number 8. You've developed the design and reported green route.

298. MR BLAINE: Yes, that's not a route that is in front of you. That was a previous scheme design, so you don't need to worry about it. That's not yet another option.

299. MR STRAKER QC: Then you record in the same one and revise that design, was it, to suit the new safety standard of Chilterns Long Tunnel?

300. MR BLAINE: That's right. The introduction of the new safety standards for safety in long tunnels allowed us to consider the option for the underground fire-fighting point in particular.

301. MR STRAKER QC: Very well. Number 9, you record the support the local authorities, the parish councils, the civic societies and charities, and the residents groups.

302. MR BLAINE: That's correct; they all support this solution.

303. MR STRAKER QC: Then we come to number 10. Here we touch a bit slower if you don't mind: 'complies with latest TSI', that's a standard drawn from where?

304. MR BLAINE: European standard technical standard specification of interoperability of safety in railway tunnels. There are a number of TSIs, but this was particularly about the tunnels.

305. MR STRAKER QC: That requires that which is spelt out on the slide.

306. MR BLAINE: Yes, the particular point about this is the safety intervention at up to 20-kilometre intervals. It provides for the safe delivery of a train in trouble, generally considered to be fire, where passengers can be evacuated and the fire could be dealt with.

307. MR STRAKER QC: It allows for an underground fire-fighting point. That's in contrast if you don't have the intervention gap.

308. MR BLAINE: Yes, that's right.

309. MR STRAKER QC: You refer to there having to be a safety risk assessment, in any event.

310. MR BLAINE: The tunnels will all have a safety risk assessment, and the question of whether a gap or a fire-fighting point is necessary would depend on the safety considerations of the emergency services and the train operators, as well as the operators of the railway system, so the undertaker as well as the operators would consider whether the safety needed some sort of intervention of this nature, at 20 kilometres in particular, with the tunnel that we're proposing of 24 kilometres. Yes, it's longer, but it's not necessarily that much longer, unlike the Channel Tunnel, which is obviously much longer than 20 kilometres.

311. MR STRAKER QC: Number 11, please.

312. MR BLAINE: The Chilterns Long Tunnel includes an underground fire-fighting point, which is positioned at Little Missenden vent shaft. That's midway at almost the centre of the Long Tunnel, but it could have an intervention gap, as Mr Payne has

outlined, an open-to-air intervention gap. That would be in the vicinity of Wendover Dean or Durham Farm or, with the safety risk assessment, the potential – and it's only potential, I'm not saying it absolutely – that with careful consideration it could be avoided altogether, and the cost of that could be avoided.

313. MR STRAKER QC: Thank you, then number 12, please.

314. MR BLAINE: The Chilterns Long Tunnel alignment was particularly also needed to consider the Stoke Mandeville maintenance loop, which has not been mentioned much previously, but it's the maintenance loop just to the north of the AONB, alongside Stoke Mandeville. This is required by HS2 for maintenance purposes to bring maintenance trains down from Calvert to a point at which they can then access the London end of the line during the closed period, but also for the safe storage of a broken-down train and evacuating passengers to a rescue train, which could be then taken on. The maintenance loop has two purposes in that way. We've taken account of that.

315. We consider the operational need might reduce, but that's to do with the length and so on. That's more of a detail. The crossover is a requirement at the head of the tunnel to allow for trains in either portal to cross over to another line, so they can be taken into a loop. We've allowed for that. There's been a bit of dispute about the alignment; we have a slight curvature of the alignment coming in to the maintenance loop for the Chilterns Long Tunnel, but I'll explain more about why that is. We feel that that meets railway standards and is a fairly common occurrence across the country.

316. MR STRAKER QC: Thank you, and then number 13, please. You can touch upon the route description.

317. MR BLAINE: The route was considered on the basis of the railway design and also the geology. The geology of Misbourne Valley is an important part of making the tunnel a viable solution, and plan follows the Government route and –

318. MR STRAKER QC: And then we go to 14, please.

319. MR BLAINE: There's a slight deviation westwards to cross under the A413. The north portal is positioned in more steeply sloping ground than the currently proposed

Wendover green tunnel portal or indeed the CRAG T3i portal would be. The topography is such that our portal is neatly within sloping ground, so you get a rapid increase in cover to the ball and it's a better geological interface as well.

320. MR STRAKER QC: Is this the happy chance that Mr Payne was talking about?

321. MR BLAINE: Yes, it is.

322. MR STRAKER QC: Then we get to 15, please. The route description continues.

323. MR BLAINE: There we are proposing three additional head shafts. Again, there has been discussion about whether a fourth one would be required. We accept that maybe it might be and we've allowed for the underground fire-fighting point at the Little Missenden vent shaft.

324. MR STRAKER QC: Then we get to comparisons, don't we? It's number 16.

325. MR BLAINE: Yes, sir. What I'm doing in these subsequent slides is do comparisons in plan and then later in section to show the differences. You've seen a bit of this from Mr Payne.

326. MR STRAKER QC: Okay, well let's go to number 17 then, please. We see this in plan form, I think, don't we?

327. MR BLAINE: Yes. You can see the deviation from the Government's proposed scheme, in terms of the horizontal alignment there for the Chilterns Long Tunnel, and I've boxed out what I call the northern section, which is the bit that we are dealing with in terms of comparisons.

328. MR STRAKER QC: Then we go on to the text, which talks about what you've just been showing in diagrammatic form.

329. MR BLAINE: That's right. Just as a reminder, it follows exactly the same line as the Government's proposed tunnel, from the M25 to Little Missenden, and then over the next 11 kilometres continues in tunnel. It deviates from the Government's proposed scheme, but less than 500 metres away from that alignment in the northern section.

330. MR STRAKER QC: Route comparison continues, number 19.

331. MR BLAINE: Then we look at the vertical alignment and again you've seen –

332. MR STRAKER QC: This is number 20.

333. MR BLAINE: The alignment in number 20 and, again, highlighted the northern portion, which I'll zoom in on in the following slides to show more detail.

334. MR STRAKER QC: If we stick with 20 for a moment, 20 shows the level at which the Government's scheme runs, rising up, up, up, up, up, still in tunnel and then emerging.

335. MR BLAINE: Emerging in the north portal on a gradient of about 3% upwards.

336. MR STRAKER QC: Upwards at the top of a hill it emerges.

337. SIR PETER BOTTOMLEY: Does it matter?

338. MR BLAINE: It doesn't matter, but it's just unusual. It's part of the energy requirements of getting across the Chiltern Hills. It's trying to seek the surface at an earlier position than you would really ideally want, because you end up with a steep gradient coming up from underneath the Misbourne and rising up to get to the surface, whereas our alignment doesn't do that.

339. MR STRAKER QC: Then we go, please, to 21.

340. MR BLAINE: 21 shows –

341. SIR PETER BOTTOMLEY: What sort of gradient is that?

342. MR BLAINE: 3% is 1 in 30.

343. SIR PETER BOTTOMLEY: What's the conventional maximum you would expect?

344. MR BLAINE: General research has shown that 3% is actually one of the steepest gradients on a railway in Britain, and so more like 2% you'd ideally go to the maximum on. 3% is quite a steep gradient.

345. MR CLIFTON-BROWN: What impact would that have on the speed of the train?

346. MR BLAINE: We'll go on to more detail of that just now.

347. MR STRAKER QC: Pausing there, I think it has an impact both on speed and also on energy used, because it's rising up the hill.

348. SIR PETER BOTTOMLEY: It works both ways, so you use less going down.

349. MR STRAKER QC: Yes, I grant you that. Anyway, the contrast between the Government's proposed scheme and the Chilterns Long Tunnel, relative to the flat of the Chilterns Long Tunnel and the climb of the Government scheme, and then route comparison continues. You were just touching upon 21.

350. MR BLAINE: Again, I've gone in more closely on the northern sections, so that you can see the gradient and the topographic differences.

351. MR STRAKER QC: We get there in 22.

352. MR BLAINE: In 22, this illustrates the topography. The black dotted line is the ground surface, which is slightly different because we're on a different alignment, but you can see, on the right-hand side, is the arrow, which unfortunately is not labelled, but that's Little Missenden vent shaft to the right.

353. MR STRAKER QC: It's there.

354. MR BLAINE: Yes, and then you've got the north portal for the Government's proposed scheme, partway up the 3% slope, then through the green tunnel, still climbing to the summit at South Heath, and then dropping down across the viaduct and through the green tunnel at Wendover and on to the Vale of Aylesbury and the Stoke Mandeville maintenance loop.

355. MR STRAKER QC: The contrast being –

356. MR BLAINE: The contrast is the Chilterns Long Tunnel is a much flatter gradient and, therefore, less energy and that's been calculated by HS2 in their report on the Chilterns Long Tunnel to be equivalent to about 190 kilowatt hours per return journey, so taking account of the fact that some trains are going downhill and others are going up. Per return journey, that's 190 kilowatt hours, which doesn't sound a lot. That's every journey. Now, if we take the number of trains per hour that is proposed,

going up to 18 trains an hour, that multiplies out to about 3,600 kilowatt hours per hour. If you take a day's amount of energy consumption that comes to 72,000 kilowatt hours per hour of energy saved, as a result of the Chiltern Long Tunnel. A rough calculation indicates that that's the equivalent of the electricity consumption of 6,000 houses, per day.

357. MR STRAKER QC: Saved by the Chilterns Long Tunnel?

358. MR BLAINE: Saved by the Chilterns Long Tunnel.

359. MR CLIFTON-BROWN: Can I ask if that takes into account the regenerative effects of the trains going downhill as well, because then they feed into the grid instead of just pulling from the grid?

360. MR BLAINE: Yes, this is the net. According to HS2's calculations, this is the net energy saved as a result of the Chilterns Long Tunnel.

361. MR CLIFTON-BROWN: It's that minus the regenerative.

362. MR BLAINE: Yes.

363. MR STRAKER QC: 6,000 homes, did you say, a day?

364. MR BLAINE: Per day.

365. MR STRAKER QC: That's 22 then, and then we go to 23, please.

366. MR BLAINE: In 23, we're looking at the effect of the proposed scheme on the AONB. Again, you see these slides from Ray Payne, if we can just go through them just to remind you of the fact that we've got nearly 9,000 metres of AONB affected by the Government's proposed scheme.

367. MR STRAKER QC: Is that square metres?

368. MR BLAINE: No, that's metres. And 405 metres of the AONB affected by the Chilterns Long Tunnel. That's really to do with the portal position at the northern end.

369. MR STRAKER QC: Then we get to 24, a plan similar to that which we've seen before.

370. MR BLAINE: That's right. That's just again highlighting the northern section, which is the section that we're particularly concerned about. That's the difference in distance affecting the Government's proposed scheme. Following that –

371. MR STRAKER QC: 25.

372. MR BLAINE: 25 is the same for the Chilterns Long Tunnel.

373. MR STRAKER QC: Then continuing in the route comparison, your next slide 26 shows the location of the underground fire-fighting point, if there is one or a need for one.

374. MR BLAINE: This is just to identify where we were proposing this underground fire-fighting point, which is the midway point of the Chilterns Long Tunnel.

375. MR STRAKER QC: We get to 27 for that, I think.

376. MR BLAINE: That's just to zoom in on those plans to show its position alongside the A413, just north of Amersham.

377. MR STRAKER QC: Then we go, please, to 28, the difference in horizontal alignment between Great Missenden and Wendover.

378. MR BLAINE: Just again going in closely to the northern end to show how the alignment varies between the Government's proposed scheme and the Chilterns Long Tunnel –

379. MR STRAKER QC: We see that in picture form at 29, do we?

380. MR BLAINE: That's right. The Chilterns Long Tunnel passes underneath Bacombe Hill. This possibly answers your question, sir, about how much farther west the Government's proposed scheme could be aligned, because of the rising ground coming up from Wendover up to Bacombe Hill. It would be quite difficult to avoid another ball tunnel, if you push the alignment west, which is why we're able to achieve it. We're in deeper ground and the next sections on geology will show that.

381. MR STRAKER QC: We get to 30 then.

382. MR BLAINE: We're then looking more closely at the comparison between the

Government's proposed scheme and the Chilterns Long Tunnel, and there we're showing the position of the tunnel in relation to the AONB boundary.

383. MR STRAKER QC: We get to 31 to see that in plan form, do we?

384. MR BLAINE: That's right. You can see the radius of curvature of our alignment compared to the Government's alignment, as it approaches the Stoke Mandeville maintenance loop, which is in the section just to the north.

385. MR STRAKER QC: The north portal for the Long Tunnel is there.

386. MR BLAINE: That's right.

387. MR STRAKER QC: The comparative distance to Wendover, which we saw earlier on, we have in mind.

388. MR BLAINE: Yes.

389. MR STRAKER QC: Then 32, please.

390. MR BLAINE: We're now going into some of the construction arrangements for this scheme. We will be proposing four tunnel boring machines, two in each direction, one pair coming from the south, as proposed in the Government scheme, and one pair coming from the north from the north portal position, near Wendover. They'd meet at the Little Missenden vent shaft and be withdrawn at that point. It's a fairly common practice to withdraw TBMs through the vent shafts. The balance of the drive would mean that, actually, the programme for tunnelling would be seven weeks shorter than is currently proposed for the proposed scheme.

391. MR STRAKER QC: Is that seven weeks shorter for the tunnel as extended?

392. MR BLAINE: Yes, it's shorter because the drive is balanced and therefore you're driving tunnels of a similar length in both directions, whereas the Government's proposed scheme has another kilometre or so of drive from one direction.

393. MR STRAKER QC: Then we deal with the construction of the tunnel, 33, please.

394. MR BLAINE: The effects of the construction are less than 50 hectares of the AONB affected. The construction sites are concentrated at discrete locations of vent

shafts and particularly at the north portal.

395. MR STRAKER QC: And 34?

396. MR BLAINE: The south portal drive site would be as proposed by HS2. The drive would be 1.1 kilometres shorter, so the length that gives you that seven-week saving, and the quantity of arisings at the south portal would be reduced by about 10%, because that 1 kilometre of tunnel drive is being taken to the north portal.

397. MR STRAKER QC: 35?

398. MR BLAINE: The north portal drive site would require additional land outside of the AONB. It avoids significant areas of land within the AONB.

399. MR STRAKER QC: 36?

400. MR BLAINE: The portal is positioned very much suited to the topography and the geology, and the topography allows for screening by the local landscape mounding and it's positioned in very stable geological strata, so it will actually be a very good position to have the north portal.

401. MR STRAKER QC: And then 37?

402. MR BLAINE: What I'm looking at here is the Government's proposed scheme and the Wendover green tunnel in particular and how it interacts with the groundwater and unstable ground of Bacombe Hill and the fissure flows, etc. If we look at the next slide –

403. MR STRAKER QC: 38.

404. MR BLAINE: You'll see the picture. This is the geological section along the line of the Government's proposed scheme, and the Wendover green tunnel can be seen as that double red line, with the portal at the right-hand end. The portal, you've got dashed lines, which indicate unstable weathered chalk. You have weathered valley floor with difficult ground conditions to give you structural foundations for the green tunnel. We're not disputing that something can be done; we're just flagging up that there's potential for unexpected geological issues that have to be dealt with and may not be allowed for in programme or cost.

405. MR STRAKER QC: Is that avoided in the Chilterns Long Tunnel?

406. MR BLAINE: Yes, it is. If we go to the following slide –

407. MR STRAKER QC: 39.

408. MR BLAINE: The groundwater level again is shown in blue. The tunnel is bored through the zone of instability, rather than cutting through it, and it's sitting on the Upper Greensand and Gault Clay.

409. MR STRAKER QC: That's shown in 40.

410. MR BLAINE: You can see that in that section again through the proposed Chilterns Tunnel, which is the pink line. The blue line is the groundwater, so it's in the groundwater, which comes out in the strata above the portal. The landform is particularly of interest, if you look at the shape of that landform. That's fairly typical of unstable ground, which is considered to be in a metastable condition. It's reached a natural stability, but disturbance of it could cause it to move.

411. MR STRAKER QC: 41, please. You record how the next slide, which we're going to look at in a moment, shows a cross-section through this important feature in the AONB, this important feature being?

412. MR BLAINE: Bacombe Hill.

413. MR STRAKER QC: Beckham Hill?

414. MR BLAINE: Bacombe.

415. MR STRAKER QC: Bacombe Hill, I beg your pardon.

416. MR BLAINE: Beckham Hill is yet to be known. We have had Henman Hill and so on, but we haven't had Beckham Hill yet. Here the Chiltern Tunnel, if you look at the section.

417. MR STRAKER QC: Which we go over to do that, 42.

418. MR BLAINE: You can see that the Chilterns Long Tunnel passes well below the ground surface and in the zigzag chalk, which is a much more stable material. The

Government's proposed scheme is on the edge of all that and on the edge of Bacombe Hill. That slope is also an indication of the potential instability. We're only saying 'potential'; it could only be proven by more geological investigations, but the hydro-geology across here has also been a concern. There are some reports about the hydro-geology and HS2 has done some further work in looking at that. They clearly do have a concern about dealing with the hydro-geology, with the groundwater coming out into the springs within Wendover. I don't want to get into the detail of that – that could be left for later petitioners – but I just want to point out that the tunnels would be not affecting that groundwater risk at all.

419. MR STRAKER QC: Thank you. 43, please. We then come to the construction of the CLT, the Long Tunnel continued, with the next few slides showing the north portal construction in relation to the AONB boundary.

420. MR BLAINE: Yes, that's right. I want to just go through the proposals for the construction area of the north portal, which is the area that's been causing the most concern for people.

421. MR STRAKER QC: We get to 45, do we, for that purpose?

422. MR BLAINE: Yes. If you look at the plan, this is the area required for construction of the Government's proposed scheme, the Bill scheme. You can see the blue area running right past Wendover and obviously on through the AONB and northwards, past Stoke Mandeville. The green line indicates the AONB boundary.

423. MR STRAKER QC: The red line is obviously HS2.

424. MR BLAINE: The red line is HS2.

425. MR STRAKER QC: Then we go, do we, from there to 46?

426. MR BLAINE: The next one is to introduce the area for the north portal construction for the tunnel boring site.

427. MR STRAKER QC: Which we get to at 47.

428. MR BLAINE: That's right. The additional area needed outside the AONB is indicated in pink and there's a bit inside the AONB actually.

429. MR STRAKER QC: Which is just there. Is that right?
430. MR BLAINE: That's right, yes, just around the corner.
431. MR STRAKER QC: This is the additional area outside the AONB.
432. MR BLAINE: Yes, that's right. The important thing to note is the area that is not needed within the AONB, alongside Wendover.
433. MR STRAKER QC: To see that, we have to go back to 45, where we see what is marked in blue as the area which has been taken out as no longer required.
434. MR BLAINE: That's right, yes.
435. MR STRAKER QC: Which is proximate to Wendover and its residential community?
436. MR BLAINE: That is right.
437. MR STRAKER QC: Do we then go to 48?
438. MR BLAINE: In 48 we are looking at the north portal in more detail. We are going to look at an indicative plan of the portal and a section across it.
439. MR STRAKER QC: We get that at 49, or does that simply show what is going to come?
440. MR BLAINE: That just shows you what is going to come and the locality of it in more detail.
441. MR STRAKER QC: We immediately go to what is to come at 50.
442. MR BLAINE: That shows our arrangement for the north portal site. In particular, we are indicating, for example, the diversion of the road around the top of the portal and the portal structure, which would be a reinforced concrete box structure in a cutting. That would be backfilled and you would end up with something a bit like a green tunnel, but it would be part of a portal with acoustic treatment as well as a portal hood. This is indicative. We have no more detail about portal hoods than has been indicated so far by HS2, and this is a development of their scheme which was outlined in the tunnel

presentation some months ago – I cannot quite remember the date – by Mr Smart.

443. MR STRAKER QC: Then we get to 51, which is similarly indicative.

444. MR BLAINE: This is the indicative section of the portal structure. This is outside the tunnel bore. The lines would be brought through from the bored tunnel into this portal with perforations inside the surface to allow for acoustic pressure waves to be alleviated; and it could also form part of the headhouse area which is indicated on the plan.

445. MR STRAKER QC: Do we go to 52 where the text indicates what the north portal compound for the construction of the Chilterns long tunnel contains?

446. MR BLAINE: Yes. We have indicated that about 50 hectares of land would be needed for the construction compound, 20 hectares of which is in the AONB. We look at it in a bit more detail in the next slide.

447. MR STRAKER QC: 53, please.

448. MR BLAINE: Possibly as much as 65 hectares would be available, but that would still mean it was not too close to Stoke Mandeville as a settlement, and it overlaps with the construction area for the Government's proposed scheme.

449. MR STRAKER QC: Let's move from that to the question of what comes out of the tunnel when you dig it. It may be thought that there is a lot of material to be got out of the tunnel in digging it and that can be contrasted with what is dug out when one is at surface level. Go to 54, please.

450. MR BLAINE: That is right. This is just a diagrammatic illustration of the difference between boring the tunnel and surface excavation. It is purely to give you an idea of the difference. Obviously, there is minimal cutting involved in the tunnel bores, but at the surface there is much greater excavation because the alignment has more cutting in it than filling. For most schemes you will try to balance it, but for environmental reasons the surface route is set lower and, therefore, additional material is to be removed.

451. MR STRAKER QC: In 55 I think you have the figure for what is to be moved on

the Government's proposed scheme.

452. MR BLAINE: The original calculations published in the environmental statement indicated that 7 million cubic metres of soil had to be moved within the AONB.

453. MR STRAKER QC: Is that as in the ES?

454. MR BLAINE: Yes, but the figures produced last week, contained within the additional provision published today, indicate that this is now 4.6 million cubic metres. There is no explanation as to how that has been achieved, but we may find out.

455. MR CLIFTON-BROWN: Could you go back one slide?

456. MR STRAKER QC: Go back to 54.

457. MR CLIFTON-BROWN: Is the surface excavation just for going through areas of outstanding natural beauty? Generally speaking, railways do not excavate in that way.

458. MR BLAINE: They don't. This is more to do with trying to deal with the topography of this section, because we are going over the Chiltern hills. Although you think you are in a valley, the line is up on the side of the valley. Not only are you dealing with the valley itself but the intervening cuts into it. This cutting is to balance the alignment.

459. MR CLIFTON-BROWN: It is a tunnel in effect; you are actually going underground?

460. MR BLAINE: We are not going underground; it is in a deep cutting, and then across viaducts and some embankments as well. Some of this cutting is taken as embankment fill, but it is to deal with the topography of the land.

461. MR STRAKER QC: In consequence of that deep cutting, you are taking a lot of material out, whereas in the tunnel you are just going through in a bore?

462. MR BLAINE: That is right.

463. MR STRAKER QC: We were looking at the numbers. The numbers have changed with the additional provision. Go back to 55.

464. MR BLAINE: The original numbers indicated that 7 million cubic metres of soil had to be moved within this section of the AONB. That has now dropped to 4.6 million cubic metres, so it is a 30% reduction, but there is no explanation as to how that has occurred. Maybe we will hear more detail on that from HS2.

465. MR STRAKER QC: Does it all go by road or along the trace as recorded on your slide 55?

466. MR BLAINE: It goes either by road or along the trace, the trace being the line of the route itself as it is constructed.

467. MR STRAKER QC: We get to 56.

468. MR BLAINE: In 56, again there is an indication of 6 million cubic metres of material to go into embankments and landscaping mounds, which would have been a substantial change to the topography and profile of the AONB. Under the additional provision, that now seems to have reduced to 3.7 million cubic metres.

469. MR STRAKER QC: Pausing there, is there any explanation as to how that reduction has been effected?

470. MR BLAINE: Not in the information I have seen so far. In addition to that 6 million being distributed into the AONB, 1 million cubic metres were to be dumped at Hunts Green Farm as the sustainable placement area. Again, under the additional provision that is being used temporarily rather than as a permanent dump of material. The proposal is that 860,000 cubic metres will be going off site, but the dump at Hunts Green Farm, which I think will be dealt with separately, would have been a loss of agricultural land, and could still be a loss of agricultural land, for about 10 years depending on how it is managed, and, if it was left there, would be a permanent change to the local character of the land.

471. MR STRAKER QC: It being temporary, does that have any significance for the number of lorry movements?

472. MR BLAINE: Yes, it does. There is an increase in lorry movements as a result of the additional provision to make it temporary.

473. MR STRAKER QC: We get to 57 where we now begin to look at the Chiltern long tunnel by way of contrast with the arisings there. We have only just spoken about the arisings in consequence of the Government's scheme.

474. MR BLAINE: Yes. For the Chiltern long tunnel all the arisings would come to the north portal. Obviously, the south portal is still receiving arisings as well, but that is managed locally. As to the north portal arisings, excuse the mixture of units here, but, if you stick to the 2 million cubic metres, which is an agreed figure with HS2, that would be predominantly a chalk slurry coming from the tunnel boring machines. It is a source of concern to local residents, but we believe it can be disposed of productively.

475. MR STRAKER QC: You give some significance as to that in 58, do you?

476. MR BLAINE: For the Government's proposed scheme, the good material is likely to be exported for use elsewhere. A lot of the dry gravels and chalk in the surface work would be useful engineering material, but the poor material, which could come from any part of the works, could be imported into the Chilterns. That is still to be discussed in detail. The Chiltern long tunnel arisings could be disposed of by rail, because that is a well recognised method of disposing of tunnel arisings.

477. MR STRAKER QC: For that, you need 59, do you?

478. MR BLAINE: Yes. If it is disposed of by rail, dewatering of the material would be required so it could be handled in rail wagons. It would need a railhead, which could also be used to bring in materials, but it could be taken to a wide range of destinations, and there is capacity to do so. We have had confirmation from one very substantial rail freight operator in the UK that they would be able to handle this material.

479. MR STRAKER QC: I think we see that on the following slide, 60, from D B Schenker.

480. MR BLAINE: They have looked at the capacity of the Chiltern line to accommodate freight traffic. Their estimate is that under current arrangements they could probably get three to four trains in any 24-hour period from the railhead at this location.

481. MR STRAKER QC: When they talk about three to four trains, what sort of length

would that be?

482. MR BLAINE: These are about 700 metres long. To give you an idea of whether or not that is adequate, HS2's report on the Chiltern long tunnel indicated that it would probably require 20 paths per week which is about two to three train paths a day, so that would fit in with this capacity.

483. MR STRAKER QC: 61, please.

484. MR BLAINE: Another option to dispose of material would be by pipeline. Chalk is pumped currently from a quarry at the northern edge of the Chilterns at Kensworth all the way to Rugby cement works, which is about 60 kilometres away. That has been operating for many decades. That is a very common method of transporting material. Obviously, it takes lorries off the road, but the pipeline would be taken to a point where it could be used for cement making or quarry restoration, if there is a suitable quarry nearby that needed filling.

485. MR STRAKER QC: We have now identified two main means of disposing of the arisings from the Chilterns long tunnel: rail and pipeline. You get to the third at 62.

486. MR BLAINE: The third one is by road, which is the least desirable. Again, dewatering would be required. That will be about 300 lorries per day in two directions, so about 600 trips a day.

487. MR STRAKER QC: That would be if one was not moving it by pipeline or train?

488. MR BLAINE: That is right.

489. MR STRAKER QC: Then you get to 63 where you ask whether a tunnel would protect the environment, so here we are making a contrast, are we?

490. MR BLAINE: Yes. The Government's proposed scheme had 12 million tonnes, now 8 million tonnes, of soil to be moved from the AONB. The explanation for that difference is still to come.

491. MR STRAKER QC: That contrasts with how much for us?

492. MR BLAINE: That is 3 million tonnes for the tunnel and 370 hectares of AONB

is disturbed in the works – you have seen the extent of the construction works – including 100 hectares alongside Wendover.

493. MR STRAKER QC: That is for the Government proposed HS2 scheme?

494. MR BLAINE: Yes. In addition, 10 hectares of ancient woodland would be lost.

495. MR STRAKER QC: That is 64.

496. MR BLAINE: That would include one scheduled ancient monument, and permanent operational noise within the AONB.

497. MR STRAKER QC: Then we come to the question in 65: does the tunnel protect the environment?

498. MR BLAINE: Clearly, there is a reduction in the volume of arisings. 3.2 million tonnes would be coming out of the north portal, and about 50 hectares of AONB would be disturbed, with 20 hectares at the northern end and elsewhere.

499. MR STRAKER QC: You have also recorded the loss of woodland for the Chilterns long tunnel and the scheduled ancient monument in 66.

500. MR BLAINE: Yes. There is no loss of ancient woodland and scheduled monuments and no operational noise.

501. MR STRAKER QC: 67 is in tabular form.

502. MR BLAINE: This gives an idea of the effects of the earthworks effects of moving 12 million tonnes, which is now down to 8.3 million tonnes. The Chilterns long tunnel is 3.2 million tonnes. With that reduced quantity, it is still a 61% reduction in earth moving. The area of surface works in the AONB is 370 hectares as against 50 hectares, so that is an 86% reduction. As to the loss of ancient woodland, it is 10 hectares against zero, so that is a 100% saving.

503. MR STRAKER QC: Does the following slide show in graphic form the comparison of area disturbed in the AONB?

504. MR BLAINE: This just gives you an idea of the cumulative area affected within the AONB for the section from Little Missenden to Wendover. You can see how much

of the AONB is affected. It is not the route itself; it is the disturbance of the construction by kilometre and then the total up to 370 hectares.

505. SIR PETER BOTTOMLEY: Does this include, for example, haul routes and utility works done in the road?

506. MR BLAINE: This is what is identified in their construction boundary.

507. SIR PETER BOTTOMLEY: That still leaves my question.

508. MR BLAINE: It is haul routes within the trace; it is not haul routes around public roads.

509. SIR PETER BOTTOMLEY: But it is everything within the construction boundary?

510. MR BLAINE: Yes.

511. SIR PETER BOTTOMLEY: If there is six weeks' work to move a utility, does the area around that count as being disturbed?

512. MR BLAINE: Only where it has been identified. To clarify that, this area is directly round the trace, not the peripheral areas, so those additional disturbances are not included.

513. MR STRAKER QC: So this would be a conservative statement rather than anything else?

514. MR BLAINE: Yes.

515. MR STRAKER QC: In 69 you ask the question whether the tunnel protects the AONB.

516. MR BLAINE: Yes, and I think the answer is: as much as it can, although there is still some effect.

517. MR STRAKER QC: In 70 you look at some costs.

518. MR BLAINE: This is a breakdown of the various elements of cost using HS2's

figures from May 2015. It shows the Government's proposed scheme and the build-up of their cost. This is the 11-kilometre section that is currently not tunnelled. It is not the whole tunnel cost. This is the Government's proposed scheme and how it is built up; then the Chiltern long tunnel, including the underground fire-fighting point, and the difference. You get to the number 532.

519. MR STRAKER QC: Which we have seen before?

520. MR BLAINE: Yes.

521. MR STRAKER QC: In 1179 that figure of 532 is repeated, shaving off the two and rounding it.

522. MR BLAINE: Yes.

523. MR STRAKER QC: The 'but' is then given to lead us to 72.

524. MR BLAINE: Yes. That cost, just to reinforce it, ignores the land compensation costs of the government scheme; the socioeconomic costs to the community; and the non-market effects of damage to the AONB, which has been discussed already.

525. MR STRAKER QC: We see at 73 the extra bit that you have put into the table in the build-up of it, which is principally the acquisition of land cost, is it?

526. MR BLAINE: That is right. If you look at just 532 for the Chiltern long tunnel and add three and subtract 50, you get to 485, just to give you a bit of mental exercise in the middle of the afternoon.

527. MR STRAKER QC: You say in 74 that those cost estimates also ignore something else.

528. MR BLAINE: We believe it ignores programme risks related to groundwater issues and the instability of ground for cuttings and foundations in the surface route. We have not gone into a lot of detail. The surface route is running across weathered chalk and potential solution features in the chalk right through the Chilterns. All of this could affect the stability of the cuttings and the foundations of the various structures, which all add to the risk of the scheme.

529. MR STRAKER QC: 75, please.

530. MR BLAINE: It also ignores the economic and non-economic effects of the scheme, which will be described later by Mr McCartney.

531. MR STRAKER QC: In 76 something else is ignored.

532. MR BLAINE: These are the major environmental impacts of the scheme which are considerable, and they will be described in much more detail by Mrs Kirkham and Mrs Murray.

533. MR STRAKER QC: That is cost. As to delay, in 77 you ask the question: will a tunnel delay delivery? We have seen already in passing that building the tunnel longer takes less time than building a shorter tunnel.

534. MR BLAINE: That is right. 77 just simplifies matters. The proposed scheme would be roughly 63 months and the Chiltern long tunnel 64 months, so there is really no difference. The difference of the seven-week saving is more to do with estimation of the fit-out of the tunnel itself, but there is no difference in the overall time taken.

535. MR STRAKER QC: 78 is your penultimate slide.

536. MR BLAINE: This just summarises whether work has been done to answer key questions. Yes, it has. We have done comprehensive studies to look at the tunnel. The tunnel route is technically feasible. The Chilterns long tunnel has fewer risks; it will not delay the programme; it will be operationally superior, because we have talked about the energy savings; and it will conserve the AONB.

537. MR STRAKER QC: I think you have had quite a few discussions with HS2, and I think you furnished to them a statement of common ground.

538. MR BLAINE: Yes, we did.

539. MR STRAKER QC: It may be we will come to that, but for the moment we can leave it there. I think that concludes it.

540. MR CLIFTON-BROWN: Have you quantified the difference in cost in ongoing maintenance between the surface solution and your tunnel solution?

541. MR BLAINE: Not in detail. It is one of the areas of common ground that is in discussion. We believe that maintenance of the tunnel is a lot less onerous. It may cost more to do it, but it is not needed as often because it is less subject to weather, plant growth and all the rest of it. Drainage issues are less significant, and there is already a maintenance requirement for part of the Chilterns long tunnel, so this is an extension of that and really should not add much to the cost in comparison with the same amount of work on the surface. We do not believe there is additional cost. HS2 have stated they believe there is an additional cost, but it has not been quantified.

542. MR STRAKER QC: Thank you very much, Mr Blaine.

543. CHAIR: Mr Mould?

544. MR MOULD QC (DfT): Going to P7416(2), Mr Blaine, you showed the Committee some slides which compared the loss of ancient woodland as between the Bill scheme and the long tunnel scheme. You said that the Bill scheme would result in 10 hectares of ancient woodland being lost and the long tunnel scheme would mean zero loss of ancient woodland.

545. MR BLAINE: Yes.

546. MR MOULD QC (DfT): I have just put on screen a slide which shows how that translates into the overall effect of the Bill scheme on the resource of ancient woodland within the AONB as a whole. You can see that those 10 hectares result in a loss of less than .1% of the overall resource.

547. MR BLAINE: I cannot dispute those figures.

548. MR MOULD QC (DfT): You mentioned that the Bill scheme would result in a loss of a scheduled ancient monument, whereas the long tunnel scheme would not. That is Grim's Ditch, is it not?

549. MR BLAINE: Yes.

550. MR MOULD QC (DfT): We can agree, can we not, that the loss in question is about 150 metres.

551. MR BLAINE: I think it is 180 on the latest figures.

552. MR MOULD QC (DfT): We will stick to 180 metres for Grim's Ditch, which is a scheduled ancient monument whose vestigial remains extend from, I think, Dorset to East Anglia, if I remember rightly.

553. MR BLAINE: I will leave that to other heritage experts to comment on.

554. MR MOULD QC (DfT): If you turn to A1179(63), you refer to the Bill scheme disturbing 370 hectares of the AONB. That is your assessment of the maximum extent of disturbance under construction, is it not?

555. MR BLAINE: Yes.

556. MR MOULD QC (DfT): The permanent effect is going to be considerably less than that.

557. MR BLAINE: I think it is about 200 hectares.

558. MR MOULD QC (DfT): At page 65 you point out that there will be a disturbance under the long tunnel scheme of some 50 hectares.

559. MR BLAINE: Yes.

560. MR MOULD QC (DfT): Which is probably closer to the mark during operation, is it not, because you say that the construction impacts on the AONB are relatively small under your scheme?

561. MR BLAINE: That is right.

562. MR MOULD QC (DfT): So it is 200 against 40-odd hectares?

563. MR BLAINE: Yes.

564. MR MOULD QC (DfT): In the context of a total area of the AONB, which is some 80,000 hectares, that gives you a sense of the relative impact here.

565. MR BLAINE: I cannot dispute those numbers.

566. MR MOULD QC (DfT): If we put up P7373, you can see a plan taken from the environmental statement which shows the existing transport routes across the area of

outstanding natural beauty. You can see that the HS2 alignment is shown in the black line. You can see, moving from south to north, the M40, which I mentioned when I was questioning Mr Payne; the A413 itself and other major roads through the AONB, including the A41, I think. There is Henley Road which takes you to Oxford in the southern part of the AONB. That gives you a sense of the figure I have just put to you. That is the 80,000 hectares. You get a sense of the construction of the HS2 route at surface from Mantels Wood, albeit in a succession of deep cuttings, green tunnels, a viaduct and embankment to the northern edge of the area, and how that plays out in terms of the relative land take compared with the area as a whole, do you not?

567. MR BLAINE: Yes.

568. MR MOULD QC (DfT): Can we turn to P7392? Coming to construction traffic, this is the western half of the Bill scheme. At this point to the east we are emerging from the tunnel at Mantels Wood and going through a succession of deep cuttings, green tunnels, viaduct and embankment up to the edge of the area just before Stoke Mandeville. You can get a sense, can you not, of the traffic effects? Essentially, traffic is moving either along the trace itself, that being the black line, or accessing compounds and construction sites associated with green tunnel construction, overbridge construction and so forth, along the A413, and then turning northwards or southwards, depending on whether it is going to or coming from the construction sites, to get to and from the strategic road network.

569. MR BLAINE: Yes.

570. MR MOULD QC (DfT): Much of that traffic will go with your scheme, although not all of it, because there are vent shafts and so forth that need to be accessed, are there not?

571. MR BLAINE: Yes.

572. MR MOULD QC (DfT): But under your scheme a lot of that traffic will simply be shunted further north, where it will have to access the tunnel drive site and segment factory site serving the construction of your northern portal just to the east of Stoke Mandeville?

573. MR BLAINE: That is right. The construction works will be concentrated at the north portal. There will be some traffic along the 413.

574. MR MOULD QC (DfT): And a great deal more in the vicinity of Stoke Mandeville than under the Bill scheme?

575. MR BLAINE: If all the material that is proposed to be moved under the Government's proposed scheme will be able to move along the trace. There is the shifting of material which is going to have Hunts Green Farm as a temporary store. Therefore, material will be moving along there and onwards. We are proposing that a railhead solution would reduce that.

576. MR MOULD QC (DfT): That is your proposal, but that depends on a number of imponderables. We need to be a bit careful about what we can assume in terms of rail access. On the train paths you have been told might theoretically be available on the Chiltern line – I note the way it is put by D B Schenker – which is three or four a day, that would be the movement of materials largely at night, would it not?

577. MR BLAINE: Yes.

578. MR MOULD QC (DfT): Which would have its own environmental effects?

579. MR BLAINE: Yes.

580. MR MOULD QC (DfT): And it might be enough if you had all those potentially available paths to get the material out, but it would not be enough to get the raw materials, for example for the construction of tunnel segments, in, would it?

581. MR BLAINE: There would be potential for materials to come in as well.

582. MR MOULD QC (DfT): Only if you could get every single one of those paths, and probably more besides.

583. MR BLAINE: The volume of material coming in is much less than the volume going out, so you might need only one train. I do not have the numbers, but you would need far fewer trains bringing material in than you would need to take material out.

584. MR MOULD QC (DfT): Another way of illustrating that there is a balance to be

struck between the construction impacts of the Bill scheme and your alternative, under the Bill scheme at West Hyde at the southern portal for the Chilterns tunnel we are not estimating a need to transport any of that material away, are we, because we are using it for earthworks construction locally?

585. MR BLAINE: Yes, you are.

586. MR MOULD QC (DfT): Whereas with your proposal to bore both from the south and north there would be a shortfall of material at the southern portal, would there not? We would not have enough to be able to do all the earthworks we need to do at West Hyde; we would have to import some from elsewhere?

587. MR BLAINE: I am not sure. I have not looked at the detail of that scheme, but the reduction of about 10% in the volume of material arriving at the south portal is going to be that significant in the mitigation earthworks in that location.

588. MR MOULD QC (DfT): If you were my witness, no doubt you would be emphasising the opportunities to try to reduce the environmental impacts of construction and so forth under the Bill scheme. What we can agree on is that each has its own inescapable impacts in terms of traffic generation and so on.

589. MR BLAINE: Yes.

590. MR MOULD QC (DfT): They may not be identical, but in each case the effects are going to be significant, are they not?

591. MR BLAINE: Yes. What we are trying to do is protect the AONB which is the main focus.

592. MR MOULD QC (DfT): You are protecting the designation, are you not?

593. MR BLAINE: Yes.

594. MR MOULD QC (DfT): I understand that. If we turn finally to the question of power and P7399(5), you emphasise the point that the gradient under the Bill scheme as it crests the route at the Mantels Wood portal and beyond would result in a requirement for power as it ascends. There would be some netting off of that as it descends, but you have said that it would have a certain effect, and you drew a comparison with the power

required to power a certain number of households. We should bear in mind, should we not, that running the railway through a more extended tunnel will have its own increased power requirements, which are set out on the screen in front of you, are they not?

595. MR BLAINE: Yes.

596. MR MOULD QC (DfT): We have not got a figure for those, but over the operational life of the project the increased requirement for ventilation fans, cooling and so forth on a railway that is in a tunnel that is essentially double the length through the Chilterns is likely to be significant, is it not?

597. MR BLAINE: That is certainly what the promoters propose and describe in the report. We do not have the technical details, so we cannot really confirm that difference, but the point of raising that issue is that the energy saving of the operation is not mentioned in the slides about the operational nature of the scheme.

598. SIR PETER BOTTOMLEY: When the promoters put forward their Chilterns tunnel were these items specifically mentioned?

599. MR MOULD QC (DfT): These matters on the screen in front of us?

600. SIR PETER BOTTOMLEY: The things we were discussing with the witness just now.

601. MR MOULD QC (DfT): They are mentioned in the reports.

602. MR BLAINE: The recent reports?

603. MR MOULD QC (DfT): Yes.

604. MR BLAINE: They were not mentioned in the earlier reports.

605. MR MOULD QC (DfT): The point I am making, on which I think we are in agreement – I have not put figures to you – is that you need to balance any savings you gain in terms of energy usage from a shallower gradient with the increased energy required to power the train as it goes through the tunnel.

606. MR BLAINE: Yes. Technically, one of the things that I am not sure about, because we have not seen the detailed numbers at all, is that the Chiltern long tunnel

will be running almost continuously in groundwater which acts as a good coolant compared with what is occurring in London with the Underground heating up in clay. You get a much greater cooling effect just by the fact that it is in the groundwater. Whether you make use of that cooling is a matter of technical design, but there is an opportunity to be taken and I do not know whether that has been taken into account.

607. MR MOULD QC (DfT): I am not sure whether it has or has not, and how far that would obviate the need for mechanical cooling is a moot point. What we can say is that on the costings we are agreed upon, subject to Sir Peter's earlier caveat – that is to say, the cost of construction of the Bill scheme – and subject to those costs that come below Mr Payne's 'but', neither party has seen fit to attribute any material increase or decrease in those costs associated with these operational considerations?

608. MR BLAINE: That is right.

609. MR CLIFTON-BROWN: Is it not the case that the actual energy costs of putting the train through the tunnel would be significantly greater than just operating the fans and cooling the tunnel?

610. MR BLAINE: Yes, absolutely. In our view, the operation of the train is a much greater consumer of energy than the operation of the ventilation – the fans and so on – which is why cooling has not been a major feature of analysis, picking up your point, in terms of how long the tunnel should be and what the solution should be. There has been an overall judgment that the tunnel could be this long and the cost is about right, but the details of the operation in terms of the operational costs have not come out until recently: the cooling, the air quality in trains and other more detailed things. They may have been in the background, but they have never been mentioned in particular as a reason for the tunnel not being longer than the 13 kilometres it is at the moment.

611. SIR PETER BOTTOMLEY: Mr Timothy Mould can speak for the promoters, but he raises interesting issues that are clearly relevant and valuable. I was only going through a 'goose and gander' thing, which is whether the points that have been put to you are ones which the promoters themselves covered when they brought forward their extended tunnelling proposals earlier on. It is not a big point. The second thing, which is the overall intent, is that it is clearly right, bearing in mind the evidence of your predecessor, for us to be reminded that because a railway goes through an area of

exceptional natural importance there is not a price you put on that. It is not as if you are buying land. Well, you are actually buying land from farmers, but the costs are not monetised, which is what has been done. The third thing is that if either the promoters or the Committee were minded to go for a long tunnel, who gains what from spending the extra money: the environment, the people, the farmers? I doubt that some of the relatively small things are ones that matter enormously. A bigger decision has to be made.

612. MR MOULD QC (DfT): If it is helpful, we agree with that, and our approach is to look at those headline costs that I think we discussed earlier. I know there is one other item that is coming in a moment, which is the monetised economic effects to which Mr McCartney is going to speak. What I will do is see whether, when we come to hear Mr Smart on these matters, we can give you a little more help.

613. MR CLIFTON-BROWN: Surely, the cost of operating fans in the tunnel is an extremely small figure compared with the cost of putting a train through the tunnel.

614. MR BLAINE: I would agree with that.

615. MR CLIFTON-BROWN: It is negligible in comparison.

616. MR BLAINE: Yes.

617. MR MOULD QC (DfT): I will ask Mr Smart to comment on that.

618. MR STRAKER QC: Mr Blaine, arising out of that, a point has just been made about how the costs of the fans and so forth pale into insignificance by reference to the cost of moving the train through the tunnel along the track.

619. MR BLAINE: It is the cost of moving the trains on the surface or in the tunnel.

620. SIR PETER BOTTOMLEY: Is more power required to move a train through a tunnel than on the surface?

621. MR BLAINE: The calculations indicate that there is an increased energy cost, but because of the alignment of the Chiltern tunnel you are saving that cost.

622. SIR PETER BOTTOMLEY: It might be calculated and discussed, but it is not

vital?

623. MR BLAINE: Yes.

624. MR CLIFTON-BROWN: Is there not drag on the tunnel wall?

625. MR BLAINE: There is drag on the tunnel wall which increases resistance and also cooling issues have been raised, but on balance because of the gradients and alignment we are talking about we believe this offers a very good compromise or counter to that.

626. MR MOULD QC (DfT): If the position of Mr Blaine, with his characteristic fairness, is that, broadly speaking, the increased cost of climbing and descending is essentially cancelled out by the increased cost of going through an extended length of tunnel, by definition the Committee does not really need to worry about it very much.

627. SIR PETER BOTTOMLEY: It will not be the determining issue.

628. MR MOULD QC (DfT): Quite.

629. CHAIR: Mr Blaine, you got through that very quickly, and like most engineers you actually answer questions, or try to. We are going to take a five-minute break, take one more of your witnesses and then a longer break before we begin the evening session.

Sitting suspended

On resuming—

630. MR STRAKER QC: Mr Paul McCartney has taken his place next to me. I will ask for slide 1180(1) be put up where the starting question as to the purpose of the evidence is shown. That is answered in the next slide to present the socioeconomic costs. The third slide, 1180, introduces Mr McCartney and gives us his qualifications and the fact he is director of economics with Peter Brett Associates LLP.

631. MR STRAKER QC: Let's get straight into the Chiltern economy, if we may.

632. SIR PETER BOTTOMLEY: Before you do that, may I just show off for a moment by saying that the book that nobody has read on social economics by Walter Hagenbuch starts with the sentence, 'Social economics is what social economists do.'

633. MR STRAKER QC: There is no particular answer one can give to that question or observation. In 1180(4) you run through over a number of slides, which we will be able to take reasonably quickly, what the Chiltern economy does, how it functions and who is there. It is home to 93,250 residents. I think the following slide tells us how many businesses there are?

634. MR McCARTNEY: Yes. Essentially, it is a strong diverse economy. By a number of metrics it is doing well; it is above the UK average. It has relatively high employment and relatively low unemployment figures; the industries are in the professional and technical sector. It is a strong and diverse economy that has done well. It is mainly small and micro-businesses with under 10 employees scattered across the district, so there is a lot of dependency on road traffic and cars moving within the district itself.

635. MR STRAKER QC: That is the 5,300 businesses there, and you also draw attention to the visitor economy in slide 6.

636. MR McCARTNEY: Indeed. It is very dependent on the visitor economy. We will come on to discuss that, but there are 55 million visitors per annum. They visit the AONB, which is higher than a number for the national parks. Ten million of them come from outside the area; they do a lot of spending which promotes and supports local economic activity.

637. MR STRAKER QC: Those 55 million come for all sorts of activities?

638. MR McCARTNEY: Yes. They are very much coming for what the AONB provides in terms of leisure, recreation, walking, relaxation – what you would expect to get from an AONB.

639. MR STRAKER QC: In 1180(7) you ask the question whether the economic performance of the area is influenced by the environment.

640. MR McCARTNEY: Very much so. As I just said, the visitor economy and the number of people who are attracted to the area provide a lot of economic and social support to the area. It is very much dependent on the visitor economy, and the environment is very much a generator of that.

641. MR STRAKER QC: That enables us to pass through 1180(9) in which you record

how the local economy works. You refer to its rural nature with a high dependency on the local road network for connectivity, because you have touched upon that.

642. MR McCARTNEY: Yes.

643. MR STRAKER QC: That leads to the question: will the construction of the line impact on people's travel? That is 11. In 12 you answer 'yes' to that.

644. MR McCARTNEY: Yes. From the environmental statement, it is quite clear that a lot of the work will impact on people's lives through the junction delays, the construction compounds, construction activity, satellite sites and uncertainty around utilities. All of that will be going on during the construction period and will impact on all sorts of movements, whether that is business, leisure or commuting.

645. MR STRAKER QC: 13 shows the number of residents who travel to work using road vehicles, presumably cars principally, although no doubt some in vans.

646. MR McCARTNEY: Indeed. To go back a step, following on from the previous presentations, what we are trying to do is understand the economic impacts on the local economy from the scheme. The environmental statement had a narrow focus and looked at construction employment and the employment impacts from displaced businesses. What we were trying to do was understand the much wider economic and social impacts, which we will come to, on people's social wellbeing, amenity and visitor spend. One of the things we wanted to do was look at the impacts on travel. Without a detailed traffic model, which you would need to do this precisely, we undertook a high-level assessment, basing that on evidence we could provide on how many people travel to work, where they are travelling from and where they are travelling to and how many people are likely to be affected. It was at a fairly high level, but it was a much proportionate approach in line with DfT and Treasury's proportionate appraisal guidance.

647. The first thing we looked at to understand this, for example, was that 68% of residents travel to work using road vehicles. As to the travel patterns across the area, we tried to focus on how many would be affected by the construction activity, not just road closures and diversions but also time delays as that permeates across the economy. From that, we estimated the travel delay impacts.

648. MR STRAKER QC: 14, please.

649. MR McCARTNEY: It has been estimated at probably under £100 million, but we have estimated a figure of that scale. Slide 15 disaggregates that across travel types: £26 million in delays for commuters; almost £64 million for other non-work time; and £50.6 million for work-related travel. We undertook various approaches to arrive at those figures.

650. MR STRAKER QC: So the Committee has an idea, when you are talking about £63 million in non-work time, what sort of occasions are you here describing?

651. MR McCARTNEY: We are looking at residents in the area. We know from the national travel survey how many journeys the average person makes in a year. We look at how many of them are made by particular modes, and how how many of those trips would be affected by the works. In normal times people who travel within the peak times can shift their travel patterns to other times. We built up a picture of what these impacts would likely be generated, using values of time from the Department for Transport and calculating that through over an eight-year construction period and then discounting that back to present values. That gives us a figure of £63.8 million.

652. MR STRAKER QC: There is a similar exercise for these other categories: £26 million for commuters; that is, delays in people catching their trains, buses or whatever it may be?

653. MR McCARTNEY: It is people driving to work. 68% of people use a road vehicle to go to work. What is the impact on their travel through road closures, diversions, the delays at junctions and the movement of utilities? We built up that picture and looked at how many people were making commuting trips and multiplied that through a value of time. We discounted that to arrive at the present value of £26 million. Using those techniques, we arrived at a total figure got travel delays.

654. MR STRAKER QC: If we go on, you ask the question how these costs have been estimated. In part, your answer has explained that, because the next slide draws attention to the fact that you used Department for Transport recommended techniques and values.

655. MR McCARTNEY: Yes. We did not have a traffic model – I am not sure the

promoters have one either – to look at the precise quantification and monetisation of these impacts. What we did was build up a proportionate approach using, where we could, as recommended in the guidance, the secondary data and information we had access to in order to build up an understanding of these impacts.

656. MR STRAKER QC: Then you ask the question at 18 whether businesses are being surveyed. You answer that positively at 19, and at 20 you tell us what those surveyed had to say for themselves.

657. MR McCARTNEY: Using that as a sense check to understand the analysis we had undertaken, we looked at the business surveys to see what the businesses themselves were saying about the construction period and the impacts that would have and put it in a table here.

658. MR STRAKER QC: The table is at 21.

659. MR McCARTNEY: It very much summarises the messages received during that survey. 77% of businesses surveyed considered that the delays in the road network during construction of HS2 would negatively impact on the movement of goods and services, staff and business trips; 60% of businesses considered the construction phase of HS2 would negatively impact their turnover. We were using that evidence to support the analysis we undertook. Indeed, the last line of this is that zero per cent of businesses think HS2 will positively impact on their operations.

660. SIR PETER BOTTOMLEY: Did they say anything about the channel tunnel Bill? Did their predecessors 300 years ago think the same thing about the building of canals, or the Chiltern line?

661. MR McCARTNEY: I don't know.

662. SIR PETER BOTTOMLEY: The higher lines are probably more robust than some of the lower ones. I am not saying they are not factual.

663. MR McCARTNEY: We just used that as a sense check to see whether the results were real in terms of speaking to businesses. Does this align with their thoughts? That was the information we received.

664. MR STRAKER QC: In 22 you refer to national connectivity being improved by HS2, or its construction creating significant disconnectivity and severance at local level, and then we see the words in brackets.

665. MR McCARTNEY: There is no difference. What we were looking at was that one of the key drivers for HS2 was to improve connectivity to spread wealth across the country. At the same time, locally it has the opposite impact, in that it creates significant disconnectivity during the construction period, not necessarily during operation, and that will subsequently have an impact on the performance of the local economy.

666. MR STRAKER QC: In 1180(23) you ask a question about the impact on road maintenance costs.

667. MR McCARTNEY: These have been estimated.

668. MR STRAKER QC: That is 24.

669. MR McCARTNEY: These have been estimated at £7.3 million. Essentially, that is caused by considerable heavy lorry movements on the local network.

670. MR STRAKER QC: That is as described in 25.

671. MR McCARTNEY: That excludes the impact of displaced traffic during that period.

672. MR STRAKER QC: In 26 you ask about the importance of visitors to the AONB. You answer that question at 27.

673. MR McCARTNEY: And it goes on to 28.

674. MR STRAKER QC: We have seen that figure before.

675. MR McCARTNEY: Yes. The 55 million visitors per annum is a big number. There are 10 million visitors from outside the area.

676. MR STRAKER QC: That is slide 29.

677. CHAIR: How do they arrive: by road or by train?

678. MR McCARTNEY: I do not have that information.

679. MR STRAKER QC: In 29 you tell us that the 10 million from outside the area spend almost £200 million.

680. MR McCARTNEY: That creates a lot of demand throughout the economy, through recreation, leisure, food and accommodation. There are a number of businesses dependent on these visitor numbers.

681. MR STRAKER QC: In 30 you ask about the loss of land in the AONB.

682. MR McCARTNEY: We have heard from previous witnesses that there will be a loss of land, and we go on to discuss what that will be and the implications of that.

683. MR STRAKER QC: That gets us to 32: the loss of 200 hectares.

684. MR McCARTNEY: Yes.

685. MR STRAKER QC: In 33 you refer to rights of way. There is a loss of 1,603 metres.

686. MR McCARTNEY: And 1.3 kilometres in the cycle way.

687. MR STRAKER QC: 34.

688. MR McCARTNEY: The ancient trackway is almost 5 kilometres.

689. MR STRAKER QC: 35.

690. MR McCARTNEY: Ancient woodland: 8.2 hectares, and agricultural land temporarily lost. That comes to 200 hectares.

691. MR STRAKER QC: Let's catch up at 37. We had a question earlier about the amount of agricultural land lost. 197 hectares are temporarily lost; and 38 hectares are permanently lost. It is 100 hectares?

692. MR McCARTNEY: Yes; those are the figures we have been given.

693. MR STRAKER QC: In 39 you ask the question whether it could have an impact on the popularity of the visitor destination, and hence its long-term performance

economically. We see the answer at 40.

694. MR McCARTNEY: What we wanted to do was clearly understand the loss of this land and the impact it would generate, which has not really been captured in the environmental statement. I confess this is not easy. In theory, it is not particularly straightforward. What we wanted to do was use the evidence we had gathered and pull that together to try to quantify, and to some extent monetise, what these impacts would be. The first was the loss of amenity due to the loss of woodland and agricultural land. What impact would this have on people's house prices? People value the amenity where they live. That is one of the measures that leads through to house prices. The negative impact on the land is reflected in a reduction in house prices. There is evidence and research from the UK national ecosystems assessment, referred to earlier, to demonstrate that a 1% loss in woodland or farmland can impact property prices. We used the information from that and looked at the mapping of property to arrive at a present value of £6.2 million.

695. MR STRAKER QC: That is 1180(41): woodland.

696. MR McCARTNEY: Yes.

697. MR STRAKER QC: There you are monetising a loss of woodland of £6.2 million?

698. MR McCARTNEY: Yes. Looking at proximity to the loss of woodland and farmland and how that transfers through to the impacts on property prices, we value that at £6.2 million. That is the present value over a 60-year period from the construction period through its operation. I think that is a very conservative estimate. Using the analysis, that is what we came up with.

699. MR STRAKER QC: So we get it clear in our minds, in the study that you carried out we have a variety of areas with which we are concerned. We have the Chilterns themselves; we have the Chiltern District Council area; we also have within the AONB part of the town, as it has been described, of Aylesbury Vale District Council. Your study was in connection with what?

700. MR McCARTNEY: Chilterns District Council.

701. MR STRAKER QC: Just Chilterns District Council?

702. MR McCARTNEY: The focus was very much on the economic impact on the Chiltern districts specifically.

703. MR STRAKER QC: If one is looking beyond that, these figures will necessarily be upwards.

704. MR McCARTNEY: They would certainly be upwards, taking on board the impact outwith the Chilterns district area.

705. MR CLIFTON-BROWN: Can I ask how you made that calculation of £6.2 million, because the permanent loss of 100 hectares of agricultural land is not anything like £6.2 million?

706. MR McCARTNEY: The research that we looked at showed that a 1% change in farmland and broadly woodland had an impact on property values. The research undertaken had been done for London. We adjusted those property values to look at the Chilterns. We looked at the value for each property in its proximity to the loss of land. For example, there was broadly a 5% loss for woodland and 50% loss for enclosed farmland. We multiplied that by 5% and 50% and applied that to the properties affected. We did not apply it to all properties, just to those affected.

707. MR CLIFTON-BROWN: The market value of 100 hectares would be about £2.5 million, or £24,000 a hectare.

708. MR McCARTNEY: This impact is over 60 years; it is the impact of the loss of woodland and farmland over a 60-year period, discounted to present value, which gives us the figure we arrived at of £6.2 million.

709. SIR PETER BOTTOMLEY: Geoffrey is absolutely right on his figures. If I do not own farmland but live in a house that looks out over farmland, are you counting the loss to me of the value of that amenity land to my sight rather than ownership?

710. MR McCARTNEY: Yes, that will impact on your property price.

711. MR STRAKER QC: Just so that we can take this a step further, this slide 41, where the reference is made to the £6. 2 million and there is reference to agricultural

land within this slide, the valuation which could be made by an estate valuer of that agricultural land as to what someone might buy from the farmer for that agricultural land, is that a step which you have taken or have you done something different?

712. MR McCARTNEY: No, we've done something different. The proximity to agricultural land and woodland has an impact on your property price. If that land is then removed and you are within proximity, that can then have an impact on your property price. It is the removal of land.

713. MR CLIFTON-BROWN: What you have effectively done is to put a net present value on a view over 60 years?

714. MR McCARTNEY: So, to a large extent, that is incorporated within it.

715. MR STRAKER QC: Incorporated within it and other matters as well?

716. MR McCARTNEY: Yes, it's the benefits that you will receive from a proximity to that affected land. If that land is then removed it has an impact on you as a property owner. So, what we did was to look at all the property owners within proximity to that land and reduced the potential price of their property. There were about 2000 properties. We reduced the price of that property to reflect the loss of the land roundabout.

717. CHAIR: Can I ask, why 60 years?

718. MR McCARTNEY: That is the appraisal period that we undertake for the Treasury Appraisal Guidance, which suggests that we carry out an appraisal over a 60-year period.

719. MR STRAKER QC: Thank you very much. We then move on away from that agricultural land to the loss of land impacting on people's health, at 42, where you ask the question there and you answer it at 43.

720. MR McCARTNEY: Using similar evidence, research has been undertaken which suggests that if you live in close proximity to land where you can exercise it has an impact on your health and well-being. You are more likely to exercise and to undertake physical activity. So, going through a similar process, we looked at the loss of land in

particular areas, and how many residents would then be affected by being in proximity to that land. There is a correlation which suggests that they are more likely to undertake a level of exercise because the opportunity has then been removed. Then that reduces such things as levels of obesity and other types of health problems. So, there is a value, again, that can be applied to that to understand what the health and well-being facts are from the removal of the land.

721. MR STRAKER QC: So, this is no more than the person who lives next to Hyde Park is more likely to exercise in Hyde Park than the person who is some distance from it?

722. MR McCARTNEY: There is a strong correlation. The evidence shows that if you live within close proximity to an area where you can exercise, you are more likely to do that, such as walking along a canal.

723. SIR PETER BOTTOMLEY: It that a direct effect of actually using what is available to you or is it that healthier people tend to be richer and to to buy homes closer to nice places?

724. MR McCARTNEY: No, I think there is a correlation. That may happen but there is evidence to suggest that if you have the opportunity to do that, you will take that opportunity. If you live next to a canal, you may go and walk along the canal, you might walk your dog or cycle along the canal. I think the same thing would happen with farming and woodland in the countryside.

725. MR STRAKER QC: That is 43. At 44 you ask the question about impact on the productivity of businesses and you answer that affirmatively at 45. The productivity loss you estimate at 2. 7 and you arrive at this.

726. MR McCARTNEY: Again, looking at the evidence that was available, the evidence does suggest that work places which are connected with greener and more attractive environments tend to have a more productive workforce. They take more exercise during the day and businesses are more likely to be able to retain staff if they work in a good environment. That means that the costs of recruiting are reduced and they are more able to maintain the most productive staff, so there is less turnover. On that basis, if we look at the level of sickness and leave that people take for sickness, CBI

studies suggested that businesses with a more active workforce have 0.4 days less sickness leave. We then applied that using the average salaries within the Chiltern district area and factored that up to arrive at the productivity loss estimate of £2.7 million, again over a 60-year period down to the present value.

727. MR STRAKER QC: Thank you. Then we look at the question of whether there will be a loss in visitor spending at 46 and you answer that affirmatively at 47 and you arrive at an estimated figure.

728. MR McCARTNEY: Yes, it is quite clear that tourism is a key component of the Chiltern district without any doubt, particularly it being a major draw for visitors and how much they spend. The approach we undertook here was to value the Chilterns as an AONB and an economy within the Chiltern district area. We then estimated an amount of spend per hectare to the local economy. We assumed that each hectare provides a similar level of attraction and visitor spend. We then took off the loss of the hectares that would happen under the proposed scheme and multiplied that up to a figure of £31.5 million. Again, that was over a 60-year appraisal period discounted. I cannot remember precisely what the annual figure was but roundabout £4 million or £5 million each year we discounted to arrive at £31.5 million. The value per hectare was £7,500 and we multiplied that through 250 hectares and then arrived at £31.5 million.

729. MR CLIFTON-BROWN: Is that a linear relationship? If you take a town that has a bypass put around it, its spend drops dramatically in the first two to five years and after that it picks up and eventually goes past what it was originally. Wouldn't that be the case here that your spend would drop for a period of years and then pick up once the whole thing had bedded into the landscape and everything else?

730. MR McCARTNEY: We couldn't find any evidence that that was actually happening. There was a suggestion that people will still continue to come to the Chilterns. They might go to a different place. We were looking at the impact on the local economy, so if they go to a different place outwith the Chiltern district, that has an impact on them. Now, there may be some visitors where their activity is displaced but we are not saying that everyone will stop coming to the Chilterns because of this construction activity and ongoing, but the evidence suggests that it wouldn't necessarily come back to the level it was before. The habits would change and people would

probably go elsewhere.

731. SIR PETER BOTTOMLEY: This figure of £4 million to £5 million is this an estimate of what happens over 60 years or is it an estimate of what happens over five or 10 years of major construction?

732. MR McCARTNEY: It's the ongoing impact of the implementation but not during construction; it is after construction. We haven't looked at the impact on visitor spend during construction. That is why I think it is a conservative figure because it could well be that people, if they visit during the construction period might decide not to go back or may tell their friends or family, 'I don't think you should go to the Chilterns'.

733. SIR PETER BOTTOMLEY: I know that HS1 didn't go through quite the same landscape as the Chilterns but are there any comparative towns or villages you have studied? Has Leeds Castle stopped having visitors?

734. MR McCARTNEY: We have not studied that but we could not find any evidence to suggest that.

735. MR MOULD QC (DfT): Perhaps I may interpose.

736. SIR PETER BOTTOMLEY: You have been to Leeds?

737. MR MOULD QC (DfT): I have, yes, although whether my visit is of any significance I don't know, but you may recall that when we heard the presentation on land compensation from the Action Alliance back in November there was evidence to show that the blighting effect of construction of the CTRL reduced essentially to nugatory as the railway began to come into operation, and that may be of some relevance.

738. SIR PETER BOTTOMLEY: Even away from places like Ashford, which got a gain from the station.

739. MR MOULD QC (DfT): Yes, so that may be of some relevance.

740. MR CLIFTON-BROWN: And how long did that period take?

741. MR MOULD QC (DfT): My recollection is – I am going from memory here and

if I've got this wrong I will let you know as soon as I can – but my memory is that the housing market certainly picked up essentially at the point at which the railway began to operate.

742. SIR PETER BOTTOMLEY: And that was even before we had the Conservative Coalition Government.

743. MR MOULD QC (DfT): Indeed so. I couldn't possibly comment on the effect of that.

744. SIR PETER BOTTOMLEY: Everything we are hearing is valid. Some of it may be interpreted as 'kitchen sinking' the issue. There are some things which I think have been more robust and matter more. I am not sure that this particular one is the biggest one we have had so far.

745. CHAIR: Shall we march on?

746. MR STRAKER QC: It is not necessarily the biggest one but plainly there will be a consequence there and whether the number is precisely the same is a matter of some difficulty, but marching on we then get to 48 where you ask the estimated value of the socio-economic impacts and you get to 49 to do that. Here you run through, don't you, the figures that we have seen?

747. MR McCARTNEY: Yes, the figures that have just been discussed are summarised in a tabular form on page 49.

748. MR STRAKER QC: Yes. Then we get to the question of whether HS2 has taken account of those, to which you answer negatively at 51.

749. MR McCARTNEY: Looking at the Environmental Statement, there does not appear to be any analysis which has tried to understand, measure, quantify and monetise these particular impacts. As I said earlier, there is a narrow focus on construction job creation during the period and also on the employment impacts of businesses that will be perhaps displaced.

750. MR STRAKER QC: You ask next the question of the reliability of the figures and this touches upon some of the exchanges which have already occurred. At 53, you ask

the question, 'How reliable are the figures?'

751. MR McCARTNEY: I must say that this is not a precise science. We have been asked to look at things and what we are saying is that there are impacts here which haven't been taken account of. We're not saying that £170. 4 million is spot on to the nearest pound. What we are saying is that there are impacts on the Chilterns economy which have not been taken on board and we have tried somehow, using evidence that we have gathered, to estimate that. Whether it is £170 million, £140 million, or £180 million, there is a figure there which has been calculated.

752. MR STRAKER QC: I just want, if I may, to spend a moment on 53 because you talk about the application of recognised techniques. Those techniques are recognised by whom?

753. MR McCARTNEY: The approach we have used as far as we could possibly do, takes on board the Government's Green Book, which was referred to earlier, which is their recommended guidance for the appraisal and valuation of public sector projects. We have, as much as we can, looked at the DfT guidance and used that as a steer for some of the figures we should use where that has been available. We have used Government sources in terms of census data, national travel surveys, etc. , so we have used secondary data but a lot of it is official data and the application of that is a used recognised technique.

754. MR STRAKER QC: Do the values recommended in DfT guidance give you figures to enable you to produce your monetised outcomes?

755. MR McCARTNEY: Yes. We have used values of time. We will probably come on to that but values of time are used and that has been set out in the DfT's WebTAG guidance.

756. MR STRAKER QC: Then you ask whether the figures are optimistic, which is slide 5

757. MR McCARTNEY: As I suggested, this is not a precise science. We have tried to use the evidence that we could to arrive at a figure. We know that there are impacts there but measuring them is much more problematic, and quantifying them and

providing a monetised impact is also problematic. Indeed, there are some things that we were not able to measure where there will be impact but we haven't been able to capture these and this is why we think that the figures are conservative.

758. MR STRAKER QC: So, we get to 56 and these are your items which you have excluded, I think?

759. MR McCARTNEY: Yes. So, things such as the impacts on running vehicles.

760. MR STRAKER QC: That is 57.

761. MR McCARTNEY: Yes, 57. If people have been diverted through road closures or travel delays that has had an impact on the running cost of their vehicles, that has not been included.

762. MR STRAKER QC: And then 58.

763. MR McCARTNEY: There is a lot of research going on at the moment to try to understand the impacts of noise. As to putting a value on that and what it means for local residents, we haven't attempted to capture that.

764. MR STRAKER QC: Then visual impacts, 59.

765. MR McCARTNEY: Again, that is something we have not looked at. There may be change in the landscape or impact on people's amenity and how they will enjoy the local countryside.

766. MR STRAKER QC: Is there a caveat there because we had this discussion earlier about the consequential impact of forested land or agricultural land?

767. MR McCARTNEY: Yes, that was very much on people's property. This is generally people walking through the countryside and the impact that that will have on their enjoyment of the AONB.

768. MR STRAKER QC: Then at 60 is the question you have been asked and have answered, which is how you have excluded the spend during the construction period, the lost spend during the construction period.

769. MR McCARTNEY: Yes, we did look at the construction period. There is not a

lot of evidence to suggest that people will not go to the Chilterns. Like I said, they might go to other places but that in itself has a direct impact on the Chilterns' economy and we have not necessarily captured that.

770. MR STRAKER QC: 61 is impact of loss on inward investment. This is another matter not accounted for?

771. MR McCARTNEY: Again there is evidence that inward investors who may be looking at the area during the construction period, for example, might not fit with the business model because it may impact. If they are doing a lot of deliveries, going out and about to a lot of meetings, etc. , that will impact on their day-to-day performance. We have not tried to capture the impact of that.

772. MR STRAKER QC: And then at 62 is something else you have not tried to capture.

773. MR McCARTNEY: There may well be a change in people's spending habits. They may go to other places rather than spending in the Chilterns. They may spend outside the Chilterns. We have not tried to capture that. Again, that would be another negative impact.

774. MR STRAKER QC: Then 63 is a further impact: loss of business and enjoyment.

775. MR MCCARTNEY: I am sorry, that is a typo. It should be impact of loss of business and employment.

776. MR STRAKER QC: And employment? I am sure we all enjoy our business but loss of business and employment, and the enjoyment that comes from employment.

777. MR MCCARTNEY: From the business survey, one in 10 business owners surveyed are considering a change of location and there are questions about how much of that is perception and how much will be a reality. If they do move, there would be a loss of employment to go along with that. We have not tried to capture that.

778. MR STRAKER QC: Then at 64, is impact on adjacent areas.

779. MR McCARTNEY: Again, our focus has been very much on the Chilterns district area. We have not looked at areas outwith the boundary.

780. MR STRAKER QC: Then we come to the impact on estimated costs of the tunnel at 65.

781. MR McCARTNEY: Yes.

782. MR STRAKER QC: The value of these impacts has not been captured in HS2 calculations. Those impacts here that you are referring to are what?

783. MR McCARTNEY: The socio-economic impacts which add up to that £170 million figure.

784. MR STRAKER QC: So, then we get over to 118066, which is the one which I mentioned right at the outset today. So, we can now travel through this document, please. We have seen it up until now and we have got to the acquisition of land costs line and the GPS, the Government Preferred Scheme – one has to acquire more land to do that than to build a tunnel – the non-market effects figure: the Government Preferred Scheme, £510 million ; Chilterns Long Tunnel, £56 million.

785. MR McCARTNEY: Yes. From speaking to colleagues they have said that £510 million has essentially been derived by the value that has been applied to the land that is lost. In the DfT guidance I understand that a figure of £0. 03 million per hectare has been applied to that land, which is £30,000, the definition of that land being intensive or extensive or agricultural intensive. That £110 million substitutes a different value per hectare of £1. 8 million by defining that land as natural and semi-natural or rural forested. So, what we are saying is that as regards the value that has been applied to arrive at the figures by the promoter we think that they have under-valued the hectare per land lost by a significant amount.

786. SIR PETER BOTTOMLEY: Is this a sum additional to the cost of either acquiring or renting the land during use?

787. MR STRAKER QC: Sir, can I answer that question because the answer is yes, it is because the actual costs that might be incurred by someone coming along and saying, 'Please can I buy your land in anticipation of my works here' is a different figure from this figure. This is the figure which has been assigned in consequence of the prior departmental work which has been carried out, which says that there is land of a certain

quality which can have assigned to it a figure to when you are attempting to see whether or not a scheme is good value or bad value. So, it is nothing to do with what, if you were selling me your house, I might be prepared to pay for it. It's to do with how society, so to speak, at large might say, 'I attribute to that going away this particular sum of money'. It is an effort to make a fair comparison bearing in mind that something difficult is being undertaken.

788. SIR PETER BOTTOMLEY: Just to pursue the point for a moment if my colleagues will let me, to simplify things, if there is a choice of having extra capacity on the railways or having extra motorway that runs up the spine of the country, is the cost of the alternative of not having a capacity, which means putting extra shoulders on existing motorways or building a new motorway, a cost which ought to be set against this?

789. MR STRAKER QC: If one was doing the exercise, so to speak, on an open book basis, then plainly so because one would be looking at trying to do an exercise which is fair to both sides of that equation.

790. SIR PETER BOTTOMLEY: So, the argument being put forward on behalf of the present petitioners is that this £110 million as part of the non-market equates --

791. MR STRAKER QC: It is £510 million.

792. SIR PETER BOTTOMLEY: I thought that the land amenity was £110 million of the £510 million. Maybe I was not listening properly, but the particular element you were talking about just now of valuing the hectares at something.

793. MR McCARTNEY: The value that has been placed per hectare by HS2, as I understand it, is £30,000 per hectare. We are saying that society will put a greater value on that land because it is in an AONB. That figure is £1. 8 million per hectare.

794. SIR PETER BOTTOMLEY: Try again.

795. MR McCARTNEY: There are 200 hectares lost. We are saying that the value that society puts on that land because it is in the AONB, is £1. 8 million.

796. SIR PETER BOTTOMLEY: For all those hectares put together?

797. MR McCARTNEY: No, £360 million for all these hectares put together, 200 hectares at £1. 8 million.

798. SIR PETER BOTTOMLEY: So, if each hectare is used to serve this railway, society should add on a value of one point something million pounds per hectare?

799. MR McCARTNEY: Yes. That is the value that is put on natural and semi-natural or rural forested land for the purposes of appraisal. We are saying that the land that is lost should be consistent with that definition and if it is consistent with that definition it should be valued at £1. 8 million.

800. MR CLIFTON-BROWN: But you are saying that it is 100 hectares, not 200 hectares that is permanently lost?

801. MR McCARTNEY: 200 hectares is permanently lost.

802. MR CLIFTON-BROWN: Well, slide 38 says 105. 7 hectares permanently lost.

803. MR STRAKER QC: It is on the screen. It is 118038. That, we have to remember, is the Chiltern District Council figure.

804. MR McCARTNEY: Yes.

805. SIR PETER BOTTOMLEY: But whatever the number of hectares, and that is very useful, we are supposed to be adding on besides acquisition costs, over £1 million for each hectare because of its intrinsic value?

806. MR McCARTNEY: Yes.

807. SIR PETER BOTTOMLEY: So, land that you could buy at £24,000 per hectare has a value which is over 40 times greater than its intrinsic value?

808. MR McCARTNEY: That's the value that is given in the DfT guidance. Under that definition, natural and semi-natural or rural forested land is given a value of £1. 8 million per hectare.

809. SIR PETER BOTTOMLEY: I am sorry, that is natural and?

810. MR McCARTNEY: Natural and semi-land or rural forested.

811. SIR PETER BOTTOMLEY: That would apply to a farm because agricultural land is just over 100 hectares isn't it?

812. MR STRAKER QC: That is the figure that has been applied to it, yes.

813. SIR PETER BOTTOMLEY I can swallow many things but I am not sure that my mouth or gullet is big enough or that my mind is powerful enough to understand how £24,000 per hectare of land is buying land which is actually valued at well over £1 million, not that anyone is going to pay £1 million for the amenity value or whatever it is, but I don't see much –

814. MR STRAKER QC: If I can just help here, sir, for a moment, the matter which one has to be careful about is the appreciation that there are two separate matters under consideration. There is that matter of what I would pay you for x and that is governed entirely by, 'What can I use the land for?' and if I can build houses upon it, it is going to carry a lot more value for me than if I'm simply buying a parcel of agricultural land or a parcel with some trees upon it. That is stripped out and then what one is thinking about is trying to assign how one works out in a fair way a value to this particular area of land when considering the value for money of building a tunnel compared to going at surface level. It is therein that one can get into difficulty because one has to have moved away from those particular matters as to what the values of the estate in terms of conventional valuation might be.

815. SIR PETER BOTTOMLEY: Let's say that with this land which I don't own but pretend I own it, that I might want to apply to one of the Chiltern councils for planning permission and that it might be worth over £1 million per hectare for development, if I can put a row of Georgettes in or something, but they won't let me do that, and the reason they won't let me do that is because they don't want it so therefore the amenity value of the land is £1 million per hectare, I can see a logical thought. I'm not sure that it actually gets me to a conclusion which is helpful, but that I can see.

816. MR STRAKER QC: Yes, it goes back to what I said in opening. The more distinguished that you are in terms of a parcel of land by bearing these labels, 'AONB' and so forth, the less you become worth on a market. Someone will buy but more should be assigned to you by way of value when you are contemplating, 'Should we take that land away? Should we turn it from something which bears that label, 'AONB'

into something else?’ That is how the point goes.

817. MR CLIFTON-BROWN: I am not sure I agree with that if you look at some of the prices paid in the Cotswolds. I don’t know about the Chilterns but I do know about the Cotswolds.

818. MR STRAKER QC: Yes, but then there may be other local circumstances, particularly bearing in mind hope value and matters of that sort, which can drive prices in one particular way. The same point should obtain if one was thinking of Broadway or somewhere of that sort and the open, undeveloped land nearby. That might have a low value in terms of what one would pay for it because one is not going to get any more shops or anything on that open land, but the value that it contributes towards the picture that people take away of Broadway, having been there, is inestimable.

819. MR CLIFTON-BROWN: Mr Straker, you go and try and buy a field outside Broadway and find out what it will cost you.

820. MR STRAKER QC: Well, one might have to go a little bit further than the immediate centre of Broadway.

821. MR McCARTNEY: I think also it’s the intrinsic value that society puts on that land. If you went to try and buy Stonehenge, for example, the value that people put, and society as a whole puts on that piece of land would be huge. What we are saying is that an area of outstanding natural beauty has similar value placed upon that by society. DfT value that, on the figures we have used from the DfT guidance, at £1. 8 million.

822. CHAIR: Shall we finish the slides?

823. MR STRAKER QC: Thank you very much, sir. Then we go to slide 67, please.

824. MR McCARTNEY: The impact on the estimated cost of the tunnel and the value of these impacts has not been captured on the tunnel cost. These are the net costs of extending the tunnel.

825. MR STRAKER QC: 68.

826. MR McCARTNEY: That means that the net cost of the tunnel option needs to take on board these impacts, which have not necessarily been captured.

827. MR STRAKER QC: And then we get to 69. What happens if there is a long tunnel compared to a short tunnel?

828. MR McCARTNEY: The answer to that question is picked up in the next slide.

829. MR STRAKER QC: Number 70.

830. MR McCARTNEY: The connectivity impact is significantly reduce during construction is the first thing, and then going on to slide 71, a lot of the impacts that we have been discussing today are then removed. The negative amenity impacts are removed.

831. MR STRAKER QC: 72.

832. MR McCARTNEY: The health impacts that we have identified are then removed. Productivity lost to local businesses from their connection with the local land is now removed, and then there is the loss of visitor spend.

833. MR STRAKER QC: That is 73 and 74.

834. MR McCARTNEY: That is then removed and finally at 75 the disconnectivity and severance generated by the proposed scheme is again significantly reduced.

835. MR STRAKER QC: Thank you very much.

836. CHAIR: Thank you. Mr Mould?

837. MR MOULD QC (DfT): I would just like to come back to this question of the £500 million that you were discussing with the members of the Committee a few moments ago, Mr McCartney. Could we just put up R17958? I think I understand what the source of that figure is. This is an extract from the Command Paper which was published in January 2012, 'High Speed Rail, Investing in Britain's Future. Decision and Next Step'. That is the document which sets out the Government's decision to promote Phase One of HS2. You will see that under a heading, 'Updated Economic Analysis for HS2', is a reference to updated economic appraisal work and a value for money assessment, which is dealt with on the next page, but we are here in the realm of scheme-wide economic appraisal. You recognise this process don't you?

838. MR McCARTNEY: Yes.

839. MR MOULD QC (DfT): And this, of course, is guided principally by the WebTAG assessment technique?

840. MR McCARTNEY: Yes.

841. MR MOULD QC (DfT): Can we just go down, please, to 3. 27 at the bottom of the page? Having set out some economic advantages that come from various changes that were proposed in the light of public consultation, and so on, so the plus side of the gain from the project as a whole, we come to some additional disbenefits. 'However, additional disbenefits also need to be set against these, including key environmental impacts such as the effect of new lines on the natural landscape. Assessment of the value of the landscape impacts inevitably entails a significant degree of subjective judgment and can only be carried out on the basis of a detailed route proposal. As part of its value-for-money assessment process, the Department for Transport has made an additional estimate of the landscape impacts of the proposed London to West Midlands line which indicates a value of approximately £1 billion. Including these factors in the appraisal reduces the BCR for the London to West Midlands line by approximately 0.1'.

842. Now, I think your point is that you regard the route-wide monetary cost that is ascribed to landscape impacts of the Phase One route as an underestimate because included within it is an underestimate of the value of the landscape impacts upon the Chiltern as an AONB?

843. MR McCARTNEY: I don't know where that £1 billion has come from.

844. MR MOULD QC (DfT): You mentioned the Department for Transport and that you have sourced your estimate from existing departmental work. If that is the departmental work that must be the source because that is the only work there is that I am aware of.

845. MR McCARTNEY: No, no, that is not the source.

846. MR MOULD QC (DfT): So, what is the source then?

847. MR McCARTNEY: The source was the guidance. I don't have it in front of me but the source is the guidance that the department published on the growth fund.

848. MR MOULD QC (DfT): The growth fund?

849. MR McCARTNEY: Applications for the growth fund. There was guidance set out which provided guidance on values of land.

850. MR MOULD QC (DfT): The Department for Transport?

851. MR McCARTNEY: Yes.

852. MR MOULD QC (DfT): And this is something which is relevant, is it? The department says that this guidance is relevant to the economic appraisal of transport schemes?

853. MR McCARTNEY: The Department for Transport published this as guidance when appraising transport schemes and within that document it suggested that if you are valuing land, these are the values you should use. We then took those values and applied them in this context.

854. MR MOULD QC (DfT): But where do we see that in any of your reports, this document with this guidance? I have looked at your reports and I don't recall seeing reference to this document with growth fund.

855. MR McCARTNEY: I am not the author of the report.

856. MR MOULD QC (DfT): You are not the author of the report?

857. MR McCARTNEY: I am not the author of that report, no.

858. MR MOULD QC (DfT): Right, I see.

859. MR McCARTNEY: But I have seen a document that the person referred to.

860. MR MOULD QC (DfT): Just to come back to my point, you appreciate, at least I think you do appreciate this don't you, that the promoter of this project, the Department for Transport, has carried out an assessment of the costs and benefits of the scheme in accordance with the WebTAG process on a scheme-wide approach, which is the right

approach isn't it?

861. MR McCARTNEY: I don't know the context of this document. This is the first time I have ever seen this document.

862. MR MOULD QC (DfT): You have not seen this before?

863. MR McCARTNEY: I have not read it in detail.

864. MR MOULD QC (DfT): This is the central document which sets out the balance between the economic advantages and disbenefits of the project and you have not seen it before?

865. MR McCARTNEY: I have seen the document. I can't remember this specific paragraph.

866. MR MOULD QC (DfT): Right, well I think it speaks for itself. There are two points I take on this. One is that the department's view is that ascribing a monetary value to landscape impacts or, put another way, to the disbenefits that are avoided by a particular option as against another option, is an inherently subjective process that you must approach with caution. You accept that?

867. MR McCARTNEY: Yes.

868. MR MOULD QC (DfT): And the second is that with that caveat in mind, the Government has ascribed a route-wide value of those impacts to the Phase One scheme under the WebTAG process of about £1 billion. I thought you were suggesting that the Government had underestimated that but you don't appear to be saying that. You are not saying that the Government has underestimated that value on a route-wide basis are you?

869. MR McCARTNEY: No.

870. MR MOULD QC (DfT): Right, okay. Of course, that would include an element of value. I can't tease it out because it is a route-wide assessment, but that would include an element of value which covers the impacts of the scheme as it passes through the Chilterns won't it?

871. MR McCARTNEY: Yes.

872. MR MOULD QC (DfT): But unless you are saying that that value is wrong, that it is an underestimate, it does not seem to me that your case on this £500 million really gets off the ground does it?

873. MR McCARTNEY: The point I was trying to make is that I can't answer that question because I don't know what you decided this £1 billion figure is.

874. MR MOULD QC (DfT): Well, exactly, but you come to the Committee saying that there has been some failure on the part of the project to account for the monetary value of the disbenefits of a surface route to the northern part of the Chilterns as against a tunnel route, but in the same breath you are not saying to the Committee that the actual figure that has been ascribed to the route as a whole, which incorporates necessarily an allowance for that disbenefit, is an underestimate are you?

875. MR McCARTNEY: No.

876. MR MOULD QC (DfT): Then the other point is this. Perhaps we could put up, please, 74667, just turning from the £500 million.

877. SIR PETER BOTTOMLEY: Just before you do that, on 58 the BCR is the benefit cost ratio?

878. MR MOULD QC (DfT): Yes.

879. SIR PETER BOTTOMLEY: And the suggestion here is that if you allowed £1 billion to the landscape impact that would reduce the return from 1.4 to 1.3 or 1.5 to 1.4. I am not sure which way round it goes.

880. MR MOULD QC (DfT): Yes.

881. SIR PETER BOTTOMLEY: But a bit?

882. MR MOULD QC (DfT): Essentially, yes.

883. SIR PETER BOTTOMLEY: And the £100 million or so which was part of the present £510 million would be about a tenth of that overall. Without going into whether land in an area of outstanding natural beauty is worth a great deal more than the other

farmland affected by the route, what we can gather from that is that at least a part of what appears to be a non-market effect has been calculated in what the promoters have put forward?

884. MR MOULD QC (DfT): It has subject to that overarching caveat, and as you know, the law and policy says that it is much more sensible to seek to bring that into account in the overall evaluation of the merits of the scheme by looking at the environmental impact assessment work that has been done and make a judgment because you can take account of things like the mitigation that has been proposed and focus on the actual impact rather than some sort of notional impact.

885. SIR PETER BOTTOMLEY: So, the perception you might have is that what Paul McCartney has been talking to led by Mr Straker is a valid consideration because it is one which the promoters/department have been looking at as well?

886. MR MOULD QC (DfT): Yes, but that is as far as you can go, I think, if I may say. Then again I don't want to take unnecessary time but you will have seen in our pack that we provided some headline points which we say need to be considered in looking at your economic effects. You have had a look at these, presumably?

887. MR McCARTNEY: Yes.

888. MR MOULD QC (DfT): Do you have any particular difficulty with any of the points in there because if you don't, I can just ask the Committee to look at it.

889. MR McCARTNEY: I have a number of points. I can take each of them in turn. Assessment is based on a large number of assumptions, many of which are not supported by the robust evidence. The assessment is based on assumptions, not necessarily a large number. It is backed by evidence that we have taken from secondary sources.

890. MR MOULD QC (DfT): Yes.

891. MR McCARTNEY: On the second point, the headline figure for economic loss of £170 million over 60 years has to be put into context. I was very surprised to see that comment. I have never heard of a scheme being justified on the basis of the cost compared against the GDA of a local economy. Schemes are based on the benefits of

that scheme versus the costs of that scheme. I am not sure if HS2 is being justified on the basis of the cost against the GDP or the GDA of the UK.

892. MR MOULD QC (DfT): You are right but your point proves too much, Mr McCartney, because your exercise is predicated on a railway which runs from West Hyde to the northern end of the AONB. The scheme that you mention, surely, if it is anything, is the Phase One railway scheme and we have assessed the benefits that come from a Phase One railway scheme as against the costs or the disbenefits avoided using the WebTAG method. What we're saying here is that if you want to draw a ring around the AONB, which is what you have effectively done in your assessment, you need to take into account as a matter of context the fact that the area in question is one that has an economic value, if you like, measured over 60 years in the context of which the impact you mention taken at face value, of £170 million over the same period, is minuscule. That is a relevant consideration isn't it?

893. MR McCARTNEY: I don't think it is.

894. MR MOULD QC (DfT): All right.

895. MR McCARTNEY: I think that schemes should be justified on the benefits of a scheme against the costs of the scheme. What we are saying is that the promoter has looked at the impacts in the Chilterns in terms of construction cost, employment and the loss of employment through business displacement. We are saying that other things need to be taken on board. To be honest, I'm not sure how this is relevant.

896. MR MOULD QC (DfT): I will take one point. There are three slides here which speak for themselves and I don't want to take unnecessary time cross-examining on them but just to take one example perhaps we can turn to 4669, please, which is the next page but one, just to get a sense of how reliable this is as a focused attempt to understand the local economic effects of the Bill scheme. Let's look at visitor spending losses we were talking about a few moments ago with the Committee. Effectively this is based on the assumption that each hectare of the AONB generates the same level of income as every other hectare of the AONB isn't it?

897. MR McCARTNEY: Yes.

898. MR MOULD QC (DfT): And then it is assumed that it does so over the course of the 60-year design life of the railway.

899. MR McCARTNEY: Yes.

900. MR MOULD QC (DfT): If we just test that, from Maplewood northwards, the Bill scheme runs through, I think, the settlement of South Heath and to the south of the settlement of Wendover and in each case it avoids any direct impact on those settlements through the provision of green tunnels. Take the settlement of South Heath. Can you tell me which visitor attraction or tourist attractor is there at South Heath that is likely to be affected by the presence of HS2 in green tunnel over the 60 year life of the railway?

901. MR McCARTNEY: I can't answer that question.

902. MR MOULD QC (DfT): I suggest that there is none but compare that with, for example, the Roald Dahl Museum in Great Missenden. I do not know how many square kilometres is covered by the Roald Dahl Museum but let's assume that it's one. We can take it, can we not, that the square kilometre which the Roald Dahl Museum occupies is likely to generate a great deal more money in terms of tourist revenue to the Chilterns than is the square kilometre of residential land comprising a number of houses in South Heath?

903. MR McCARTNEY: Yes.

904. MR MOULD QC (DfT): I noticed in your report that you took two case studies. One was the Roald Dahl Museum and the other, I think, was another facility in Amersham. In each case under all the schemes that are before the Committee the railway is running in tunnel, isn't it, so by definition there is unlikely to be any material difference in terms of impact on tourist revenue between those two facilities, yet in your table, if we just turn to page 118066, just to complete the point, you have a figure of £170 million, including this £30 million odd discounted scheme life impact on tourist activity in the Chilterns but you have no effect at all from either of the alternative tunnel options from that or any other economic impact over the same period do you? You are effectively assuming that the other options have not a pound's worth of effect on the tourist economy or whatever it may be of the Chilterns during that time.

905. MR McCARTNEY: Yes, what I have said in the report is that these figures are likely to be significantly lower and have much less adverse impact under the tunnelled option basically because the greatest impact was on travel and the tunnelled option would have less impact because there would be no closed roads and then traffic diversions and also the amount of traffic on those roads would be significantly less because of the excavation and movement of the soil which was creating the problem.

906. MR MOULD QC (DfT): How are you going to traffic your vent shaft sites? You are going to have a number of vent shaft sites north of Maccleswood which are going to require compounds and traffic will have to go off the A413 to take materials to those compounds. Are you saying that not a single lorry serving those sites will give rise to any delay under the tunnelled options, which is going to be reflected in a transport cost?

907. MR McCARTNEY: No, I have said that delays are likely to be much less significant.

908. MR MOULD QC (DfT): So, it is not going to be nil?

909. MR McCARTNEY: No.

910. MR MOULD QC (DfT): So there should be a figure shouldn't there?

911. MR McCARTNEY: Yes.

912. MR MOULD QC (DfT): In each of those blanks there should be a figure.

913. MR McCARTNEY: I have said it would be much, much smaller.

914. MR MOULD QC (DfT): All right. Thank you very much.

915. CHAIR: Mr Straker?

916. MR STRAKER QC: I don't want to ask any questions, sir, by way of re-examination, but might I just observe at this stage that the relevant report is one by the Department in December 2013, 'A Value for Money Assessment. Advice Note for Local Transport Decision Makers' and so it may be useful for us and for the Committee if we are able to bring that along so that that can be seen so that fons et origo of what we have said can be identified.

917. SIR PETER BOTTOMLEY: Where it came from?

918. MR STRAKER QC: Yes.

919. CHAIR: Thank you, Mr Straker. I think we are going to adjourn now and come back at 7.15 p.m. Order, order.