

MINUTES OF ORAL EVIDENCE

taken before

HIGH SPEED RAIL COMMITTEE

On the

HIGH SPEED RAIL (LONDON – WEST MIDLANDS) BILL

Tuesday 25 November 2015 (Afternoon)

In Committee Room 5

PRESENT:

Mr David Crausby (Chair)
Mr Henry Bellingham
Mr Geoffrey Clifton-Brown
Sir Peter Bottomley

IN ATTENDANCE

Mr Timothy Mould QC, Lead Counsel, Department for Transport
Mr James Strachan QC, Counsel, Department for Transport
Mr James Burton, for Potter Row Neighbourhood Watch Scheme
Mr Michael Humphries QC, for FCC Waste Services (UK) Ltd

WITNESSES

Mr Colin Mackenzie
Mr Sean Ring
Mr Malcolm Griffiths
Mr Allan Provins
Mr Ronald Petersen
Mr Murray Cooke
Mr Andrew Band
Rt Hon David Lidington, MP for Aylesbury
Mr Ross Jordan

IN PUBLIC SESSION

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The Potter Row Neighbourhood Watch Scheme (cont'd)

1. MR BURTON: Yes, thank you sir, thank you for giving us the opportunity to discuss with the Promoter. In what I hope is an answer Sir Peter, to your question, which was, as I hope I understood it, essentially if what is sauce for the goose is sauce for the gander, does it really matter if it tunnelled faster because they will both be tunnelled faster in terms of costs. It does matter. We have slightly different figures as to how much it matters. The Promoter's is £60 million, ours is £100 million but yes, it does matter, and to be absolutely clear, that's not money that's not – that is money that turns entirely on the rate of progress. And clearly there is quite a lot of detail into that, but yes, it does matter in terms of costs.

2. Now, in terms of costs of what – and I might have misunderstood, I wondered might be an underlying question, or perhaps a follow-on question, you already know all this back to front anyway Sir Peter. It also doesn't make – it doesn't make a difference, and I hope I am going to express this properly, to the overall time of the programme if we are right, and that a faster rate is the prudent rate. It is not that the Promoter, if we are right, will be able therefore to say 'okay, the overall time comes down and the 8.25 years that you have said is the target that you need to meet on delay. That is the wrong set of goalposts and actually, it is seven years, because of other things on the critical path. Now, you may not have been asking that, and I am sorry if I have wrongly anticipated the question.

3. SIR PETER BOTTOMLEY: You take too much argument for our consideration, but, if your tunnelling rate worked, you could fit within the time envelope, which the promoters have been talking about.

4. MR BURTON: Indeed.

5. SIR PETER BOTTOMLEY: We aren't conflicting – they may but we aren't. But the detail of the argument doesn't need to be rehearsed in front of us; it is a straightforward argument between you. And if you accept the other point that I was making, that if you were goose and gander, the same rates should apply roughly to each alternative, we accept that. All I am really trying to do is to save Mr Mackenzie having to talk too much, or us having to listen too much as the details won't actually affect us that much.

6. MR BURTON: Well, it will affect you as I've said, it obviously depends on the view that the Committee takes regarding £60 million or £100 million, depending on whose right on the costing side of things, but there is a substantial figure is the answer to your –

7. SIR PETER BOTTOMLEY: Well, you're saying that rather than trying to defend it in detail. To explain it in great detail would be –

8. MR STRACHAN QC (DfT): Just to be fair, what we managed to do in the time that we've been coming up with the £60 million figure, is simply to identify what time related, extended preliminaries would be reduced if the TBO tunnel were bored faster. And the £60 million difference, simply for time related differences, means that it would cost £60 million more to do the TBO scheme, than the CRAG T3i, rather than £100 million. So it's £60 million simply for those time related costs. And without going into the detail, obviously CRAG T3i comes from two ends and so assuming they are tunnelling all at the same rate, they will meet quicker and have less time tunnelling, so cheaper costs. TBO, going at the same rate, will take longer, even if it's going faster than we've previously seen.

9. So that, in time related extended preliminaries, we are identifying a £60 million difference in addition to the CRAG T3i. There is a lot more than that, of course, that would be necessary to look at on TBO in terms of the additional challenges of taking a slurry TVN for 23 kilometres, with the associated bentonite support through one tunnel. As far as I aware a nine kilometre distance is the furthest it's been done with a slurry TVN, 23 kilometres is in a new world. I'm not saying it can't be done, but there are many other additional challenges and potential costs. It's unnecessary for me to go into those details.

10. SIR PETER BOTTOMLEY: The Channel Tunnel was bored with a different system.

11. MR STRACHAN QC (DfT): Sorry?

12. SIR PETER BOTTOMLEY: The Channel Tunnel was presumably bored with a different system.

13. MR STRACHAN QC (DfT): It was bored from both ends.

14. SIR PETER BOTTOMLEY: Yes, I know.

15. MR STRACHAN QC (DfT): It was a different system, but it was bored from both ends

so the distance of the TBO, 23 kilometres from one end is, as we understand it, from what I'm told, far in excess of anything ever attempted before.

16. MR BURTON: It is part of the reason that you do need to go from Mr Mackenzie.

17. SIR PETER BOTTOMLEY: Yes, I think headlines from Mr Mackenzie is all that's needed.

18. MR BURTON: Yes absolutely, headlines from Mr Mackenzie and we can come back to that, when we come back to the – can we have 1657A, 1657(77) up.

19. SIR PETER BOTTOMLEY: And just so for those who have joined us for the first time today, this may feel, to some of us, as almost a third bite at a rather significant cherry, so that's why headlines I do think –

20. MR BURTON: I do appreciate that Sir Peter, this Petitioner has never been before you.

21. MR STRACHAN QC (DfT): It doesn't feel like that.

22. SIR PETER BOTTOMLEY: That's a distinction without a difference.

23. MR BURTON: Mr Mackenzie. We have some of your qualifications up on the screen. I imagine the Committee already know what the British Tunnelling Society is.

24. SIR PETER BOTTOMLEY: We have gone through that, just turn over the page.

25. MR BURTON: Could we turn to the next slide please and explain it.

26. MR MACKENZIE: First of all the point that you made Sir Peter, about the Channel Tunnel. The Channel Tunnel was bored from the English side by an open-faced machine, which would never be applied on this particular project.

27. SIR PETER BOTTOMLEY: That's not the point of it.

28. MR MACKENZIE: The French side was tunnelled using a pressure balance machine, which is what my calculations are based on. And so you have a comparability there with the Channel Tunnel and the very high outputs that they achieved. This chart that you see in front of you is a chart which I have used, in one way or another, for many years, to estimate tunnelling outputs, because the job I had –

29. SIR PETER BOTTOMLEY: We understand that.
30. MR MACKENZIE: I had to determine –
31. SIR PETER BOTTOMLEY: I think we've got that. Assume we've read the papers.
32. MR MACKENZIE: Right ah, you have read this, right.
33. SIR PETER BOTTOMLEY: Yes and a lot.
34. MR MACKENZIE: So, we had – there are particular differences that I am trying to highlight here. In the top part of that sheet you will see that I have got three eight hour shifts per day. Now, that means the face is continuously manned because there will be – men will be on site –
35. SIR PETER BOTTOMLEY: Assume we understand that.
36. MR MACKENZIE: Yes, but wait a minute, there is an important point relating to it. That has not been common practice in the UK in recent years. So, it may be that some of the jobs that have been used as references, well I know in particular, some of the jobs that have been used for references, did not have continuous face working. So there is a – that in itself might account for part of the difference in rates. But I am calculating on the basis of continuous face working, whereas some of the references are not based on continuous face working.
37. SIR PETER BOTTOMLEY: We are picking up the points three times faster than you are speaking.
38. MR MACKENZIE: Right.
39. MR BURTON: What are we looking at Mr Mackenzie, and why –
40. MR MACKENZIE: This is a calculation of how you get to the outputs that you would expect. If you look first of all to the extreme right you see performance limit, and that is a relatively – that is the one that can be predicted most accurately because you can take out the various elements of down time and such like, I reduced them to minimums, the minimum that would be acceptable. And that produces you a particularly – you will not achieve that in a minute. As a generality your average, this is from my experience, your average would be five

eighths off the peak, and that's why I have these three little check boxes at the bottom, where it happens in this particular calculation that I've done, the programme needs 63%, which is almost exactly five eighths. And the other one is the figure that, in order to achieve a particular figure here, which I've called the programme B, you will be going above it and below it, you are definitely going to hit some peaks above it. And traditionally, from the records that I've kept, these peaks had hit about three quarters. And you can see here, in this case, they are coming in at 74%. So that these figures, I believe, are solid figures based on my experience with all sort of jobs.

41. Now, one of the reasons why I have picked to operate with earth pressure balance machine, and I do not have anything against the slurry machines, because I used to have a fleet of slurry machines and I had a fleet of earth pressure balance machines. And I knew when to use one and when to use the other. But, as time went on we developed more and more confidence in our earth pressure balance machines, we could put them into almost any ground and we particularly put them into a job in Ipswich, where it was in chalk, and which the earth pressure balance machine performed brilliantly in the chalk, produced the –

42. Now, there are objections from some people that earth pressure balance machines count high and you can't tell what the pressure – that is factually incorrect. It can handle high level of ground pressures to handle the ground pressures that would be expected on this job. So, these are figures, which are the way I would normally have gone about calculating them. I then take these figures and I do exercises on existing jobs that other people are doing, like Crossrail and Lee tunnel and such like. And then I do calculations before I know very much about the job and then see how they turn out. And they actually turn out to be accurate predictors of outputs before the job is sort of a quarter way through.

43. MR BURTON: So Mr Mackenzie, one of the things obviously you explain in your paper is that this is exactly what you would have done each time you, as a tunnelling contractor, were tendering.

44. MR MACKENZIE: Yes, putting our neck on the block for a price.

45. SIR PETER BOTTOMLEY: But at the risk of repeating myself, we've got the point.

46. MR MACKENZIE: Yes, you've got all that.

47. SIR PETER BOTTOMLEY: But Mr Mackenzie is saying that his experience would lead him to suggest this, that checked against real life actually comes out and he's saying that on a five day week you could have 145 metres per week, but you need to add in the other things for it to be 120 roughly, but if you did a seven day week it would go back up to 145. Let's – it's not for us to challenge that.

48. MR MACKENZIE: There is one element, and that's right at the end, where the idea of working seven days weeks, continuously for three or four years, i.e. I cannot prescribe to that.

49. SIR PETER BOTTOMLEY: That's note three, and you say other than –

50. MR MACKENZIE: In point 22, that the highest outputs are generally obtained when you're looking for consistently high outputs, on five day working. And so, five day working, with three eight hour shifts on the face, I strongly recommend that and I think we –. However, whoever's doing it; I think that would be a good way of the client contributing to the control of the project. Because every project three runs three hour – the only project running on a seven day week permanently, gets into trouble and the costs escalate and they are not good.

51. MR BURTON: Now Mr Mackenzie, our understanding, and the Committee will correct me on that, our understanding is that, to date, the Committee have not had tunnelling evidence from someone who has been and lived their life as a tunnelling contractor. I have asked to be provided with Mr Smart's CV and I am told that he explained his credentials. But our understanding is that Mr Smart is not a tunnelling contractor and I think and hope the Committee will understand what I mean by that. He has been involved in projects involving tunnels and he has overseen them, but he is not a tunnelling contractor, as I understand it.

52. SIR PETER BOTTOMLEY: We understand the difference between a commissioner and a contractor.

53. MR BURTON: Yes, I thought you would sir.

54. MR STRACHAN QC (DfT): Could I try and save time on this because – Mr Smart, who gave his credentials when he first gave evidence to the Committee, he is director of engineering and operations at HS2. He is not a tunnelling contractor, but HS2 is advised by consultants, and I have got a list of them to find for you. As you will appreciate, there is a

large number of people advising in the background. He is advised or HS2 and him are advised by Atkins, Mott MacDonald, London Bridge Associates, Arup, Morgan Sindall, Skanska, Costain and BAM Nuttall. The last four are all –

55. SIR PETER BOTTOMLEY: Which are a mixture of consulting engineers and contractors.

56. MR STRACHAN QC (DfT): The last four are all contractors who have I think recently either been involved in the Thames Tideway tunnel or the Lee tunnel we he have heard about. And the important point is that the evidence Mr Smart has brought to the Committee and HS2 is putting forward for the assumptions made for this project are based on planning and tunnelling working groups; with those advisors and consultants to arrive at a lot more than just tunnelling rates, but for the purpose of this debate, the tunnelling rates that have been put before the Committee. And Mr Smart presented that evidence on behalf of HS2.

57. CHAIR: And we also know that these have been effectively put in front to us as sensible assumptions, which it would hope would be beaten when contractors bid, but you can't go into planning on the assumption of what you are going to get out of the bidding process.

58. MR STRACHAN QC (DfT): That is certainly right and I hope the Committee will have a chance to read Mr Smart's statement.

59. MR HENDRICK: You didn't dispute the fact that the tunnel could be finished earlier, but the point was that he was putting forward prudent predictions based on the advice of the people you've just mentioned.

60. MR BURTON: We understand that absolutely, Mr Hendrick, and I will now turn to Mr Mackenzie and ask him whether, as the tunnelling contractor expert the Committee is actually hearing from, rather than a funnel such as Mr Smart; he considers that a prudent rate or whether he thinks the prudent rate is something else, the benefit of his years of experience.

61. MR MACKENZIE: Mr Smart misunderstands, or in his latest communication with us, it is clear he misunderstands what I've been doing in these calculations. He talks about instantaneous rates, they are not. They are sustained tunnel advance rates, on which you would base a programme and you would expect to chart reality against prediction. Now the

Lee tunnel has been mentioned. I am very surprised that anybody who had anything to do with the Lee tunnel would be talking about 80 metres per week, because they were getting more than double that. And they were –

62. MR BURTON: Is this your next slide?

63. MR MACKENZIE: Yes that's the next slide.

64. SIR PETER BOTTOMLEY: 79.

65. MR MACKENZIE: Yes well I'd much more specific information than that. But they were – I think somebody has taken the beginning of the red line and joined it up to the end of the red line, and therefore you have got a very long learning curve. And a comparison between Lee, if they had done that and if, you know you actually do it, you find you get an 80 metres per week figure. Lee was done from a shaft, which meant that the tunnelling equipment had to be introduced piece-meal and they had to go a long distance before you could get into a comparable position with the position –

66. SIR PETER BOTTOMLEY: I am not sure this detail is helping us a great deal.

67. MR MACKENZIE: Well it is important.

68. SIR PETER BOTTOMLEY: Well why don't you give your conclusion before you give your argument and then we will have the argument because we have patience.

69. MR MACKENZIE: Okay I will go as fast as I can.

70. SIR PETER BOTTOMLEY: No, not going faster – I'm just trying to cut out half of what you're saying.

71. MR MACKENZIE: Yes, at Chiltern the tunnelling machine will be going in from the portal. Here, if you draw a line from the beginning of the red line to the end of the red line, you're not making a true comparison. If you may be appropriate –

72. SIR PETER BOTTOMLEY: That's not the first time you've spoken, Mr Mackenzie, on that.

73. MR MACKENZIE: Yes, but if you made the appropriate adjustment, you would come out with figure of about 115, 120, and you certainly would not have 80.

74. SIR PETER BOTTOMLEY: We understand that.
75. MR BURTON: How, Mr Mackenzie, are you able to tell us how HS2 how have got to 80? You've mentioned the Lee, which they mentioned back in the tunnelling sessions, the Lee tunnel, Channel Tunnel and Crossrail?
76. MR MACKENZIE: I don't know how they've got to the figure, it seems to me there's an imbalance of equity here that the output that I've felt- that's put on the table the specific detail of how we got to the rate. But these I've no idea how the Promoter has got to these figures. And I think that's unfair.
77. SIR PETER BOTTOMLEY: The judgement that's been made either by the promoters or if it came to it, by this Committee, would not be based on that kind of lots of information on one side and virtually no information on the other. What matters, although it does go back to this morning so someone may have forgotten, is that rates of tunnelling would be roughly the same to either kinds of tunnel. There are variations.
78. MR MACKENZIE: Yes we got that in the morning.
79. SIR PETER BOTTOMLEY: I don't think we need to hear more about what is the right rate of tunnelling because the relative cost difference, and the relative balance of advantage and benefits, and not effected by the rates of tunnelling if they are roughly the same for both kinds of tunnel, not exactly the same, we understand that.
80. MR BURTON: Sir Peter, they are affected, sorry, I had hoped I'd explained our argument. They are affected by the rates of tunnelling, £60 million or on our face, £100 million. They are affected by the rates of it.
81. SIR PETER BOTTOMLEY: Significant I hope is a word would be put in somewhere, but we're getting more on tunnelling than I think is likely to be helpful to us, speaking for myself.
82. CHAIR: Mr Burton, you're presenting a case.
83. MR BURTON: Yes sir.
84. CHAIR: And you hope to have the sympathy of the Committee, which at the moment you don't have very much. So, please move on.

85. MR BURTON: So Mr Mackenzie, could you please – sir, three questions for you; two of them based on Mr Smart’s comments document that the Committee had, that I need to ask you about, is he has, as I understand it, relied on the bentonite as a significantly below nothing and I believe a more costly factor; that is the first question. And he has also, I think suggested that because your figures are based on a fresher balance, then if it’s the slurry machine then your figures go out of the window, and then the final question is what is, in your view, the prudent rate this Committee should be working to?

86. MR MACKENZIE: Going right to the end, the prudent rate I would have thought would have been somewhere in the region that I suggested, and I mentioned doing it the way that the calculation has been done. The point about bentonite, I was a little surprised about that because if he was proposing a slurry machine. It’s not normal to have to have bentonite on a slurry machine because as you’re tunnelling the face, you’re powdering the chalk, albeit underwater, and that generates its own slurry and as the mixture of water and chalk goes out, every pump it goes through smashes it a bit more. So you end up with a chalk slurry containing lumps of chalk. It goes out in the separation clump and the lumps of chalk are taken out and the chalk slurry goes back in again. You don’t need bentonite.

87. MR HENDRICK: And Mr Burton, give a range?

88. MR BURTON: 180 and 120.

89. MR MACKENZIE: The rates are I have put in here.

90. SIR PETER BOTTOMLEY: Take it around 180.

91. MR BURTON: 120 as against the Promoter rate.

92. MR HENDRICK: Okay so 50% more efficient.

93. MR MACKENZIE: Well, to put it into context, there are tunnelling rates well over 200 metres away. The Channel Tunnel actually got over 400 metres.

94. MR HENDRICK: We accept that, and the Promoter accepted that. The question is what is a prudent rate.

95. MR MACKENZIE: Well, I think –

96. MR HENDRICK: We have heard gives categorically –

97. MR MACKENZIE: What I say is five day to 120 –

98. MR HENDRICK: – evidence that this would be a prudent rate.

99. MR MACKENZIE: Well I – I'm conscious that the project – it's not my project, it's HS2's project and they can make whatever decision that they like, and I'm not here to rubbish their decisions. I was asked questions –

100. MR HENDRICK: We've already had Mr Smart –

101. MR MACKENZIE: – what outputs I would produce and I did that. But I am certainly not here to rubbish the work that anybody else has done or is trying to do. But I have given the two figures for 7 day work and 180 metres a week, five day work I would expect it to be in the order of 120 metres a week. I would think the output could reasonably be sustained is all the – yet that we don't know that much about, the details of the ground at the present time. But I would be expecting to see the machine not being out over 200 metres a week. Because this is the best machine that money can buy. Each machine is about somewhere between £15 million and £20 million apiece and Techtronics is absolutely state of the art, superb, well-proven equipment. It's tremendously powerful. Each of these machines could power a power station in its own right.

102. MR CLIFTON-BROWN: Can I ask you a question, ultimately this all boils down to costs. I understand the cost of the TBO tunnel out here has been driven down substantially. Do you happen to know on what basis of tunnelling rate that contracted price –

103. MR MACKENZIE: I have no idea. That would be confidential. They are – the budget cost comes down always, nearly always when you go to bit. And that's why, in most successful tunnelling contracts in the recent decade or couple of decades, have been on a part owned basis, where the client, his designer and contractor are all on the one team, and right from day one, you know what the target is. Who the target cost is for the outcome of the works, not for the start of it, and you know the problems. That's all hammered out in infinite detail by the team together. And so therefore, the client is starting his project on a very sound basis.

104. MR CLIFTON-BROWN: It looks, on a commercial basis the survey's tunnelling costs

are coming down. All the anecdotal evidence we're getting. How long have these very high state of the art machines been in existence?

105. MR MACKENZIE: 20 years at least.

106. MR CLIFTON-BROWN: Right, so this is nothing –

107. MR MACKENZIE: The first one we introduced, we introduced the – we personally, me and my colleagues, introduce earth pressure balance into the UK, and that machine came in, in was introduced – manufactured in Canada and brought here in 1989. And then that – because that was able to do things here in London that had never been done before, tunnelling through the Thanet sand for instance, and the very high water there. That led to a wave of interest in both the jobs, the Jubilee line, bits of the Jubilee line became possible and loads of other things became possible. That led then to a wave of interest, the Germans, well the Germans were already interested in what the Japanese were doing, we got the concept from the Japanese. And so that would be the middle nineties we were beginning to see these pretty sophisticated machines.

108. MR CLIFTON-BROWN: Are the machines getting better every time?

109. MR STRACHAN QC (DfT): Sorry, I don't want to be out of order, I just wonder if I could raise this point with Mr Clifton-Brown because you made the point about the Thames Tideway tunnel yesterday. We looked into it overnight. The only public information we have got is that the tunnelling contracts was £2.3 billion. The tendered price is £1.76 billion, which would allow for approximately 25% indirect costs for Thames to manage those contracts, which would need the budget of £2.3 billion that was originally allocated. But it may be we're not – we don't have all the information, but so far as we are aware, the tunnelling contracts have been priced and coming in at within the budget that was always predicted, i.e. the £2.3 billion. The tunnelling contracts being cheaper but with the direct costs having to be added in on top. But if there is other information which we need to look at we are happy to do that.

110. CHAIR: Mr Burton.

111. MR BURTON: Sorry sir, no I think I had hoped the Committee, had they had any further questions for Mr Mackenzie would have asked him.

112. SIR PETER BOTTOMLEY: I think it was half-mentioned but I don't think we all got the significance; I think you said that you recommend the promoters shouldn't aim for seven days, they should aim for five day a week working,

113. MR BURTON: Yes.

114. SIR PETER BOTTOMLEY: It wasn't just a point; it was a specific point that if you were advising on this project you would say five days is a much safer way of doing it than seven.

115. MR MACKENZIE: Yes. But the five days would be on three eight hours.

116. SIR PETER BOTTOMLEY: Yes, I understand that but the significance, I don't think we got first time around so thank you for confirming that.

117. MR MACKENZIE: You maintain an iron grip on the job.

118. SIR PETER BOTTOMLEY: I understand.

119. MR BURTON: And one follow up question to that, Mr Mackenzie, were the Promoter to find itself on five day working, slipping behind schedule, could it, because I don't understand now, could it switch for a period to seven day working, to bring itself back on track?

120. MR MACKENZIE: Yes. One of the points, just to – one final point, I am not sure whether everybody has taken any notes; these are long tunnels and therefore the machines would require refurbishing from time to time. The provision of shafts by the client is vitally important.

121. SIR PETER BOTTOMLEY: The shafts and you also said the intervention gap could be used for refurbishing the machines.

122. MR MACKENZIE: Yes, absolutely, you've got it.

123. MR CLIFTON-BROWN: On what you've just said, the length of tunnel makes no difference to the daily rate.

124. MR MACKENZIE: No.

125. MR HENDRICK: There seems to be this machine either has been chosen not to be used by HS2, or has been overlooked from the sound of it. You're recommending this machine over and above what HS2 are likely to use that.

126. MR BURTON: Yes I think –

127. MR MACKENZIE: That comes down to my specific experience, we were running, granted small machines with some machines were slurry, some machines were earth pressure balance and what the client was proposing is to use a slurry machine. Now, I have no big hassle with it, but I personally prefer the earth pressure balance machines, because in my experience, they can handle just about any ground the meet. The slurry machine cannot handle all grounds. But the earth pressure balance machine can handle just about anything it meets. Also, the earth pressure balance machine doesn't need the separation plant, it puts the spoil onto a conveyor, or even in extremis, as it did in the Channel Tunnel, it can go into skips and use rolling stock. But the separation plant is quite a big issue. There's two tunnelling machines going side by side and assuming their both slurry machines, that's two, that's a huge separation plant. You're talking about a separation plant that could cover an entire football field.

128. SIR PETER BOTTOMLEY: Got that, but the argument, sorry, balancing the advantages of each type of operation applies to almost any tunnel and anything.

129. MR MACKENZIE: They're both good machines.

130. MR BURTON: And you've explained in your report there's not much difference in time.

131. MR MACKENZIE: Yes.

132. MR BURTON: Yes.

133. CHAIR: Thank you, Mr Mackenzie.

134. MR MACKENZIE: Thank you.

135. MR BURTON: Do you want to ask questions of Mr Mackenzie?

136. MR STRACHAN QC (DfT): I am going to make some comments later.

137. MR BURTON: You're going to stick to making comments.

138. MR STRACHAN QC (DfT): I hope it's apparent that we don't accept the –

139. CHAIR: No, no we accept that.

140. MR STRACHAN QC (DfT): But I don't think it's necessary.

141. MR BURTON: Just one point of clarification for the Committee, I think my learned friend Mr Strachan said that he hadn't or they didn't know Mr Mackenzie was giving evidence today. They did have our witness list on Friday, in the normal way.

142. CHAIR: Right.

143. MR BURTON: So, whilst Mr Ring is just taking his seat we are moving to fit out, if we could have the next slide please, and the Promoter has provided, as it did with Mr Mackenzie, I have just got Mr Ring up here. But I will just explain that I am going to taking the Committee to P11632 because I need Mr Ring, to previously his credentials were not opposed then and I don't propose to challenge then and I don't propose to spend any time going over that ground unless you want me to.

144. Mr Ring, obviously, with a tunnel bored one way there are different costs considerations and there are different time considerations so far as fit-out is concerned. And I think probably the most efficient way to do this is if we go, and thank you very much, to 11632, which is the – this is the Promoter's response to your document and the Committee again have had Mr Ring's report. And you've seen, in a nutshell, he says you can fit out, from both ends, as the Promoter is doing with AP4, in just shy of two years; this is what HS2 is saying about that. So, I think probably most efficient Mr Ring, if you just tackle that slide.

145. MR RING: Yes, than you. I think, as a prelude to that, the point I make in my report that, and I think it is picked up as a tunnelling, that the actual detail of the fit out system and the plant, would very much be contracted and everyone – a successful contractor comes along. At this stage of the project, just like HS2, I have to make experienced judgements on methodologies, there are different methodologies. But, in looking at the change from AP2 to AP4, and what HS2 Limited have put in, they are including now for fit out from both ends, if I read their AP4 statements correctly. They are working from AP2 and my presumption, because there is not enough detail to understand it is that the same applies for AP4, not on the

24/7, but on a normal agreed-working-hours basis. And they are looking to have fit out additional trains and plant working from the north portal as well as from the – so that's the AP4 of course, as well as on A25, southern portal site.

146. On that short extension they are certainly not looking at 24/7 working. They are presumably expecting to get as far as their original portal in the time they previously allowed for the late progress they allowed, without 24/7 working. The extra two mantles with the AP4 extension represents about a sixth of the total tunnelling opening too, so there is no reason why 24/7 working should be used. And there's five sixths of the time left for TBO to fit out without 24/7 hour working, assuming HS2's figures are correct from the north portal on a long tunnel. Because they are already fitting the first 13 performances without 24/7 working. So I do not believe that there is any justification in the statement that the long tunnel fitted out in this way would suddenly cause it to jump from normal hour working to 24/7.

147. MR BURTON: So, if on the hybrid – okay if I have understood, if on the hybrid build scheme, which proposed working only one way, or APE, you could do the 13 kilometres, just from one end, without 24/7 working. HS2 are now working on the basis, which is a change with AP4 that they are going to fit out from both ends. So you are already fitting out from both ends you can do well if not the same distances, another 13 kilometres, it's less, it's eight kilometres, obviously you shouldn't do that without 24/7 work.

148. MR RING: Absolutely.

149. MR BURTON: Okay do that's bullet one.

150. SIR PETER BOTTOMLEY: Sorry, can I just ask a question so I understand. Fitting out from one end, you do it as fast as you reasonably can make sense for safety and cost.

151. MR RING: Yes.

152. SIR PETER BOTTOMLEY: If you need to add on an extra 60% to what you're doing, how much extra time does that take?

153. MR RING: The time taken is for the slowest part of the process. And the slowest part of the process, and I'm not totally challenging HS2's rates on the base concrete, that's the slowest process. A contractor's particular plant for fitting the tracks and the other systems will work at rates far in excess of those allowed. Contractors regularly achieve 200, 300

metres per day with the actual track laying for trains. That doesn't achieve anything if you can't make that same progress with the base concrete. You just do it faster and how fast you do it depends on the contractor, the plant you already owns, how fast it can go and his time relating costs. So you would fit out that as fast as possible.

154. SIR PETER BOTTOMLEY: If a friend in a pub said, taking everything into account, you do 13 kilometres in say two years, how long does it take to do 21 kilometres. I know it's a piece of string.

155. MR RING: If you look at my evidence I am looking at the fact that the fit out is parallel so that the original concept of how long it takes was the sequence of works, not parallel work. So the first premise that it –

156. SIR PETER BOTTOMLEY: So it's the one question.

157. MR RING: Yes, sorry. But it's based on the wrong premise.

158. MR BURTON: Okay, I think you've dealt with the first bullet, I think. Sorry I didn't hear you.

159. MR CLIFTON-BROWN: What is the point it was sort of meant to be – but that'll be for – do we really need to hear all of this, can we just accept, without going into the background, what you're actually saying?

160. MR RING: I'd like to think so.

161. MR BURTON: We would like to think so, but the Promoter, the reason the Promoter has provided these bullets is because it doesn't accept it.

162. MR CLIFTON-BROWN: Well, we are a difference of opinion, we understand that. We're capable of doing that but we know your version and we know the promoters don't agree with it. Just explain each of these five points. We can read them, I've read them.

163. SIR PETER BOTTOMLEY: Oh, you disagree with each of them?

164. MR BURTON: Yes.

165. SIR PETER BOTTOMLEY: You don't need a large compound, you don't need a second induction training, you don't need a concentration of sales delivery, and you don't

have extra costs?

166. MR BURTON: I need to caveat that.

167. SIR PETER BOTTOMLEY: It might be handy if you –

168. MR BURTON: If you believe that you believe anything. But we don't agree with the first one, as I hope we have explained in a way that –

169. SIR PETER BOTTOMLEY: And you're saying it doesn't need extra hours at all?

170. MR BURTON: well, it doesn't add to the time of the programme Sir Peter, because you're – they're already fitting out from both ends.

171. SIR PETER BOTTOMLEY: But we are interested in two, one is whether the time of the programme is the only critical factors, and the second is whether there are other critical factors.

172. MR BURTON: The cost being quite a big one if not the biggest one. All the four bullets Mr Ring has something to say about them and he should. I would very much like him to say because it's important going to that.

173. SIR PETER BOTTOMLEY: What would be really, really helpful, it might be very easy, is to say how much of this he, on behalf of the neighbourhood watch for Potter Row, agree with.

174. MR RING: I was very happy to accept the acknowledgement that it can be fitted out in two years and that a pessimistic rate is 2.5 or that the rate, the theoretical rate because those show up against the figures I put in anyway.

175. SIR PETER BOTTOMLEY: Okay, we got that then. It required – would it require extra working hours?

176. MR RING: No.

177. SIR PETER BOTTOMLEY: Not at all?

178. MR RING: No.

179. SIR PETER BOTTOMLEY: You're doing more work in the same time but it doesn't require extra hours?

180. MR RING: You're doing more work in the same time because the fit out rates of the train are being very suppressed by their assumptions.

181. SIR PETER BOTTOMLEY: Well the same thing would apply to their systems as well, so in comparative term, right the next point, a larger rail system fit out –

182. MR RING: Sorry there are two trains, it doesn't matter what pace they work, the infrastructure you would need for shunting one train up each bore is the same; there is no benefit of having –

183. SIR PETER BOTTOMLEY: Large don't need a large compound. You require two trains.

184. MR RING: And HS2 have allowed for two trains anyway in their AP2. So, whatever infrastructure you need for shunting two trains in and out of the bores, you are still only having two trains.

185. SIR PETER BOTTOMLEY: High concentration materials delivery, the same place.

186. MR RING: It's adjusting time delivery, why would you need more than the same buffer?

187. SIR PETER BOTTOMLEY: Because you are taking more materials in the same place.

188. MR RING: You're taking them –

189. SIR PETER BOTTOMLEY: You're taking them from both ends, and we're now going to do it from one end.

190. MR RING: You're taking the material in for a longer duration but you're not taking in – you're not stock-piling material for the whole job, you only need to feed one train at the rate it works. So, one would prune to allow for periods of catch-up and potential 24/7 working.

191. SIR PETER BOTTOMLEY: The last point is the, and it's the second page, do you think there are no additional costs for the temporary infrastructure fit out?

192. MR RING: Not at all, because there is no more temporary infrastructure.

193. SIR PETER BOTTOMLEY: So it's a flat contradiction of what they're saying.

194. MR RING: HS2 have allowed for fitting out trains from both ends, I am saying that the rates train works they can fit the whole lot out in the allowed time, from one end, there's less infrastructure. And you would not need to buy two more trains.

195. SIR PETER BOTTOMLEY: That's something that is probably sufficient for us.

196. MR HENDRICK: Yes, I think that's quite categorical, unless anyone from HS2 wanted to address those points, specifically because they are in direct contradiction to HS2's response.

197. MR STRACHAN QC (DfT): We certainly can make some, but I just question the value of it in this respect; what we were seeking to do is accept you could accelerate fit out and we were trying to be helpful, so that we could recognise that that was not an insurmountable problem. Our other – the main part of our case was that TBO created a time problem based on our tunnelling rates, which debate we have just had. If you accelerate the tunnelling rates, if we were wrong about that, and you accelerated the tunnelling rates, in some respects the fit out doesn't become so critical.

198. If you were to accelerate fit out all we were identifying here is it would have a cost implication so far as we were concerned, and, for example, you see too specialised high rate concrete production trains, both serviced from the south portal. What that is doing is the concrete has to go in for the base concrete. But because you're tunnelling from one end, the opportunity, you can't do that two trains from either end, two highly specialised trains, more expensive than the ones we are anticipating, to put in the concrete for the 23 kilometre length from the southern end, to enable then to carry out the rail system's fit out once that concrete's gone in. And that is not a cost we have had in our scheme, would be a cost of their scheme. In addition to the – what we think are perfectly acceptable assumptions as to additional costs of accelerating a programme in the way that we've described.

199. But rather than get into a long debate about it, it doesn't seem to me it's particularly critical for accepting that you can accelerate the fit out if you had to. As it happens when we come to costing the TBO proposal, I don't think we've actually added in the rail system fit out

costs as an additional item. So, when we get to the headline figures there may be dispute about that but we actually haven't added in any of the costs for that yet. So, you're not – it's not necessarily going to assist you at this stage, to resolve that debate.

200. MR HENDRICK: So you're saying that rate at which it rolls is a major criteria?

201. MR STRACHAN QC (DfT): Yes.

202. MR HENDRICK: That almost is academic because you can do that at whatever rate –

203. MR STRACHAN QC (DfT): You can accelerate. We say it would have a cost but that's where the debate lies, but we haven't actually given you a cost for that because we hasten to add, we only this proposal 10 days ago.

204. MR RING: If I may just add to what I said, it goes back to my first point that the actual methodology the actual plant will depend on the final decision of the traffic fit out systems, so the real cost will only come out when the contractors appointment and would depend on the plant and experience the successful contractor has.

205. SIR PETER BOTTOMLEY: We understand that.

206. MR RING: And I don't disagree with the argument if you use one method it will be different costs, really that the lower costs by separating the base concreting from the track fit out.

207. MR BURTON: As you've heard, Mr Ring, essentially they accept, you said, 23-something months fit out, and they're saying two years, okay. Fine, do we need Ring to go to your slide number 81 in our pack, A1657(81)? I mean we hope, well I think – we hope it is fairly self-explanatory.

208. SIR PETER BOTTOMLEY: It is.

209. MR BURTON: Right okay, unless the Committee have any questions for Mr Ring, further questions?

210. MR HENDRICK: As far as HS2 and him are more or less at one as far as the fit out is concerned.

211. MR BURTON: The timings, Mr Hendrick.

212. MR HENDRICK: The timing.

213. MR BURTON: Absolutely.

214. MR HENDRICK: Okay.

215. MR BURTON: And you've seen, from Mr Ring's report, his two years – he's actually said he's allowed some generous times, even to get to his two years actually, but you've read it, well, yes. You have his report don't you, yes, so that's very helpful. I am going to call Mr Griffiths back now. Just briefly and could we turn to 82 please, to the next one. And just Mr Griffiths, bearing in mind the agreement that now exists regarding the timing the fit out could be achieved in, two years, what crude average rate for tunnel boring would need to be achieved, are you able to tell the Committee?

216. MR GRIFFITHS: Well, I think you'll see this in column D, and it's 89 metres per week would need to be achieved in boring to go with that two years to make the timescale. We show you two other cases, but I don't think they're relevant now, for the two years.

217. MR BURTON: So, Mr Mackenzie says it's actually you can expect from 120, HS2 are saying 80, and given the agreement that's what will be required. Right thank you, sorry Mr Griffiths, you go.

218. MR GRIFFITHS: We'll go to the next slide please. You've seen this before, we've established, we're going on benchmarks, they're going on bottom up, we're £24 million, they're £49 million rate, it's a difference. You can go to the next slide please; what we have here is – this is all REPA work, it's not HS2 Limited work. What we have sort to do here to explain to you what can be done within the timescale, that's not an issue, but how much extra is it going to cost versus AP4. On the REPA assumptions, including what I've just said about the tunnel costs, we get to nearly £49 million extra. We also looked at how we felt HS2 would look at it based on their position in July, when we looked at the anomalies.

219. So, we adjusted the tunnel cost to their position in July and that is by far and away the biggest difference that we have with them.

220. MR BURTON: So that is their £44 million against our Potter Row £24 million yes?

221. MR GRIFFITHS: That is their £44 million, which is their position.

222. SIR PETER BOTTOMLEY: Is that £44 million as they do it, or £44 million as they say you would do it, or is it not the difference?

223. MR GRIFFITHS: It's £44 million, which in July they were saying that is the cost per kilometre of incremental. Mr Smart reiterated many times, and I think on 16 September Mr Strachan, again reiterated that was their figure.

224. MR STRACHAN QC (DfT): Just to say, I have said it was that figure and I reiterated that again yesterday. I said we calculate our costs on the bottom up basis; it's not appropriate to look at a benchmark figure, but then we went on to look at what our figures would be and look, compare them against the benchmark and we said they were not too dissimilar. But I think we've been over this ground several times.

225. MR GRIFFITHS: Yes I think we have, but I'm sure I can find the reference, but basically, you asked Mr Smart whether it was £44 million.

226. MR STRACHAN QC (DfT): 44, 53 or £55,000, is it within the range of figures you'd expect is the quotation I gave.

227. MR GRIFFITHS: You're talking about a different reference. I will have one more go and then I'll stop. You actually said it's 44, Mr Smart's figure, his experience and more importantly, it's the figure our engineers came up with. But I am not, in any way, claiming that 2.13 is the current HS2 Limited figure.

228. MR BURTON: We've got that on P11635.

229. MR GRIFFITHS: We have, although that is not on the same basis, because that's not versus AP4, so we don't know how much more they think it would be.

230. MR BURTON: That is versus the hybrid scheme?

231. MR GRIFFITHS: Yes. So, if we could go back to the previous slide, that is our view of what is between us, they have a different view.

232. MR BURTON: If we could go back to A1657(84) please.

233. MR GRIFFITHS: I would like to make a couple of additional points briefly; one I think everyone – I think I've heard two or three times today that when it goes to bid it's a fair

chance that the cost will come down. And I think there's a question there on costs, not necessarily schedule but take the point about previous, but on costs, should decisions be made on a very prudent figure or what you think you will actually be going forward with. I also looked up the Thames Tideway overnight. I couldn't find the information Mr Strachan has got, but what I found was a press release by Ofwat, who said how pleased they were that by virtue of the bidding process, the customer cost for the tunnelling scheme has come down from £80 to £25.

234. MR CLIFTON-BROWN: That is correct. That is correct.

235. MR GRIFFITHS: I don't know what that minimum lasts per year, or what it is, but that's a huge reduction.

236. MR CLIFTON-BROWN: I think should we just clarify that, because within those two figures, as I understand it, part of it is reduction in tunnelling costs, and part of it is written reduction in finance costs, so it isn't all reduction of tunnelling costs.

237. MR GRIFFITHS: Indeed, and I can't get to more detail, but I think what it's showing is that whatever HS2 Limited come up with, and I won't pretend in know what they are going to come up with. It is the owners cost estimate with everyone looking at them and what they're going to do and what they are going to do if they go over. When the bidding process comes in it is very likely that there will be a substantial reduction.

238. The only other thing that I would say, and I am not going to say much more on costs, but I would like very briefly, I think I can dare to do this, to mention again what I was talking about this morning, in terms of those embankments. There is a long way to go on this project, in terms of sorting out details in relation to safety. And Professor Woodward, in 2011, from Heriot-Watt, is a recognised expert, warns about the risks of the 360 kilometre per hour train, and I won't read what he said, because it's slightly emotive, but there is a real risk of derailment if things are not got right. So, in this situation, with –

239. SIR PETER BOTTOMLEY: Because of instability of the land?

240. MR GRIFFITHS: Because of the instability of the land. Well, it's the instability of the land and on ballast track; it's the pull up of the ballast. You know, nothing's running more than 320 and there's a problem with the ballast, 360, that's a 44% increase in the

aerodynamics around that. And if ballast gets on the track you've got sort of, it's picked up by the wheels, the train takes off, it crunches into the track and that, plus the instability are two reasons to have slab track. But it's all about safety.

241. In a tunnel, Colin has mentioned this to you twice; if you go on through the Channel Tunnel, apparently you can put a pound coin on the table edge up, and when you get through to the other end it's still edge up. If you try and do that anywhere else on that route, on land it falls over, and at 360, there are going to be more vibrations, there's going to be more instability, there's going to be risks. And in the Chinese situation you know, they reach the conclusion that they were not going to run their trains at more than 300. So, it's just something else that –

242. SIR PETER BOTTOMLEY: Because they are using ballast?

243. MR GRIFFITHS: I don't think they are. I think they are using slab track, and the reason I say that, all their research is based on non-ballasted.

244. MR HENDRICK: Turning to an example in discussion yesterday, the accident in 2011, in Wenzhou, he accepted there was a signalling problem. It was due to two trains colliding, both of which were less than 65 miles an hour. The decision to slow down those trains was taken subsequently as a general precaution. It wasn't attributed necessarily to the use of track or anything else.

245. MR GRIFFITHS: No, you're absolutely right. I think I said yesterday that was a signalling problem. The reason that they have reduced, and it's all in the papers and in fact I've got an FOI from HS2 Limited and I asked them what they knew about the Chinese problem, would it impact HS2 and what were they doing about it. And they just responded: 'We're looking into it'. And they actually gave me some of the Chinese papers. This is a real issue. It's not been resolved as yet. I'm not suggesting for one minute they will not find a safe solution to it before they get to the end of this thing and I don't expect the process, that we leave in the UK, a train that wasn't safe. But, in terms of risk, and risk to cost and risk to engineering, the tunnel is a far superior option.

246. MR CLIFTON-BROWN: It sounds like you're arguing for the shortest possible tunnel.

247. MR GRIFFITHS: No, I'm not. I'm not. Sorry. Because the tunnel is slab track, in a

huge piece of concrete that is absolutely stable. That's not going anywhere. The problem is soft ground and embankments.

248. MR HENDRICK: I think to use the Chinese example, it's not been definitively proven, and the Chinese are still open-minded about it, that it was anything to do with the track. It was a signalling fault.

249. MR GRIFFITHS: On that particular accident, absolutely correct.

250. MR HENDRICK: And that was the only major accident we've had on the network with the newer HSR system.

251. MR GRIFFITHS: Yes.

252. MR HENDRICK: We've had more accidents than them on our network.

253. MR GRIFFITHS: Yes, but the reason for their speed reduction was the Rayleigh waves, ground stability causing fatigue cracks in the rail system. And they brought the speed down ahead of a major accident and they launched a huge research project. And that's still going on. Okay? And the French haven't gone first on the 320. They haven't gone first on the 320. We're coming up and saying, we think we can do 360, and do it as fast as we are.

254. MR HENDRICK: So, what you're trying to say is that a deep bore tunnel becomes safer.

255. MR GRIFFITHS: It becomes absolutely a lot more safer, a lot smoother ride, a lot better. I've said that.

256. MR BURTON: Thank you, Mr Griffiths. That's very helpful. So, unless the Committee have further questions for Mr Griffiths, we have, we hope, established that TBO can be done in the time. I don't need to take you through the benefits because they're obvious and you've been through them umpteen times. The question then, or one of the questions is, knowing the benefits, knowing I suppose where we are on costs and where HS2 are on cost, we say it's another £49 million. They say, I think, once you, you've got their sheet, they say it's more like half of the 500, or whatever, the 459 and then you've got to take off 84. They haven't allowed for that. But, those sorts of things there. The question, and this is the second solution I said we were going to bring evidence to you on today.

257. If we turn to the next slide, please? Thank you very much. Is there contrary to the position that the Promoter has taken to date, and that's in fact on the following slide. Could we just look at A86? The Promoter has told you there just isn't a robust way, there's no robust technique, to quantify non-market effects at local level. In particular, the one that everyone is very focussed on here – landscape impacts. And we're here to tell you that's wrong and it's actually contrary to the Government's own approach through Mr Provins, who will, if we go back one slide, go back to 85, please, I hope will introduce himself and explain to you what the position really is.

258. MR PROVINS: Thank you. Good afternoon everybody. I'm an economist. I'm a Director of an economic and environmental consultancy, eftec, that's a UK based consultancy which specialises in providing economic analysis to support environmental policy and management. For example, we have worked extensively with Defra and the Natural Capital Committee on developing the Natural Capital agenda and helping to better integrate the understanding of the natural environment and the benefits it provides in to decision-making. This includes developing evidence for the Committee's 25-year programme for restoring England's natural capital and also methodologies for natural capital accounting.

259. My work has mainly focussed on the evaluations for environmental and cultural goods and services and used this evidence in socio-economic analyses, including impact assessments, cost benefit analysis, policy and project decision-making. I've worked on about 200 consultancy projects and reports. And within that, I have led a number of projects to product guidance documents for UK Government Departments and Agencies, providing environmental impacts in project and policy appraisals. This includes some current work for Defra, which is entitled 'The Environmental Value Look-up Tool'. This is the most recent development in environmental appraisal guidance for environmental departments. The guidance is to complement existing guidance with entry level assessments that can signal where more detailed analysis of environmental impacts are needed to inform decision-making.

260. Also of note is the work I did with Defra in 2010 to produce their value transfer guidelines. These support a supplementary Green Book guidance entitled 'Accounting for Environmental Impacts and Policy Appraisal'. That is an HM Treasury document from 2012. These guidelines are a key reference, if anyone needs any evaluation evidence for policy and project appraisals. And that would include the approach which is being used in relation to

valuing landscape impacts of HS2. And just to, finally, to finish off on this slide, I've undertaken numerous primary evaluation studies using normal market evaluation techniques; probably 30 or so from 2003 onwards. That includes work for various water companies in the UK. It includes studies on water quality, and includes studies on bathing water policy, local environmental amenity, benefits of regeneration for DCRG, the valuation of landscaping packs for DfT and also the Thames Tideway Tunnel.

261. If I give a summary of where I wish to get to today my three concluding points will be to say that the evidence that is currently available in relation to the benefits of an extended tunnel option for the HS2 in the Chilterns Area of Outstanding Natural Beauty is not sufficient to inform decision-making. It has a number of fundamental limitations. It is possible to improve that evidence by undertaking a primary evaluation study. And that can build on previous research which has been undertaken for the DfT. And the critical element in all of this is quantifying the benefit to the population who actually cares about a tunnel option in the AONB. This is the missing information in the current assessment of the landscape impact. This is what needs to be addressed in order to make an informed decision about whether the cost of the tunnel, or the additional cost of a tunnel, is outweighed by the benefits or not. Next slide, please.

262. I've been asked to contribute today here on the valuation of landscape impacts and project appraisals and the adequacy of that evidence in relation to HS2 for weighing up costs and benefits of extended tunnel options for Chilterns. A particular point I was asked to address and comment on was a statement which has been attribute to the DfT and is quoted on the slide. And which reads: 'DfT does not believe that a sufficiently robust technique exists to quantify non-market effects at the local level, in particular, the landscape impacts of development. ' In short, this is a statement I would not agree with. And added to that, it's somewhat surprising that it is actually attributed to the DfT in the first place as it is contrary to what is set out in the Green Book, the HM Treasury Green Book and related documents. Could I have the next slide please? So, the key references being in relation to the Green Book are the Supplementary Green Book Guidance, 'Accounting for Environmental Impacts and Policy Appraisal'. That is the HM Treasury Defra document I just mentioned, as well as Supplementary Green Book Guidance, which is entitled 'Economic Valuations Stated Preference Techniques,' that is a DfT and DTLR document from 2002, which was developed for DfT by eftec with leading academic practitioners.

263. These documents are available to be read online. But, if I summarise what they say, it is essentially that the techniques that are available to quantify non-market effects are firstly consistent with core method economic appraisal, that is cost benefit analysis, and through application is fundamental to ensuring that the project and policy appraisals goes beyond conventional financial assessments and account for broader social, environmental and economic effects. So, as a point of principle, the techniques of valuing on market effects are methodology robust and these techniques they provide measures and changes of social welfare which are consistent with the Green Book approach. And importantly we have protocols available to us for examining the data and result from these studies which allow us to test and assess their validity. That's based on both expectations from economic theory and previous research, previous empirical studies. So, to be clear, and contrary to what the statement is, and the evidence to be presented to this Committee, there are robust techniques for valuing non-market effects, including for landscaping impacts.

264. MR BURTON: And, from the sound of it, the Government is suggesting they be used?

265. MR PROVINS: Yes.

266. MR BURTON: Right.

267. MR PROVINS: So, even if we reflect on the second element of the statement, which is about the robustness of these techniques in relation to local level effects, it still doesn't really fits with the way in which non-market valuation methods are applied. And to be clear on this point, these techniques are designed to assess non-market effects which are well defined in terms of locality and spatial extents. This has always been the case in non-market evaluation techniques. There has also been a particular focus on this spatial environmental evaluation in the past 10 years or so, particularly if you look at the analysis that underpins the UK National Ecosystem Assessment 2011 and the follow on phase of work in 2014. So, given this I think we can set aside the question of robustness of techniques. They are recognised in the relevant guidance, which includes that which has been produced by the DfT, they're use is advocated for example in the Natural Environment White Paper from 2011 and also in the outputs of the Natural Capital Committee and there are plenty of examples where non-market evaluation methods have impacted to policies and project appraisals. If we take a transport example as a case, the evaluation of noise impacts in appraisals is based on a non-market evaluation technique. So, rather what I think the DfT statement is really driving at, and I think this is the

key issue for the previous representations that have been made to this Committee, is the adequacy of the assessments in relation to non-market effects such as been carried out for HS2 and in particular the landscape impacts and what the assessment implies for a balance of cost and benefits in relation to the tunnel and mitigation options for the Chilterns. The point here is that the HS2 assessment has not used primary research methods. It relies on an approach called value transfer, and the DfT's adaptation of the valuation methods that are summarised in the DCLG document in 2001, 'Valuing the External Benefits of Undeveloped Land'. Next slide, please?

268. Perhaps then if I say a few words about this value transfer approach. And then come on to HS2 assessments. The available guidance which is mainly provided by Defra does advocate the use of valuations through value transfer 'where it is proportionate and appropriate to do so'. Value transfer is simply a case where we use the regularly available evidence, as simple as results from a previous study to value environmental impacts in a new appraisal setting. So, in that sense we can call it using secondary evidence as opposed to primary research. As we don't have time or resources

269. MR PROVINS: HS2 assessment available guidance does evaluate value transfer where it's proportionate and results from

270. MR CLIFTON-BROWN: Mr Provins, can you point to this Committee to any big public projects, road projects or rail projects such as HS1, where these techniques have been used?

271. MR PROVINS: The business case which is published in October 2015 for the Thames Tideway Tunnel. The assessment of benefits for that is based on a stated preference study and non-market valuation technique.

272. MR HENDRICK: Is it that new, the methodology you're talking about?

273. MR PROVINS: No. No. The methodologies we're talking about here are general methodology in terms of non-market valuation.

274. SIR PETER BOTTOMLEY: The methodologies are old. The applications are new.

275. MR PROVINS: The applications have been going since the 1990s, 2000.

276. MR HENDRICK: Okay. So, is the application in this area?

277. MR PROVINS: The application in this area is explored in 2006, 2008, the DfT research project which I led.

278. MR HENDRICK: When did it become established?

279. MR PROVINS: Established in what sense?

280. MR HENDRICK: Well, you've mentioned that there was a recent project this year in 2015 that used this. Has there been anything prior to this?

281. MR PROVINS: Sorry. Yes. Apologies. The Tideway research was actually done in 2006 and there was a previous study done in 2002 for that, so, in that sense, in that policy area, that's been used for getting on for almost fifteen years, I guess.

282. MR HENDRICK: But, on a major infrastructure project?

283. MR PROVINS: On a major infrastructure project, outside of the Thames Tideway Tunnel?

284. MR HENDRICK: Yes.

285. MR PROVINS: You would have to look in the water sector. So, there's a lot of the business plans which are produced by water companies and are sent off for every four or five years, they're supported by the use of non-market valuation techniques which look at the benefits in terms of improvements in some water and waste services because these aren't market goods, they're non-market goods, which are the regulated market there, so, the prices that customers pay for services do not reflect their preferences, their values for improvements such as reducing sewer flooding, reducing pollution to rivers, improving things such as tap water quality.

286. MR HENDRICK: Okay.

287. MR PROVINS: So, the process, the regulatory framework which Ofwat has set up in the water sector takes account of non-market effects and uses these methods through primary research to quantify these things.

288. MR HENDRICK: Okay. Thanks.

289. MR PROVINS: I was talking about value transfer and this is a secondary use of evidence available. It's not doing primary research. It's making use of evidence that's already in use and the value transfer is useful where we do not have time or resources to carry out primary valuation research in every appraisal case and sometimes it may provide us with an adequate account of environmental impacts. It's the proportion that are worth it, if you like, which is reflected in the Treasury Green Book.

290. But, what really matters is what value transfer results tell us about the potential size of the environmental impact in relation to other costs and benefits and appraisals. Specifically, what their comparative order of magnitude is and if we look at the appraisal overall, could the assessment of the environmental impacts influence the decisions that are to be made. So, the value transfer approach which has been used in the case of the HS2 assessment can provide a signal where an improved account of environmental impacts is needed in monetary terms. And this is the essence of the Defra 2010 value transfer Guidelines and the understanding that value transfer can be a starting point for an appraisal, but it may lead to conclusions that will need to move on to a primary evaluation study in order to have more confidence we have appropriately accounted for environmental impacts. And this was because of a fundamental challenge with value transfer is the inherent degree of uncertainty introduces, in terms of the assumptions we need to make, when using secondary evaluation evidence. We have quite limited control for a lot of factors which we think are important, which are important, sorry, for influencing environmental values. And that's in relation to the extent and the level of impact, the characteristics of the population that are affected by the impact, and the availability and quality of the substitutes that might be available for the impacted environmental resource. So, that's in very general terms.

291. I move on to these factors shortly in terms of HS2. But the outcome, the conclusion from that is really good faith in primary research because you control for these factors; it makes the research more robust; and there will be cases in terms of the size of the impacts, the size of schemes where this will be more effective evidence produced from it. So, I just wanted to move on to the DfT method. I appreciate you've heard about this in previous representations. The DfT method is based on a DCLG study, 'Valuing the External Benefits of Undeveloped Land'. That was a study undertaken by eftec, who were then OBPM. It was a literature review that compiled evaluations from approximately 50 UK and international studies published between 1984 and 2001. It doesn't present a methodology for valuing

impacts. It simply summarises a range of values in a common unit, which was pounds per hectare. And the DfT uses these values in its methodology for monetising landscape impacts. The main focus of that DCLG study was to evidence the non-market benefits of urban fringe land, so that's recreation, community, landscape and wildlife benefits. And that's a land use planning context. It's concerned with land use change and the complete loss of those benefits due to discrete parcels of land being converted to housing. The DfT use of these values, adapts those pound per hectare values, to assess the impacts associated with a transport footprint. This is appreciably a different context from the original DCLG study. DfT's trying to measure some continual impairment to the amenity of the value of the environments rather than the loss of the benefits. In terms of the limitations of the DCLG valuations, these stem from the value transfer approach that's been used. The limitations mean that it might be a useful starting point for gauging the possible value of a landscape impact of a transport scheme, but it's unlikely to be adequate if that impact is significant. And is going to be central to the decisions that need to be made such as whether an extended tunnel should be constructed.

292. The first limitation is the age of the DCLG value evidence. This is fairly critical. The majority of the studies date from before 1995. That's almost two thirds of the values in there. And they are at least 20 years old. We recently were recommended a cut off at around 10 to 15 years for a value transfer. And this was in relation to the work we've done for firm and Defra for the Thames Tideway Tunnel. And that's based on looking at academic research in this area and what that has concluded.

293. The second limitation is the extent to which the DCLG values and maps the impacts of HS2. The best way to understand what you have in relation to HS2 is a kind of indicative idea of the potential impact. Note that just one study, the DCLG research, covered the impact of transports, and that was in relation to a road through ancient woodland. There is nothing in those source studies which were concerned with rail and its impact on the landscape.

294. The third is in the DCLG values there is no account for the significance or importance of the landscape that is impacted. So, this is recognised by the Area of Outstanding Natural Beauty designation you have for the Chilterns. The perspective we would take for non-market valuation is that this is judged to be a high quality landscape, and is of cultural significance as an environmental resource; has few substitutes and is hence relatively scarce. The DCLG values do have some source studies in there which were concerned with National

Parks. There is no way you could draw out that evidence to say what premium would be associated with culturally significant landscapes. And that's largely by design, as that DCLG study was concerned for urban fringe land.

295. Fourth. And this is the last point on the limitations; there is no account of the extent of the impact to population. So, the pound per hectare values are estimated from a range of source studies, which includes studies into local residents, visitors to specific sites on national populations, or on valuations of pride in a setting such as HS2. It's not really clear as to what assumption's been made as to who's values are being accounted for in the appraisal or the benefits. Robust valuation is as much about understanding the scope of the affected population, so whose benefits counts, as it is about what the actual value is. The value can be £20 per household per year, but is at 10,000 or 100,000 households that are impacted by the loss of amenity. This is a key weakness when you use pound per hectare values in an appraisal without controlling for the affected population.

296. So, what you can take from these limitations is two things. First, the DCLG evidence is dated and older than we should really be comfortable using.

297. SIR PETER BOTTOMLEY: Just aid us. How many more pages are there?

298. MR PROVINS: I'm just almost done with DCLG and then I'll come on to the solution if you like.

299. MR CLIFTON-BROWN: We can read these slides.

300. MR PROVINS: You can read these slides. Yes.

301. MR CLIFTON-BROWN: Could you not come to your conclusions quite more quickly?

302. MR PROVINS: I will do. So, if I just finish on the points of the limitations of what we have with the DCLG values and the current assessment for HS2. The DCLG evidence is dated and older than we should really be comfortable using. And, second, it has limited impact or limited map into the impacts and interests so you can only take it and interpret it as being indicative. And this is the disappointing aspect of the HS2 assessment. From what I've seen and including the representations that you've had at this Committee, you've had sympathy with DfT for trying to do their best with the limited evidence that is available but it

needs to recognise that the assessment is not sufficient to inform decisions about the impact of the high speed rail scheme in the designated landscape. And to understand this you only have to reflect on how other impacts have been assessed. So, if want to establish time travel savings of HS2 you need demand forecasts, you need passenger numbers. Similarly, if you want to understand who is impacted by noise, you need modelling to work out which households are affected. But when you put the landscape impacts there is no understanding of who is affected. Do only locals care about the Chilterns? Is it Southeast of England which cares? We simply do not know because this has not been quantified, so how can you know if the costs of a tunnel are outweighed by the benefits if we do not know who the beneficiaries are? Second, how credible would it be if you had demand forecasts for HS2 which were based on evidence which is over 20 years old? That's essentially what the case you have here, the landscaping impacts. And this doesn't really require a background in non-market valuation methods. It's simply understanding what an economic appraisal needs to do in order to provide sufficient evidence for the decision at hand. That's the failure here. So, that's my assessment on the impacts.

303. MR BURTON: So, that's why what the Promoter's provided just doesn't give the Committee enough information.

304. MR PROVINS: Yes. So, shall we move onto the next slide? So, what can be done? So, the way to refine these systems, if you are minded to understand whether the benefits and the costs and the balance of those extended tunnels are, is to look at this through a primary valuation study. If you change the assumptions and methods that underpin the DfT's methodology, you will not change the limitations which come from using the DCLG values. So, you can spend time also debating what the primary research method should be, but, actually, this was addressed by research for the DfT in 2006 to 2008. And the project was entitled 'Value Transport Impact on the Natural Landscape'. That was undertaken by a consortium led by eftec. I was the project manager for that study. And that was commissioned by DfT to develop monetary values to put into their appraisal process. It was a three phase project.

305. Phase 1 was the initial research and scoping. So, looking at 70 types of transport schemes, looking at the landscape character assessment, working out the scope of the research in there. Phase 2 developed and tested a stated preference questionnaire, that's a non-market valuation technique, for valuing the landscape impacts of transport schemes. And that also

included pilot testing and one of the schemes included in the pilot testing was a high speed rail line, but that was not in an Area of Outstanding Natural Beauty. Stage three would have been the full scale implementation analysis and this wasn't taken forward by DfT. In part, it was felt that there wasn't really a strong demand for monetary valuation evidence for landscape impacts as most of the scheme appraisals DfT expected to develop or review were concerned with existing infrastructure. So, that would be road widening, rather than new routes. And coupled with this was the cost of course of implementation and we're still looking at a large combination of transport types and landscape types, so it is a fairly costly piece of research to take forward. And there was an expectation I think that if you did have one off schemes with significant impacts then primary valuation research could be commissioned to actually assess those directly.

306. MR BURTON: If I just stop you there, sorry, Mr Provins. And return to Mr Hendrick's question, asking when is your primary valuation research method been applied to major infrastructure projects. And you discussed the Thames Tideway Tunnel, as I understood what you've just said here is that the DfT did actually ask you to do a dry run or research work that did include amongst it a pilot high speed rail scheme?

307. MR PROVINS: Yes. The high speed rail scheme, we did an initial system in transport scheme. So, we started off with about 70 types of transport schemes which would end up going through DfT's appraisal process and we narrowed that down to the ones which we felt had potential impacts on landscape and would be most frequently appearing in the future also. And that was based on looking at the NATA, the new appraisal approach to transport, which was running around 2006.

308. MR BURTON: Sorry, back to.

309. MR PROVINS: Okay. I think it's the next slide please. Yes. Okay. So, whilst the study for DfT didn't complete it doesn't mean that you have to start from scratch here. It is possible to produce a primary valuation study which will give you more confidence in the evidence available for assessing the extended tunnel option. That's a stated preference study, as I said. That's a survey questionnaire based approach. And the DfT research had an awful lot of design and testing that went into it. So, this could be readily adapted with the specifics of HS2 and the tunnel options for the Chilterns and elicit evaluations in relation to the general public's values for avoiding the landscape impact which you'd get from a tunnel. It's worth

mentioning to you that the research team included a number of leading academics in the area including people who have been members of the Natural Capital Committee as well as prominent transport and landscape appraisal experts.

310. There is a question of what's feasible in terms of primary research, and we were asked to provide a proposal to REPA for a study which would take about four or five months to plan, pilot and implement. This was to fit with the expected timeline for being able to report back to the Committee. The timeline is feasible, but I do wish to allow more time. The critical aspect for getting the study right is the sampling procedure and assuring that it's adequately represents the impacted population, so the beneficiaries, this key piece of missing information which I've highlighted. So, that really means controlling for the distance of survey respondents from the Chilterns and capturing how their valuations might decay in terms of value as you get further away from the Chilterns. I can elaborate on that if that's useful?

311. MR BURTON: Okay. And you've said you can do the work in three to six months. I think the Committee actually have your proposal within their papers from us. Can I just check I have got this, please, Mr Provins? You've explained that if the Committee do want to know how the public value the benefits of a long tunnel through the Chilterns over the Promoter's present proposal, there's a way to do it.

312. MR PROVINS: Yes.

313. MR BURTON: You've explained that way is in fact in accordance with Government's own best practice?

314. MR PROVINS: Yes.

315. MR BURTON: And you've given the Committee a time period for that work, which obviously requires asking folk questions?

316. MR PROVINS: Yes. And that really brings me to my conclusion which is to say the evidence that you have currently has some fundamental limitations and that's not sufficient to be able to make assessments on whether the costs of an extended tunnel are worthwhile. You can improve that evidence with a primary valuation study. The proposal which we've produced has been aligned to the scale of resources and time that are expected to be available.

And the critical element in all of this is really answering what is the beneficiary population. That has not been looked at. That is a big gap. It's not how you'd assess other types of impacts in an appraisal.

317. SIR PETER BOTTOMLEY: Can I ask one question before Mr Strachan? Do you know the Oakhampton bypass?

318. MR PROVINS: In West Sussex? Or East Sussex?

319. SIR PETER BOTTOMLEY: No. Down in the southwest.

320. MR PROVINS: Okay. No, I'm not familiar too much.

321. SIR PETER BOTTOMLEY: Because there the issue's, assuming Oakhampton had to have a bypass, and it took about hour and a half to drive through it without one, whether it should go to the south, just inside the National Park, along an old railway line or whether it should be built on a viaduct to the north. And all the public comment apparently was: 'You can't build in a National Park. ' Therefore stick it on this viaduct, which will be visible for everyone from the National Park, as it happens, and would, in most people's view, not have been sensible. And I suspect that your form of analysis would have everyone saying not building in a National Park's absolutely vital. Do something which would be wrong. And from the day it opened, nobody ever said it was the wrong decision. How does your approach cope with that kind of possibility?

322. MR PROVINS: I mean this came up in the research study for the DfT. So, as I said, we looked at a range of transport types. We looked at both new routes and working in existing routes or existing transport corridors. And key feedback came back from the testing we did with the general public so that was focus groups and one to one interviews and these things was really that if you put transport schemes into existing transport corridors, then they don't really feel as much of an impact because the infrastructure is already there. So, in your case, if you're putting a road alongside an existing transport infrastructure then.

323. SIR PETER BOTTOMLEY: A rather disused railway line, as it happened.

324. MR PROVINS: Okay. So, it may be that the strength of preference wouldn't be there. But, I mean, the point of these methods is they're quite democratic in the sense that you set up the scenario which says, well, here's Option A and Option A might be to have a surface

route. And Option B would have the tunnel. And then you provide the balance information and you let the people say, well, actually, I prefer A or B. That's all there really is to it. You just raise a simulated choice situation for them in order to provide you feedback.

325. SIR PETER BOTTOMLEY: And if you were doing the same thing for say Stonehenge, where the road comes into the main road, but, some people spend a fortune to various roads so no one going down there can see Stonehenge. Which most people want to see if they're not –

326. MR PROVINS: The point with Stonehenge coming, the point is we're focusing on one aspect of an appraisal. An appraisal has to take into account all the elements that are impacts. So, the landscape impact is one thing you want to quantify. You also have the journey ambience and the journey quality and that's another thing which would be impacted by Stonehenge tunnels. So, if you're doing your appraisal correctly, you should be both accounting for the user experience, in terms of the transport scheme, and the wider environmental impacts. The point about this being about, it's not actually about non-market evaluations, it's about understanding what appraisal evidence has to be or has to produce in order to inform a decision.

327. SIR PETER BOTTOMLEY: I did similar things about 30 years ago on road casualty evaluations where some, quite easy to calculate the cost of hospital treatment or burials, the loss of, disability, and it turned out that a life was worth a lot. And then I had to persuade people to wear cycle helmets or use their seatbelts, which cost nothing.

328. MR PROVINS: Yes, that's a question of risk, really, in terms of how people understand whether something catastrophic would happen to them or not. It doesn't change necessarily the appraisal. The appraisal needs to account for the actual risk of someone being injured.

329. MR BURTON: Yes. But, just picking up some pieces Colin said. It sounded like some of your answers would lead us back to correctly identifying the beneficiary population.

330. MR PROVINS: Absolutely. That's the gap there.

331. MR BURTON: Like the Stonehenge example. Does that include the drive? And just to be clear Mr Provins, obviously you and your firm, eftec, have not done the work yet. And

at the moment, you've no idea what the answer might be if you did the work? Or do you have an idea?

332. MR PROVINS: Absolutely not. This could go either way. It could prove that actually we have, you know, if you were to ask someone to endorse it, would they be willing to contribute or pay for a tunnel in the Chilterns, they might say: 'Well, no. I've got the Jurassic Coast. I've got the Cannock Chase. I've got other Areas of Outstanding Natural Beauty next to me so why would I care about somewhere further away. But we can't answer that, we can't understand how far people care about this because there's no evidence which has quantified that. I think when you're trying to understand is it worth paying extra cost of an extended tunnel option, if you can't answer who the beneficiaries are of that tunnel then that's a bit of a limitation on the evidence that you have before you. I don't know if Mr Strachan has any questions?

333. MR STRACHAN QC (DfT): I'm just going to ask one question which really was going back to slide 89. I just think I've understood this. Before I give an answer to this point, generally, which has already been made by the Promoter. But, just to clarify your slide 89, you are there referring to work, you did work in 2006, 2009, by way of research.

334. MR PROVINS: Yes.

335. MR STRACHAN QC (DfT): And you've explained phase 1 and then phase 3, full 'implementation not taken forward due to expected limited need for landscape values for low scheme appraisals'. Having done the work, this isn't a process which has been taken forward for implementation for evaluation of these schemes, is it?

336. MR PROVINS: And, as I said, I think from DfT's perspective.

337. MR STRACHAN QC (DfT): Well, is that right. I just want to clarify.

338. MR PROVINS: Yes.

339. MR STRACHAN QC (DfT): Yes.

340. MR PROVINS: And to clarify my response to that, I think DfT were expecting the study to produce evidence which they would use in their kind of standard, run of the mill appraisals. I think it would be hard to foresee HS2, and putting a high speed line through an

Area of Outstanding Natural Beauty, as being a kind of run of the mill, everyday scheme. So, even if this research had gone forward, it may not have produced the evidence because it wasn't targeting schemes of significant impact in that sense. Even that might not have produced evidence which would have been sufficient. You may still have wanted to commission a specific piece of research which was very much refined to the details of HS2.

341. MR BURTON: Obviously, Mr Provins, you need to explain how precisely this methodology has been taken through with the Thames Tideway Tunnel.

342. MR PROVINS: Yes. Twice.

343. MR BURTON: Yes. So, can we just have please slide 91? Yes. Slide 91, please. Thank you. So, to be absolutely clear, gentleman, our ask in relation to what Mr Provins has just explained to you, well, the first ask, and this is a plea really, is that you give an indication and, please, today, or very soon, that you hopefully agree with us that it would be useful to have what would plainly I say be best evidence to inform you when you are looking at the pound sign cost of a long tunnel, taking in to account what you obviously know of the benefits of that, are answering the question, well, what value does the public place upon this? And I heartily commend to you that this work would assist you. But, we ask first for an indication from you along those lines that you agree it would assist you. Now, the second ask is that you, I acknowledge this is a more ambitious ask, but, you do actually require this work to be done. You know from Mr Provins the time scale that it would take eftec who are, from what he's explained, clearly, the leading firm working with Government on this work, to produce a robust study which is three to six months. So, those are the asks on that. I'm not going to take us back now to work you through all of our asks. I think they're, I hope they are, pretty clear with you and you know the hierarchy begins with a long tunnel just here. But, obviously, if Mr Strachan has more to say. I'll say something brief and stop.

344. CHAIR: Okay. I have a feeling over the last two and a half hours I've just felt we're back in July. Do you want to respond to some of those points?

345. MR STRACHAN QC (DfT): I'm going to try and be very brief. I'll be guided by the Committee as I go along because a lot of this is ground we've covered, if not once, on a number of occasions. We started off today to do an analysis of Potters Row and their Neighbourhood Watch scheme which is the name of the petitioners. So, can I just return to what the real issue is for residents in Potters Row, which is where we started off? And

P11077 is the construction plan. And there were questions asked about the haul road. And I think I've answered those when I put the plan up originally as to the location of the haul road in answer to, I think, Ms Manton's questions about the haul road. It is a haul road which would be used for carrying excavated material from the railway, but as I've already indicated, the haul road will come back onto the trace once the excavation around the portal is done, so it won't be as close to the residents of Potter Row, which was their main concern. Can I just remind the Committee that this is AP4, which is a scheme specifically designed to mitigate the effects on Potter Row by taking construction traffic away from Potter Row itself and Kings Lane where it was previously shown in the Hybrid Bill and it results in a significant improvement for the residents of Potter Row by doing that, along with the depths of the cutting in the operational phase.

346. I just wanted to clarify, it will be used as a haul road, but the way it moves away from the properties as time goes on will be beneficial. On the alignment of the scheme, the Committee has already how, of course, the scheme comes back up towards the original alignment, but there are significant benefits for the residents of Potter Row, particularly the ones as you move towards South Heath. Yes, I readily accept, as it comes back up on to the original alignment towards Leather Lane, then the effects are going to be similar to that under the Hybrid Bill, but we were looking to mitigate the effects on the whole host of residents along Potter Row where the red lines are shown, and we've achieved that through AP4.

347. The other issue that was raised was the replacement of two pylons with a further two pylons. The Committee has already heard about this, but just to be clear, we're going to introduce two new pylons. We moved two existing pylons and replaced them with one new pylon which is where the arrow is here. It's further away from Potter Row, although it is a bigger pylon than the two that were there previously. I think it's 55 metres versus 43 and 39 metres. So it's one larger pylon, but further away from Potter Row, from the two, and that's necessary to achieve the tunnel portal in this location. Need to sell; I wasn't proposing to say anything about that because we've heard a lot about need to sell already.

348. Archaeology. As you may recall, this morning Mr Gover gave a presentation on archaeology. If the Committee is in any doubt, just to remind them, Mr Gover, all of the things he raised are actually identified in the environment statement, CFA9, where for example, it's simply not right as Mr Gover said, to say that Jenkins Wood was looked at as merely ancient woodlands. I'm just reading 6327. 'Jenkins Wood contains the remains of a

possible motte-and-bailey type earthwork in a similar tradition to that of Redding Wick.’ There are similar points made about Bury Farm and the excavation of pottery.

349. I’m not going to read it all out, but the general point is that these have been subject to appraisal. It’s recognised there’ll be some adverse effects and consequences of construction, but this is accompanied by the Heritage Memorandum and the information paper E8 on the way in which, as a result of the Heritage Memorandum, there will be work done when excavations take place in appropriate areas to carry out recording, and there may be some, of course, positive benefits in terms of knowledge that comes out of archaeological finds, but they’re subject to protections in the Heritage Memorandum and information paper E8.

350. Noise. I don’t want to talk about noise too much, but I would like to make this point absolutely clear: Mr Thornely-Taylor, for your note, gave evidence on 21 January 2015 in response to Mr Delow. He explained why there were not Lmax contours shown in the environmental statement, and the reason for that is that the Lmax, which are – the figures are all in the environmental statement – but the Lmax 11’s are free fields, and in order to estimate facade levels, you would have to take into account the shapes and dimensions and orientations of the buildings in particular locations to work out the true facade level, which can be slightly higher, up to 2.5 decibels higher than the free field.

351. He explained in evidence on January 2015 that that was not an exercise that had been undergone. It’s potentially too complex and producing a free field contour wasn’t considered helpful in those circumstances, but the Lmax figures are all there available in the environmental statement. That’s the reason why there’s no Lmax contour, as Mr Thornely-Taylor explained in evidence. I apologise, I would not repeat this if it’s unnecessary, but can I just similarly explain, because I am concerned that there’s a degree of misunderstanding about this. P11084(1). Mr Thornely-Taylor has also explained there is a fundamental difference between the arithmetic average of night time LAmax 5 minutes, which is the third column here, the 50.5, and the highest night time LAmax, 72.1.

352. These are existing baseline figures. The arithmetic average of night time LAmax 5 min, the 50.5, is calculated by taking the highest noise event every five minutes throughout the hour over the eight hour period of the night, and then getting an average figure. So it takes account of quiet hours during the night. If at 2.05, 2.10 there’s not much noise, the average comes down. However, within that period, the highest night time LAmax is 72.1, and

therefore, it is simply not right to compare HS2 LAmaxes with the arithmetic average of night time LPAFmax 5 minutes, and Mr Thornely-Taylor explained to that Committee in September 2015.

353. Unfortunately, that's precisely what Ms Wharf was doing again today in making that comparison. So can I just take you to the true figures for Potter Row? 11237(2). If we take the Mapleton property which we looked at earlier on Potter Row, the effects of AP4, as I was indicating earlier, are that, the scheme, it will be 51 LAQ during the day, 42 at night and a 65 or 67 – depending on which type of train – Lmax in that location. You cannot compare with the 51 max that's shown in the six column, because that's the five minute average period. If you were to calculate a five minute Lmax for HS2 over the equivalent period, it would be far lower because there aren't any trains running between 12.00 and 5.00 a.m.

354. So for those periods, you would have a no LAmex event, so you're not comparing with apples or apples or oranges with apples. If you see, to look at the 51 figure...

355. MR HENDRICK: Would it be relevant perhaps to use the arithmetic average for peaks over the period during which HS2 is running?

356. MR STRACHAN QC (DfT): Well, you could do that, but then you would have a different arithmetic average number, because –

357. MR HENDRICK: You would, but can you compare like with like in that way?

358. MR STRACHAN QC (DfT): You could take, although I don't think it's conventional to do it, you could do a five minute average over the periods, say, 10.00 p.m. to 11.00 p.m. or 11.00 p.m. to 12.00 p.m., to compare the situation with HS2.

359. MR HENDRICK: I take your point that it's not comparing light with light, but I'm saying if you did it over the period which the train was running, then I'm sure you would come out with a different figure.

360. MR STRACHAN QC (DfT): You would come out with a different figure, yes.

361. MR HENDRICK: Because you're going to get an event every 90 seconds.

362. MR STRACHAN QC (DfT): Well, not at 11.00 to 12.00, or indeed 5.00 to 6.00, because you're talking about repositioning trains, but that's...

363. MR HENDRICK: Not at those times of the day, but in a busy time you would get an event every 90 seconds.

364. MR STRACHAN QC (DfT): This is the L_{Amax} events particularly for the night. That has been the focus of the comparison, and that's why I'm pointing out the difficulty with that. Of course, there would be trains moving 11.00 and 12.00, but a very limited number because you're repositioning, and your L_{Amax} five minutes are consequently going to be very low, because you're going to get one...

365. MR HENDRICK: I totally take the point you're making, but the point I'm making is that the Petitioners have a bit a point in that, if you took it over maybe an average of peaks over a more meaningful period, then you'd get a different figure and then you would be comparing light with light.

366. MR STRACHAN QC (DfT): Well, the purpose of looking at this at night time, the night time is when of course people are trying to sleep, so that's why one is trying to give the five minute picture. What we do is provide the L_{max} for our scheme, and I've indicated that 65 here in this location at Potter Row, and you will recall from what I showed you earlier, that there are, in Potter Row for example, events in the night time of 72 dB. It can be a car passing; it could be something occurring in the night.

367. MR HENDRICK: Yeah, but you can't legislate for that, but you can work out what it is for the train.

368. MR STRACHAN QC (DfT): The train is 65. It will be in that location. There are many areas where – the point I'm making, there are many, many areas, indeed most areas, where one has L_{max}es from whatever event is occurring of higher levels than 65. That said, because it's above the loll figure, it's one of those noise levels where you'd seek to reduce it where reasonably practicable under the information paper E20. It is fundamental, and that's why we're raising it again, that one shouldn't seek to compare what we're doing with introduction...

369. MR HENDRICK: I accept that point on the comparison, but I'm putting forward a way in which you could maybe have a more meaningful comparison which wouldn't be apples and pears.

370. MR STRACHAN QC (DfT): Well, as I said, the reason we haven't done it is because I think it would show very low levels for our Lmaxes in those periods, 11.00 to 12.00, we've only got a few trains, and there no doubt we would be criticised the other way for saying we are not under representing the effects of the trains, so what we focus on is Lmax events that give you the highest noise event that will occur, but then one has to treat it in an appropriate way to understand what it means. That's what we've done. So I've explained the contours, I've explained the Lmaxes. When you look at AP4 and it achieves, it achieves reductions in Lmaxes and LAQs and the important thing for Potter Row, and we will of course continue to have our policy about seeking to reduce, where reasonably practicable, noise above the Lmaxes.

371. MR CLIFTON-BROWN: Sorry, I ought to know this, Mr Strachan, but when does day become night in this?

372. MR STRACHAN QC (DfT): It's 11.00. I'll check that. I'm pretty sure. 11.00 p.m. Could I just then move away from noise and touch on the other issue, the TBO tunnel, and I'm going to try and take it as quickly as possible. You have our evidence in response. I can't do better than really say that the TBO proposal is effectively a CRAG T3i tunnel but bored from one end. It has exactly the same operational effects post-scheme. In order to construct, you'd have to have an intervention gap of the type that we've discussed. We've discussed previously the 900-metre intervention gap in the AONB area that we've looked at.

373. It is therefore wrong to say that the construction of TBO, any more than CRAG T3i, eliminates traffic from the AONB in the construction phase, as we've shown previously and nothing has changed, it would actually introduce more traffic in terms of construction because of the amount of soil, excavating material that would generated by the creation of the intervention gap, which would then have to be taken along the A413, and of course, there's no trace in those circumstances, because you are boring a tunnel. We've dealt with that on previous occasions, but it was repeated again that it would eliminate traffic problems. It wouldn't.

374. In addition, we have produced costs of the CRAG T3i tunnel, which the Committee has previously considered, and we've done the same for the TBO tunnel, P11163(5). On our assumptions of tunnelling rates, it's another £100 million on top of CRAG T3i. If there's been a debate about tunnelling rates, we obviously stick with ours, but you heard that

potentially that figure could come down by £40 million, but it's still going to be considerably in excess of the CRAG T3i tunnel. For those reasons alone, it's not a solution and it doesn't provide any better solution than CRAG T3i, which has already been rejected.

375. There are a number of other implications which we set out in the slides for the Committee to look at some point, but you will see that P11162(8), the TBO 1 tunnel introduces a much larger work area, of the southern area, and indeed spoil at the southern area, which then has to be removed. An extra approximately 1.4 million cubic metres that would have to be removed. The Petitioners are talking about sustainable placement in that area. The Committee will be well aware of the issues that arise of disposing of additional material in the Culm valley area in circumstances where even our own proposal has generated plenty of dispute, but the idea of generating a further 1.4 million cubic metres and putting it in the same area is somehow a solution, we say it's simply not the case.

376. There are also the implications of the tunnelling rates, which I'm not going to go over. Mr Smart has given his response to that, and I've made it clear we don't accept – and I say Mr Smart, with all the benefit of the advice he has, we don't accept the tunnelling rates. We maintain ours is the prudent rate to persist with and it's the right rate. Can I just clarify the position and slurry TBMs? Mr Smart has explained in that evidence and previously that we cannot see how it would be anything other than a slurry TBM that we require in this location, and the ground investigations and site investigations that we've talked about. We don't anticipate to change that in any way, because of everything the Committee has heard about the nature of the water based chalk that is in this area and the location of the aquifers.

377. You will recall, for example, that at the very southern end we have to tunnel through a special protection zone for water. In those circumstances, it's difficult to see on what basis any different decision than a slurry TBM could ever be contemplated. That is not based on no information. That's based on existing known information about the geology of this area, including previous bore holes and other works that take place, remembering this is an area where water is extracted from to supply Affinity Water and large parts of London. I'm going back on the point we've already discussed about ground investigations and site investigations, but nothing in there is going to change, we don't see, change the need for a slurry TBM with the consequential rates progress and the type of machine that has to be introduced.

378. That is the difference between us and the latest witness who has come forward with

rates based on an EPBM, which we don't accept. Unless you want me to go to any more detail, I do depend on Mr Smart's statement, which revisits it. I think I dealt with it yesterday and I'm not going to repeat what I said, but can I just refer back to what I said about slab versus ballast? That is the decision yet to be taken, but the point I made was that Rayleigh waves is a problem on soft ground. It's not a problem we contemplate to be likely to occur in the location of Potter Row, and the issue that was being raised was a concern about increased noise for residents in and around South Heath because of the introduction of slab track over ballast, which is, for that reason, not likely to arise.

379. As I said yesterday, if it were to arise, it's a problem of slab track at the lower levels where the noise barriers that are already contemplated in this area would already mitigate that, but there are reasonable measures that can be introduced to mitigate slab track noise in any event. That's what I said yesterday.

380. MR HENDRICK: I think it was originally introduced, the debate about slab track, as you say, because of noise, but I think there was also a point made later about concerns about safety at certain speeds. What's your response to that?

381. MR STRACHAN QC (DfT): My response to that is that, as I said, the decision on slab versus ballast is yet to be taken. So far as I'm aware, it is an issue which arises of soft ground only. So it's not one which applies route wide. The French system runs on ballast predominantly, I think, very predominantly, and the Rayleigh wave issue is one which is well understood by the Promoter, as one which can occur on soft ground and where it does occur, you may need to mitigate by introducing slab track, and as I also explained yesterday, slab track versus ballast has different upfront costs, but different maintenance costs.

382. So it is not the case that use of slab track is necessarily more expensive in the long run, because it has less maintenance over a longer period. There's a commercial decision to be made about that, but any effects on noise, if they give rise to additional noise, will need to be addressed as part of our overall noise policy where we set out the anticipated noise levels we're going to achieve along the scheme, and we have a policy to take the reasonable practicable steps to remain within those.

383. MR HENDRICK: So you're saying there's no decision yet been taken on whether or not slab track or ballast will be used through the tunnel or beyond the tunnel?

384. MR STRACHAN QC (DfT): Slab track is used through tunnel, but outside tunnel, there's no decision yet on where slab or ballast would be used.

385. MR HENDRICK: Okay.

386. SIR PETER BOTTOMLEY: The question about whether an extra 40 kilometres an hour speed makes a difference to the stability of this ballast?

387. MR STRACHAN QC (DfT): As I understand it, those who looked at this in detail are more than confident you can run the extra speed on ballast, because it's a question – subject to the geology below it. I think the issue that arose, even on a slower – forgive me, I'm not the expert. It's on peat soil, on existing track which isn't even high speed, or any issues that arise there.

388. SIR PETER BOTTOMLEY: We understand, but one of the points that was made to us was that if you're running a railway at a higher speed than those others have, and there's probably some sort of square law that comes in, it's probably a linear thing, the disturbance to the ballast becomes more problematic is what we were hearing.

389. MR STRACHAN QC (DfT): Yes. I think that was the point being made. I know there's a paper that the petitioner referred to which looks at the decision to be made between slab and ballast track, but as far as I'm aware, and I'll have it checked...

390. SIR PETER BOTTOMLEY: Something about the speed, the speed issue, how that might affect things, would be helpful.

391. MR STRACHAN QC (DfT): I'll get it checked. Despite contrary appearances, I'm not an expert on Rayleigh waves or indeed slab versus ballast track. I'm acting on instructions. I'll get the information for you.

392. SIR PETER BOTTOMLEY: Thank you.

393. MR STRACHAN QC (DfT): I think that just brings me finally to the question of the eftec valuation methodology. What I wanted to say is that you already heard evidence precisely on this point earlier in the year in July. Precisely the same points were made by others, and the petition, so far as DfT is concerned is that the effects on landscape was covered in the value for money advice provided to ministers and the business case and the

decision made at the time in 2013. That approach that was adopted is in line with WebTAG and it's consistent with the Treasury Green Book, in the way in which the exercise was gone about.

394. The position that this petitioner put up on the slide is that the other approach of seeking to value local landscaping practices and the way it's been suggested, we don't regard as sufficiently robust as a methodology to introduce. The position is that process of assessment is undertaken through understanding the impacts of the scheme through, amongst other things, environmental statement and of course the wealth of information that the Committee and others in parliament will have on the effects of the scheme and the AONB status. Nothing has changed in essence from our previous response and the evidence you heard on it previously. Unless you want me to set that out in more detail, I refer back to what was said in July, I think, on those occasions.

395. SIR PETER BOTTOMLEY: Neither the Promoters nor the Secretary of State has chosen to do what could be done.

396. MR STRACHAN QC (DfT): What could be done, but it's not what's required to be done as a matter of policy.

397. SIR PETER BOTTOMLEY: I wasn't asking you to repeat yourself. I was trying to clear around the edges of what you were saying.

398. MR STRACHAN QC (DfT): Yes. Well, I think the suggestion was that it was best practice or even policy, and that is what I am disagreeing with, and what we have done is in accordance...

399. SIR PETER BOTTOMLEY: Well, if they haven't done it, it's clearly not practice.

400. MR STRACHAN QC (DfT): Now, there was – yes, night periods are 11.00 p.m. to 7.00 a.m., so I was right about that. I'm conscious that there were a lot of things raised and I'm very happy to pick up on anything else that the Committee wants me to, if there's any other requests, but I've tried to take it as efficiently as possible. Sir Peter, the machine and the Channel Tunnel, from the French side, was an earth pressure balancing machine, rather than a Slurry TBM.

401. SIR PETER BOTTOMLEY: I think that's what we were told by the experts.

402. MR STRACHAN QC (DfT): I apologise.

403. CHAIR: Right, Mr Burton. Brief final comments?

404. MR BURTON: Yes. I will be brief because I'm conscious, sir. Just in reverse order, because I want to deal with the big points first. It's a matter for the Promoter of course that it chooses, despite knowing our witnesses, having them in advance, not to call its own evidence, and it chooses not to test our witnesses' evidence through cross-examination. It's important for you gentlemen because of course you want the best evidence and we all know that one gets to the best evidence by, amongst other things, putting the witness there, rather than making my learned friend, Mr Strachan, do all the work.

405. You have heard from the expert in relation to the value and importance of a primary valuation method for landscape. You've heard from him it is best practice. You've heard from him it's what should be done. I heartily commend to you his expert evidence, rather than my learned friend's inexpert submissions. The same point in relation to tunnelling. Very interesting, certainly from the Petitioner's perspective, hopefully yours as well, that the Promoter acknowledges Mr Smart; he is not a tunnelling expert. He comes before you as a witness on paper and has previously come before you in person, but he is not an expert. He is not an expert like Mr Mackenzie is. He is simply a mouthpiece for other people –

406. SIR PETER BOTTOMLEY: Ministers have thick skins and have a sense of humour, and the word 'mouthpiece' is one that you might well choose a substitute for.

407. MR BURTON: I apologise for the language, sir, but he is a conduit.

408. SIR PETER BOTTOMLEY: He is saying what experts have been saying to him.

409. MR BURTON: He is saying what others have been saying to him, yes sir, which –

410. SIR PETER BOTTOMLEY: Which is what barristers often do as well.

411. MR BURTON: Well, we rely on the evidence. I appreciate that this Committee has been working in slightly more flexible ways, but that doesn't change the fact that you want to have the best evidence and certainly you will no doubt want to assure yourself that you've heard from experts, and we put Mr Mackenzie in front of you because he is just that an you've heard from him.

412. MR HENDRICK: It's been pointed out as well from Mr Strachan. What we've seen is that is a slight variation – coming at it from both ends – is a dressed up version of the previous version of what was already introduced before, and the same goes for the evidence where you use the methodology as used by the other department it comes from.

413. MR BURTON: Mr Hendrick, I wasn't at those sessions. I can't –

414. MR HENDRICK: Well, we were.

415. MR BURTON: You were. I can't respond to that. My instructions are that Mr Provins' evidence is new, is the first time you've heard from an expert who is clearly at the heart, with government, of the use of primary valuation research. If those instructions are wrong, I can only apologise, but of course it doesn't change the fact that his clear advice to the Committee is, what the department for transport has done to date is not good enough, and I would hope that that is the message you would take away, that you can get something that is good enough and it should be done.

416. MR CLIFTON-BROWN: If you believe this evidence is so important, why is CRAG not commissioning the research as such?

417. MR BURTON: I'm very grateful you have asked me that, Mr Clifton-Brown. The reason, and I'm sure you will have read between the lines, the reason we are asking the Committee if it feels it is able to give an indication of whether or not it agrees with us that it would be of value to you to have this evidence, is that if you say it would – and I'll be blunt – but you're not willing to require it to be done, i.e. of the Promoter, then people can try to fundraise for it. We feel it's important that you have the eftec quote for the work, as Mr Province would be. It might favour the Promoter, but it might not. We don't know.

418. CHAIR: Carry on.

419. MR BURTON: Does that address your question? Thank you. What you can take, Mr Hendrick, from the tunnelling evidence you've heard, is that, because of the agreement that we have reached regarding fit out speeds, it would only require the HS2 figure to be too slow by eight metres and require Mr Mackenzie to be, as it were, only right by those eight metres. You'll recall the 80 metres and the 120 metres, only 89 metres is required to bring it in within time.

420. MR HENDRICK: Eight metres on a very, very prudent assessment we've heard from HS2.

421. MR BURTON: HS2 only have to be wrong to the extent that their prudent rate should be shifted a mere nine metres faster for the long tunnel to come in in time. They're saying 80 metres, it only needs to move to 89 metres because of the agreement that's been reached regarding the fit out speeds, it can come in within the 8.25 years. Mr Mackenzie of course has said the prudent rate is much faster than that. It's 120. You know that, yeah. I just wanted to make that point. We don't accept what is said about the spoil. Obviously, that's a dispute there, but please just reflect on the fact there is a very large – we've still got the site, which is helpful – a very large area down in the south which is already built in to the Hybrid Bill, built into AP4, that's going to have two million cubic metres spread for environment mitigation.

422. What we're saying is, yes, there will be more spoil coming out that end. It's a question of an extra layer at the site that's already there. It's not going to have to be trucked around, and the same with the intervention gap. Those are the big points regarding the solutions that we've put before you. Regarding the very specific Potter Row matters, I'm switching back to the original order, Mrs Manson's fears regarding that haul road, as I understood her my learned friend Mr Strachan's comment, are well founded, because it will be used as a haul road running to the backs of gardens. Archaeology, I think that Mr Gover's point regarding Jenkins Wood was not that HS2 had not realised there are earthworks there, this is an asset that the County Council Archaeology Department say is the same quality as a scheduled ancient monument.

423. They haven't recognised that. The final point, noise. You heard Ms Wharf's evidence. I think my learned friend was perhaps confusing it with evidence that she gave yesterday. I certainly didn't hear her make the comparison, the floor comparison he explained, myself today. I didn't hear her do it. Maybe I wasn't paying attention, but we all understand that despite AP4, 35, 37 of the Potter Row houses are still going to have max noise above the lowest adverse effect level. That is the key point that we ask you please to bear in mind, and which is we asked for a long tunnel through the Chilterns, and if not, at the very least, a tunnel at a lower level and our other asks I won't repeat. Unless, gentlemen, you have any questions for me, we're very grateful.

424. CHAIR: Thank you very much, Mr Burton. We're now going to move to AP3

Wendover HS2 Action Group. Mr Ronald Peterson. Welcome, gentlemen. You may get interrupted at some point because David Lidington is also coming to give evidence and he is on a slightly more constrained timeframe, so you might get half an hour in and then have to go and sit on the bench for a minute while he gives his evidence, which may well fit in what you have to say representing Wendover, and then you can come back and finish.

Wendover HS2 Action Group

425. MR PETERSEN: Could we get our first slide up? Good afternoon, Mr Chairman. I'm Ron Petersen and I'm speaking for the people of Wendover, Halton and Dunsmore, broadly the Parish of Wendover. As a brief aside, I should explain that I and my family have lived in the Chilterns for 44 years. We've been residents of Wendover for 23 years.

426. CHAIR: You've been here at the Committee before?

427. MR PETERSEN: I'm sorry?

428. CHAIR: You've been to the Committee before?

429. MR PETERSEN: I did indeed, yes, in July. Wendover is by most accounts the single village most affected by HS2. The line passes right over the top of the high street, only a few hundred metres from the main shopping area. Some other villages are as close to the line as Wendover, but not with a population the size of Wendover's. We will make that clear in a moment. From day one we have maintained that the solution to all of the pain facing Wendover and the Chiltern's AONB; property blight, noise, massive traffic jams, risk to water supplies, the pristine landscape, was a fully bored tunnel throughout the entire AONB to a point north of Wendover.

430. In late July, this Committee, based largely on what we believe to be misleading cost information provided by HS2 Limited, signalled your belief that an overwhelming case had not been made for such a tunnel. We intend to challenge that conclusion. Let's see the next slide, please. We understand that you have to make difficult decisions based on what is presented to you. Today we will show you an alternative view of HS2 Limited's data, exposing aspects that they have not brought to the Committee's attention. We maintain that a fully bored tunnel through the AONB to the north of Wendover, the TBO tunnel described earlier today, can be built for little more than the Promoter's current scheme.

431. Such a tunnel would address all of our concerns. Next slide, please. Let me tell you a little bit about Wendover. In so doing, we hope to answer the question that Mr Chairman you have posed several times, which was, who precisely is affected by this? The Parish of Wendover is not a little hamlet. It's home to 9,200 souls in 3,320 households. Each day, 2,800 people commute by car or van from Wendover to work. They will be directly affected by the HS2 Limited construction programme. In terms of property blight, 404 homes are within 500 metres of the line and 1578 are within 1000 metres, HS2's own definition of blight. That's almost half the homes in Wendover.

432. The impact is already being felt in our town, with homes either not selling or selling at a significant discount to their proper value. Who on this Committee would choose to live so close to HS2? Wendover is also home to 220 businesses and 25% of the business done by those businesses is conducted with customers more than five miles away. So access is critical to those businesses. Tourism is a big part of our economy. 300,000 people every year climb Wendover Woods right behind my home, and 100,000 people climb Coombe Hill and 56,000 people pass through Wendover on the Ridgeway. Together they bring in some £95 million annually to the town's economy.

433. Wendover is also a strong farming community. 10 farms in the CFA 10 area occupy almost 1,000 hectares, 22% of which will be taken over during the construction phase and 8% lost forever. It's projected that four of those farms will fail due to HS2. So those 9,200 residents of Wendover, Dunsmore and Halton are the people who will be directly affected, Mr Chairman. Next slide, please. And the impact will go far wider than just the parish of Wendover. In addition to the decimation of Bacombe Hill there will be a downstream environmental impact on the waterways and reservoirs in the wider vicinity, with a loss of wildlife and amenity value. We'll make more of that in a moment. Next slide.

434. We maintain that the Committee has been consistently misled by selective information presented by the promoters, HS2 Limited. This misinformation has been in at least three broad areas: cost, noise and the hydrology risk – hydrogeology risk. We don't intend to dwell on the subject of cost except to say that today's TBO presentation should have convinced you that HS2 Limited have misled you as to the cost of tunnelling, projecting tunnelling rates that have consistently been exceeded in similar tunnels throughout the world. And that was so aptly presented by Mr Mackenzie.

435. It is a grotesque distortion of the truth for HS2 Limited to maintain that the tunnel extension from Mantle's Wood to Wendover, a distance of some 10.7 kilometres, will cost £495 million more than the existing scheme while the extension from Mantle's Wood to South Heath, that you've already agreed to, cost only £46 million, a distance of 2.6 kilometres. In other words, for four times the length the cost would be 10 times higher. I would suggest that that insults your intelligence and insults ours too. Four times the distance; 10 times the cost. The next slide, please.

436. Noise is a vastly important issue to those living near a 250 mile an hour high-speed line. We believe that HS2 has consistently tried to trivialise this issue and, in so doing, and in so doing has seriously misled this Committee, and they did it again today and you saw it. You've already sat through at least four turgid exchanges on the subject of noise, hearing ad nauseam about acronyms like LOAEL, LAeq SOAEL and LAm_{ax}. In all of HS2's ES map books, all of the visualisations were based on averages, which gave us a distorted perception of the noise problem. We were therefore ultimately pleased to hear the HS2's own expert, Mr Thornely-Taylor, confirm that what really matters for mitigation is the maximum noise at night.

437. It's the measure that must be addressed by any mitigation for Wendover. That's not some 5-minute average starting at 11 o'clock at night and running through the evening. That's the – one train every 100 seconds. What did they say from Potter Row? Five different couples said every minute and 50 seconds. That's the noise that we're talking about and that's what we'll be experiencing in Wendover. Next slide, please.

438. Some of this is – this clear finding is actually further confused by further misinformation from HS2 Limited. It was inferred, rather than stated by HS2 Limited, that sound was measured at 60 locations across Wendover, but that was not the case. In fact there were only 10 points at which measurements were taken, and then there were 50 assessment points to which values were assigned. 10 that were measured, 50 assigned. Critically, some of those values were corrected for distance from the source or from screening, but the process appears arbitrary, and when studied by anyone familiar with the local geography some of those attributed values are patently wrong.

439. When a statistical analysis is undertaken of HS2's data for the assessed sites we have discovered a significant bias in HS2's prediction, pretending to make Wendover apparently

noisier than the measured locations would suggest.

440. That can be probably be demonstrated – next slide, please – with a measurement at a site you all know well: St Mary’s Church. You could have been forgiven for believing that sound levels were actually measured at the church, but that was not the case. Sound was actually measured at point CF1053, bottom-left of that slide. You can see it down there by the blue dot. The value was then extrapolated to the two points shown by the arrows, so the church and the school, across two roads and a railway line 500 metres away and 100 feet – 75 feet higher in height.

441. Why didn’t they use the actual measurements from CS6013 or CS2057, shown clearly on that map and much closer to the church and the school? Who and what are we to believe about the whole noise issue? Slide nine.

442. Without ever admitting that their fundamental design process with regard to noise was wrong, but forced by this Committee to respond by unacceptable noise levels affecting the Wendover School and St Mary’s Church, HS2 Limited has come forward with a proposal to construct an array of noise barriers up to six metres in height to both the north and south of Wendover. These barriers, grotesque in design and visually unacceptable to the community, have one other fatal flaw: they don’t work. Based on HS2 Limited’s own data they merely reduce the number of homes experiencing peak noise levels of 60dB from 1267 homes by 448 homes, leaving 65% of the houses without adequate mitigation. 65% of the homes that would have experienced levels about 60dB at max noise will continue to experience them in spite of the noise barriers that are being suggested. Noise barriers are not the answer to Wendover’s noise problems. Next slide, please.

443. Now, briefly to the ticking time bomb of Wendover’s HS2 dilemma, hydrogeology. We’re well aware of the deliberations of the select Committee, that you’ve had over this, and we’re pleased that it’s at least recognised that there is an issue with hydrogeology in Wendover, the aquifer on Bacombe Hill. Our concern is the ongoing lack of recognition of how significant that issue is. We believe that HS2 is a prisoner of its own process, unwilling to heed our pleas to do some early investigative analysis to dimension the problem. They have decided on a way to do things and organisational inertia, the inertia of rest, has set in. Trying to make them change anything is extraordinarily difficult.

444. In so doing, we believe they are exposing the entire project to a massive time scale risk.

While there are some points of agreement between HS2 and our expert, who you've all heard from, there is a fundamental disagreement as to when ground water modelling should be undertaken. Our expert has already undertaken a preliminary groundwater model using HS2's data, which gives us an initial view of the scale of the problem. HS2 have agreed his methodology and indeed the environment agency has told us, in their subsequent deliberations, that they have suggested Mr Johnson's results inform them where ground investigations will be needed.

445. So we fail to understand why HS2 insist that they will not undertake that modelling themselves until such time as they have received groundwater investigation results two years from now, at a point which will be too late to avoid enormous project delay if they find the water situation that we believe to be there. It's too late when they do it then. Slide 11, please. Next slide.

446. We believe that HS2 Limited's plan to dig a 2.8 kilometre-long, 19 metre-wide ditch through Bacombe Hill will slice through a major aquifer responsible for feeding over 24 million litres of water daily, the equivalent of up to 18 Olympic swimming pools at peak load, to a series of springs, the Wendover Arm Canal and the Weston Turville Reservoir and SSSI.

447. We understand that the Committee is currently – and I quote – ‘Satisfied that there are adequate processes for scrutinising and monitoring any hydrology issues.’ Well, HS2 have not revealed those processes to us in any meaningful way. In any case, if they HS2 are to wait for the groundwater investigation results it will again be too late to engineer out the issues without causing delay to completion of the design that they have set for the satisfaction of the Environment Agency and local planning authorities. This will inevitably delay construction.

448. If we are correct HS2 will ultimately need a real contingency solution. Our expert's opinion is that such mitigation would include lining or tanking with concrete the entire 2.8 kilometre ditch with – that's the distance from here to Euston Station, installing huge drains and two-hectare settlement pond and a substantial pumping station, as well as buying five kilometres of pipelines to redirect the outflow. Those pipelines, potentially two feet in diameter, would require significant engineering and construction in their own right because they will cross several roads, a railway line and private properties. This adds further disruption to the Wendover community, with construction at least a year before the main

works for the railway can start.

449. Surely given the disagreement between the experts the select Committee should consider calling upon an eminent professor in hydrogeology to arbitrate and give the select Committee an unbiased and balanced view for the overall benefit of the project. That's our ask in that area.

450. Let me just go quickly to – there. Thank you. That's fine. This diagram illustrates, in what looks orange on this one, the impact of HS2 continuing their current sequential subjects while discovering in 2018 – the red line at the top – that far more mitigation is required to address the hydro-geological issue. They haven't, by the way, said that that's not possible. It is possible. They are simply saying 'We don't have to find out until 2018. But as a consequence there is a significant risk of a project timescale overrun, with first trains coming to service in 2028 rather than 2026.

451. Now, whatever we think of the cost of the pumping station, be it HS2's figure of £1.2 million which we think is a significant under-estimate, or a more realistic cost of £20 million to include the required pipelines, the more significant issue is the financial impact on the overall HS2 project schedule, and we cannot guess as the magnitude of a two-year delay. The alternative shown in green is the TBO tunnel, described earlier today, which addresses the project risks for a figure that seemed to get buried in today's discussion. The TBO work that was done suggests a cost premium of £49 million, not the 459 that you've heard. We'll come back to that. Could I see the next slide, please?

452. The fully bored tunnel will avoid all of the problems facing Wendover and Halton and Dunsmore: Noise, hydrogeology, business disruption, property blight. All of it. Next slide.

453. I won't go into this chart. You've seen it now a number of times. You've heard this morning how the TBO Tunnel would be generally similar in its direction to T3i, with the difference that all the spoil comes out of southern end by the M25, alleviating big issues in Stoke Mandeville, by the way. Our community is willing to accept the temporary pain of spoil movement related to the construction of the intervention gap, in contrast to the imposition of viaducts, cuttings and noise barriers within the AONB. This chart compares – sorry, next slide.

454. This is a summary slide. It compares TBO to other tunnel options – bored, mined,

green tunnel – as well as to the current HS2 Limited proposal for the existing AP2 scheme with sound barriers. During the build phase the TBO option uniquely avoid soil movement in the Wendover area related to tunnel works, minimising the community impact. During the operating phase the expected AP5 barrier option has the worst impact on the community, with viaducts, barriers and noise issues. Only a bored or mined tunnel could be guaranteed to avoid the hydro-geological catastrophe that is forecast. AP5, with barriers, appears to be the cheapest. TBO is in second place in this race. But AP5 carries enormous cost in project timescale risk associated with hydrogeology.

455. In summary, the TBO option, although slightly more expensive than the current projections for AP2 – if our numbers are correct, and we invite comparison; we invite an analysis – then the TBO option offers unparalleled advantages over any of the other options, and may in fact in the end be the lowest cost approach. Next slide.

456. HS2 Limited stands to benefit from TBO too. We're always thinking of the other guy. There's a massive reduction in project complexity: no viaducts, cuttings, road diversions or pylon movements. It also fixes the problems of Wendover's cricket pitch. There are no traffic issues on the A413, fewer compulsory purchases and no hydrogeology risk. Compensation costs could be greatly reduced and they'll have the full support of communities throughout the Chilterns AONB without the lingering possibility of further community action.

457. We understand the select Committee has hard decisions to make. You said in July that we have not made an overwhelming case for a long tunnel. We believe we have now, Mr Chairman. TBO resolves virtually all of the issues you've heard of from hundreds of Chiltern parishioners. All agreed that a fully bored tunnel is the solution at a price that the nation can afford. Critically, TBO protects the AONB for future generations. You have an opportunity to do that.

458. We ask that you adopt or critically, at least, evaluate, the TBO proposal. Thank you very much.

459. CHAIR: Thank you.

460. MR PETERSEN: Any questions?

461. CHAIR: No. Well done. You rattled through that very rapidly, and I wish all our

witnesses came from the United States and were that to the point. Have any of your colleagues got anything to say or are they just there to back you up?

462. MR PETERSON: Yes, they were here to help me if we got a question but there seems to be no questions yet. I think they might appear.

463. CHAIR: Okay. Mr Lidington is going to wait until you've finished, so – thank you, gentlemen. All right. Mr Strachan.

464. MR STRACHAN QC (DfT): Yes. First of all the costs of tunnelling, the Committee has already heard evidence on the costs of tunnelling, both the costs of the extension to the Chilterns Tunnel; cost of REPA's proposal comparatively; the costs of CRAG T3i and the cost of TBO. Save for TBO, where that's only come about in the last 10 days, but the costs of all the others, quite detailed costs have been provided which explain why, for example, we say the CRAG T3i tunnel was 349 million more on the assumptions we have made.

465. That didn't in fact take account of the need for an increase size in the intervention gap, and the need for it to be lower down, which I had mentioned a few days ago, but there's full information available from Mr Petersen and anyone else in the evidence we've given to the Committee on how we've costed those tunnels and the reasons why they are priced as they are. It won't have escaped notice that of course one of the significant costs of the tunnel in CRAG T3i is the creation of a very large intervention gap that would be necessary for such a tunnel to operate, and the location of it was discussed. But if there's – I don't go over all that information but it's there in front of the Committee.

466. MR PETERSEN: I think you have again –

467. MR STRACHAN QC (DfT): Well, why don't I finish and then you can say your piece?

468. MR HENDRICK: Just before you do. I guess Mr Petersen was going to ask the question that I'm going to ask. There was a huge difference in the costs given the lengths of the tunnels concerned. Now, you're saying you've given us the figures and an explanation for those costs in the past. In a nutshell can you give us the basis for the huge discrepancy per kilometre of the two tunnel prices?

469. MR STRACHAN QC (DfT): The Chiltern Tunnel extension doesn't involve, for example, the creation of any additional vent shafts. It doesn't involve the creation of an

intervention gap. It doesn't involve the use of, in the CRAG T3i, two additional tunnel boring machines and all the site setups coming from the north, because CRAG T3i is a tunnel from both ends. It doesn't involve all of the additional rail systems and extra costs associated with a tunnel for that length.

470. And I think – I'm just really trying to summarise some of the major differences which give rise to the various significant different costs –

471. CHAIR: I think the other difference is there was cut-and-cover tunnel and the deep bore tunnel, he had to net that off the cost of that as well. So per kilometre the costs came down.

472. MR STRACHAN QC (DfT): What one can't do is, say, take a – what effectively is a shortish extension, a tunnel extension which doesn't involve the creation of additional vent shafts and all of those additional infrastructure and then factor it up in the way –

473. MR HENDRICK: I wasn't saying it that crudely. I'm just trying to find out why there was such a magnitude of difference.

474. MR STRACHAN QC (DfT): Yes. Well, at the risk of going through all the evidence again –

475. MR HENDRICK: No, I'm not saying you have to. Give it as nutshell.

476. MR STRACHAN QC (DfT): Yes.

477. MR PETERSON: May I respond?

478. CHAIR: You'll get an opportunity in a minute. Have you finished your points, Mr Strachan?

479. MR STRACHAN QC (DfT): No, I'm just going to – so that was the first point. The second point raised was the issue of noise, and can I just show you the slide that we produced previously for the Committee in relation to Wendover P10778? This was a summary of the environmental information that we provided on the additional mitigation proposed for Wendover, and this is obviously summarising quite a lot of information that's already available to the Committee, but you can see we looked at a number of things, including the effect at St Mary's Church and eliminating that effect; the significant community effect at

Bacombe Lane which we have removed.

480. And then we've looked at both the number of dwellings affected above LAeq, LOAEL level and also those above the Lmax LOAEL, 60dB. And I summarise that this is from our information based on our modelling, and we summarise the respective potential schemes and their costs, and what's actually achieved, and you can actually see from this why AP5 – the AP5 scheme, which is the tunnel – green tunnel extension coupled with some additional noise mitigation of the track at a cost of 10 million – but you can see the number of dwellings that are affected by noise levels for LAeq and LOAEL, which is why we say it's an effective – very effective scheme in mitigating the noise effects, the principal noise effects on Wendover.

481. And just to – I think the criticism was put in colourful terms, but to be clear the way in which the noise modelling has been done is set out in detail in the environmental statement. It explains where baseline modelling is done and then the methodology for projecting forecast noise in accordance with very well-established methodologies, which of course Mr Thornely-Taylor has also explained to you.

482. It's never been said that we monitored each and every location, and that's simply not feasible to do at this stage.

483. MR HENDRICK: Could I ask a question on this? Because I accept what you're saying and I'm sure the rationale behind it has been explained at as well, but how, if you're taking the noise measurement at certain places do you get a model which takes account of every building and every possible obstruction between a new point on the other side of the railway line and the railway? Because it seems to me that you might be able to get a model of between a particular point, where the noise is coming from, but to do it from the other side of the line, how's that done?

484. MR STRACHAN QC (DfT): Let me address the particular criticism that was made about the other side of the line. The Committee will recall, but in addition in this case we've actually been back to St Mary's Church and done modelling at St Mary's Church subsequent to the concerns being expressed, to check our modelling. But more generally – and I think this point has been addressed, and if I get it wrong I'll get someone to clarify it – but the modelling points are used to build up a baseline environment of the noise environment and then appropriate – and there is an element of judgment from the acoustic professionals, but appropriate judgments are made as to which points are representative for particular locations,

which then build up the model, taking account of all of the topography and the buildings, which are then fed into the model.

485. So it's a mixture of empirical data and then judgments made as to the – where the baseline model –

486. MR HENDRICK: Well, can we imagine if you were doing it on flat ground and there were no buildings there? All I'm saying is, how do you get the representation of the buildings into the model if you're doing it from the other side of the line?

487. MR STRACHAN QC (DfT): Well, you do it from – you do it on both side of the line. We have baseline modelling points on both sides of the line. We had one in Bacombe Lane and two on the other –

488. MR HENDRICK: But when Mr Petersen showed the example of the places you took measurements from, they were on one side of the line, not the other side of the line. The other side of the line were used as references but no measurements had been taken from that.

489. MR STRACHAN QC (DfT): No, there were – I'm pretty sure there were –

490. MR HENDRICK: Could you put up that picture again?

491. MR STRACHAN QC (DfT): I'm pretty sure they were baseline models. I'm pretty sure that the –

492. CHAIR: Slide 8.

493. MR PETERSEN: The previous one, number 7.

494. MR HENDRICK: That's the one. So as you can see the measurements in red, as I understood it, were where actual measurements have been taken, and the ones in purple –

495. MR STRACHAN QC (DfT): No, no. The actual measurements are the blue spots.

496. MR HENDRICK: Oh, so it's the other way around.

497. MR STRACHAN QC (DfT): I'm pretty sure that they're different ones for –dependent on what you're modelling, because there's also vibration assessment models. But I'm pretty sure – and I have checked – it's the blue spots are baseline modelling points. If you look at,

for example, A6159(8), if you can see that – if I show you P11081.

498. MR PETERSEN: Shall I ask Mr Cooke?

499. CHAIR: Mr Cooke, would you like to make a comment?

500. MR COOKE: Gladly. What you'll find there are the blue dots that are marked CS. These are the actual measurement points. The other points with the six-digit numbers, these are the receptor points where assessments are made. If you look in the Environmental Statement of Technical Appendices you will find out how the measurement points are allocated to other places. In some cases they are adjusted for distance for potential screening.

501. The way that these adjusted and how they're selected for adjustment appears to be arbitrary. What is worse is that we've undertaken statistical analysis of how these assessments have been done and what we have found is that if you compare the means of the properly measured sites compared to the ones that have been estimated there is a huge bias to using noisy numbers across Wendover.

502. CHAIR: Yes. Okay. Thank you. All right. Let's get Mr Strachan to finish his response and then we'll come back to you.

503. MR STRACHAN QC (DfT): The first part is precisely what I've said, that you – the blue measuring points are baseline modelling measurement points. I've got the map here for South Heath and I'm probably finding the one for Wendover similarly. But what happens is a number of baseline modelling – sorry, baseline measurement points are identified in the wider area and from that we've then calculated, using the model, what the effects of the scheme will be, taking account of topography and distance. And that's done by the relevant experts in the field. And so you can see there's quite a widespread –

504. MR HENDRICK: On both sides of the line?

505. MR STRACHAN QC (DfT): They're both sides of the line. It's exactly the same for Wendover. If now criticism is being made of where these points were taken I haven't seen that criticism. This environmental statement has been around for some considerable period of time and I think it's been looked at by many independent people to assess the approach and methodology that's been adopted. So I reject the criticism that are now being advanced for the first time off it.

506. But perhaps most pertinently the example I was giving was, having done the predictions, for example, of St Mary's Church, we've gone back and done further modelling at St Mary's Church based on actual noise measurements there which, as far as I'm aware, don't show any discrepancy between –

507. SIR PETER BOTTOMLEY: Which we heard when we were hearing about the other mitigation.

508. MR STRACHAN QC (DfT): Precisely. I don't want to repeat myself but I am just responding to the – yes, and I think it's important to note on the methodology that discussions were held with the environmental health practitioners, as they're now called, from local authorities in selecting the appropriate locations for the sound vibration assessments, and for the baseline sound monitoring protocols and the selection of monitoring locations and identification of any areas prized for their tranquillity where the soundscape is deemed to be a significant factor. Identification of quiet areas defined, identification of new developments and a review of baseline data.

509. So the Committee can certainly rest assured that there's a very considerable amount of thought that's gone into identifying the correct baseline monitoring, and I think they're also – yes, local community forum meeting groups are also asked to provide suggestions for additional baseline sound monitoring locations and, where appropriate, practical measurements have been completed at these locations.

510. So it just gives you a flavour of what's set out in the methodology statement for this area and as for any other area. So aside from the methodology, the particular issues raised about St Mary's Church – I've already taken you to the evidence about that – the effect of our proposal, even excluding the noise barriers along the roads – because we haven't modelled those. They will have additional benefit, but not for the railroad, but for improving the noise environment. It reduces the Leqs at St Mary's Church to 46 at day and 37 during the night, which is obviously below the LOAEL levels. And you've heard I think quite a lot of information about that already.

511. But the reason I mention it is these are indicative of the noise environment in Wendover, which is substantially mitigated by the green tunnel. Now with the extension and the additional height of noise barriers, it can – to give you an overview of what's happening.

512. So the next topic raised was hydrology, or the issue of water, and again I've given – I've dealt with that on a previous occasion. I refer you back to the evidence that was given on that occasion. There was a meeting between the two experts. It was agreement and disagreement, but the extent of agreement and disagreement was reflected, and for the cutting we identified in our risk register – because we don't consider it yet established there will be a problem, but we've identified in our risk register an amount of money which would provide for full scale mitigation – if it proves necessary, which depends on the precise water level of the aquifer – of the 1.2 million, I think it was, or 1.6 – I forget the precise figure – plus operating costs for the pumping station.

513. So it's already built into our approach, although as yet we don't think it's established that it is going to be necessary. But it is something that we looked at in detailed design. But the important point is that this is not – this is an entirely neutral factor in relation to alternative tunnelling, because alternative tunnelling, coming out of – be it CRAG T3i or TBO location would involve in fact very much deeper cutting, where similar hydrological issues would have to be addressed – potentially addressed in relation to the water environment in that location and solutions found. But none of that is beyond solving as a matter of engineering.

514. On the issue – I think that was – the last issue was a plea for a bore tunnel or TBO tunnel, and I just refer you back to our previous evidence on the TBO and CRAG T3i. I have set out what we understand the relative costs of those to be, and, just trying to read my – just a moment. The explanation for how sound data is described in particular locations, just for your reference, is set out in paragraphs 1.3.29 to 3.37 of the scope and methodology report.

515. CHAIR: Thank you, Mr Strachan. A brief comment on this, Mr Petersen?

516. MR PETERSEN: I can make a brief comment on the noise reviews.

517. MR BAND: Responding to the issues of the noise, we brought up the example of Stoke Mandeville church – St Mary's Church. This is just an example, one that you're familiar with. This is not a specific point issue. It is generic across the whole of the piece. You heard last week I think it was about the, for example, the path versus the high street, a very quiet area compared to the high street, which had got exactly the same noise profile according to HS2's baseline. What we're saying is the underlying baseline is wrong.

518. If we then look at the presentation at the noise, we were delighted to see that HS2 came

along the Wendover Memorial Hall, as requested by the select Committee, to inform the public about the project on November 7. We were disappointed that whilst there were displays about operation, construction and compensation schemes. There was no significant presentation of noise. No diagrams were available. When I asked to speak to a noise expert I was introduced to a noise expert. This was a man who understood railway noise. He could tell me that a four-metre high barrier cost £1000. He could not tell me anything about the noise proposals for Wendover. This seems inappropriate. Okay?

519. If I then take –

520. CHAIR: Are these concluding remarks.

521. MR PETERSEN: These are concluding remarks.

522. MR BAND: The suggestion that the green tunnel and noise barriers fixed the Wendover problem I think is a partial answer for those people, those 448 lucky households which will be saved. The others aren't. The green tunnel and the noise barriers fix 35% of the problem, leaving two-thirds of the problem unaddressed.

523. MR PETERSEN: if I could comment briefly on the issue of hydrogeology, and then I'd like to hand it over to Andy Band.

524. CHAIR: Normally with final comments it's only one person responding. So we're just getting to the points. If you want to make Mr Petersen's final comments I'll let you, if you're very brief.

525. MR COOKE: Mr Chair, two points in response to Mr Strachan. Firstly, it is completely misleading to say that TBO will actually cause further hydro-geological problems, primarily because the TBO is designed to ensure that it moves towards the layer at the southern end of – sorry, the northern end of Wendover, and thereby travelling underneath the aquifer. So I think that is entirely misleading.

526. The second point is that, as you appreciate, subsequent to our hearings of 14 July and 8 September the Environment Agency and many others have been meeting with HS2. We have briefed. They last met on 29 October, and during that meeting our expert's evidence was put forward and there was a long discussion with respect to how HS2 will proceed with their investigation work.

527. But we still had no assurance that HS2 were going to undertake the ground water modelling in due time in accordance with the 14-step process that the EA set out, and we fail to understand why HS2 think that they can carry on for another two years without completing that work and actually understanding the extent of the problem.

528. CHAIR: We will take that as a pitch to the Committee. Shall we go back to you for brief final comment?

529. MR PETERSEN: What am I allowed to comment on?

530. CHAIR: Well, I'm bringing you in because I like you.

531. MR PETERSEN: Golly gee. I like you too. Sorry, thank you, very brief. I would thank you very much, Mr Chairman.

532. Very briefly, we've given some examples of where we feel that you, as a Committee, have been misled by information provided by HS2, either partial information or inferred information or, frankly, information way over in that corner, comparing, the – for example, comparing the TBO tunnel to the T3i tunnel. It was never – we'd never use that comparison. But anyway, nonetheless.

533. We think there are points that are critical here. We believe the noise issue has not been resolved. We believe that the TBO tunnel ought at least to be examined in sufficient detail so that we can understand how much it does cost in addition to the alternatives. I think that's important to all of us. I think we would ask for your – sorry, I'm just going to give myself a quick reminder of something. Yes, so we would ask that there be an independent view of the hydrogeological situation. If we're wrong we're wrong, but the time to find that out is now not two years from now, because if we're right two years from now 1.2 million doesn't begin to solve the problem. If we're right it's a 2.8 kilometre ditch that's got to be lined in concrete, I mean all sides, the bottom, big pumping stations, five miles – five kilometres of pipelines etc. The time to do that is now, and it seems to me a small price to pay. And if we're wrong great, because then Wendover is protected. Okay. Thank you.

534. CHAIR: Okay. Thank you for raising some important points. It's been raised before, I know, but at least you were punchy relatively brief compared with some petitioners we see, so very nice to see you.

535. MR PETERSEN: Thank you very much.

536. CHAIR: We'll now hear from your Member of Parliament, the Right Honourable David Lidington.

Rt Hon David Lidington MP

537. CHAIR: Welcome, David, for coming here today to represent your constituents. I know for the last few years we have had endless conversations and you and your researcher have spent considerable amounts of time on HS2. I suspect it fills your life almost as much as the European Union.

538. MR LIDINGTON: Chairman, thank you very much. Well, I think Lady Clarissa Eden is thought to have said in 1956 that she felt as if the Suez Canal were running through her drawing room, and I do rather feel that I've had HS2 being built through my office during the past five and a half years. I suspect that for the Committee it's been an equivalent if somewhat more condensed and intensified experience, but I have had something like 2,000 individual constituents write to me about HS2 since the scheme was first announced, many of those from Wendover. And I actually think it's important that those of us who have performed had to spend a lot of time working on this project always need to bear in mind that our experience is of little account set alongside those of my constituents, who have been living with the reality of blight on their homes, worry about the futures of their businesses or about their wider community.

539. Now, I intend this afternoon to focus very much on Wendover. I believe that we will have another opportunity for me to present the case on behalf of my constituents in the various communities along the line who stand to be affected by HS2 where there are many different individual and community interests at stake, but I know the Committee's heard a lot of evidence in recent days and weeks, not least from numerous organisations and individuals in Wendover, about their needs and about particular tunnelling options, and I want to focus quite narrowly on that, as their Member of Parliament, this afternoon.

540. The Committee quite reasonably has been asking searching questions about whether the cost to the taxpayer of any of the tunnelling options, bored, mined, green tunnel, is justified by the public benefit that such a tunnel would bring. I think it's fair to say that for my constituents in Wendover the cost of any of tunnel schemes, even if we take at face value the

costings that are asserted by HS2 Limited, represent a very small fraction of the cost of phase one, let alone of the entire HS2 project. Any of the tunnel options of which you've heard evidence would provide significant additional benefits to Wendover, coupled – compared with the alternative package of mitigation measures that the promoters have now brought forward.

541. And I recognise that in terms of noise mitigation the alternative package from the promoters would be a step forward from the provisions in the Bill. I'm not going to deny that, but having discussed their scheme both with the promoters themselves and with my constituents, with their elected representatives at county, district and parish level, and with people like those from whom you have just heard evidence who've devoted a considerable part of their lives, their energies in recent years to studying the impact of HS2 on Wendover and trying to come up with appropriate remedies, I believe that more still needs to be done.

542. Now, if we could look at slide 1, please, this – I mean, this just presents in a fairly, sort of fairly shorthand basis, the numbers of people, the impact of the various options that have been put forward. And in case anybody is asking about the source, the free-field noise data in the first line comes from environmental statement volume 5, technical appendices, SV004010, and the LOAEL numbers are the free-field numbers adjusted by three decibels. The figures for the numbers of people and properties affected are taken from looking at the 2011 census figures and from a street map of Wendover, compared with the noise contour maps that have been published with the environmental statement. And the data is again published by HS2 Limited as part of the assessment.

543. Any of the tunnel options would provide greater protection against noise for many more residents of Wendover than the promoter's proposed alternative. I mean, even the extended green tunnel, though inferior to a bored or mined tunnel, would provide some extra protection, and it would give protection that local people want to see to St Mary's Church, the churchyard and burial ground, and to Wendover Manor School. A longer tunnel, either bored or mined, would deliver those benefits and in addition remove the need for viaducts and embankments between Wendover and South Heath, bringing enormous relief to my constituents in Wendover Dean, London Road and Dunsmore, who are at present forced – faced with the nightmare of significant construction works over several years in sight and sound of their homes, followed by the operations of HS2, which, given the presence nearby of viaducts and embankments, will cause permanent visual and noise intrusion on their amenity. A longer

tunnel would also, as Mr Petersen has just explained in his evidence, remove the hydrogeological risk that is present at the moment.

544. Now, of course a tunnel of whatever length would cost money to build, and it would though too generate some offsetting savings, savings in the costs of compensation, the absence of the need for viaducts and embankments, the cost of the currently proposed Wendover green tunnel if it were a deep bore tunnel, the costs of pylon relocation, and it would also lessen considerably the impact of property blight on both dwellings and businesses.

545. Now, you've heard evidence earlier today about the TBO scheme and that analysis, and I'm not proposing, chairman, to repeat the detailed evidence that you have heard earlier today on which the Committee will come to its view. But the TBO scheme suggests that it is possible to build a deep bore tunnel, protecting Wendover at a significantly lower cost than the estimates so far provided by the promoter, and yet at the same time it would still be possible to deliver on the promoter's schedule. I think we've got slide 2 just here as a – no, it's not this one. No, not that one either. That one. I think the Committee's seen this earlier but I'll just, sort of, leave that on the screen as a reminder. The TBO scheme basically argues that you could tunnel from one end rather than from both ends, for a rate of tunnelling slightly faster than that assumed by the promoter, and for certain other adjustments to costings to bring HS2's estimates more into line with the experience of other large tunnelling projects and the national infrastructure report.

546. Now, Chairman, I don't make any claims to be an engineer or a technical expert at all, but I –

547. CHAIR: It hasn't stopped other people.

548. MR LIDINGTON: But it's precisely for that reason that I, along with very large numbers of my constituents, have felt an incredible sense of frustration that so often the promoter has relied on assertion rather than detailed analysis when it has come to the arguments in support of their estimates of cost, and when the promoter has rejected the critiques of others, even by those who are technical and engineering experts, even in response to Freedom of Information Act applications. HS2 Limited has consistently relied upon a stock response that to release detailed costing information would prejudice their ability to negotiate future contracts, yet professional tunnelling engineers who have advised some of the

campaign groups in Buckinghamshire have advised that in their experience the release of such data would not prejudice future contract negotiations, and I believe it is necessary to test the promoter's figures. There's no real arguments about the benefits that tunnelling would bring. The question is, as the Committee has said in the past, whether the cost is proportionate to those benefits, and only detailed analysis of the kind I am asking for would provide the answers.

549. Now, if we look at TBO, TBO proposes boring from the south only. It would be cheaper than the promoter's plan because it would mean hiring only two out of four boring machines. The TBO scheme assumes also a higher tunnelling rate of 90 metres a week or more, rather than the 80 metres a week in the promoter's assumptions, and you heard evidence in the previous presentation today about that. I won't detain the Committee any more on that point. The promoter of course has never made public the analysis on which the assertion of 80 metres a week is based, and it has been argued by my constituents and their consultants that other long term tunnel schemes are significantly – are ones where significantly faster rates are usually achieved, and that in the two slurry cases cited by HS2 Limited the figures that have been given actually include quite significant non-tunnelling costs. In my view there is a very strong case for the Committee to commission an independent analysis of HS2's claimed estimates for the cost of tunnelling.

550. In any case, the TBO calculation is that the long tunnel protecting the whole of Wendover, including Wendover Dean and London Road, as well as South Heath and Potter Row in Cheryl Gillan's constituency, would have net costs of between £50 million and £213 million, depending on whether the REPA team's or the promoter's own scheme of costs is assumed. Now, even the higher figure is significantly below the 300 to 400 million that we've been talking about in the context of the figures discussed in Committee and agreed by the promoters about the estimate for a deep bore tunnel, and which has been the reason why such a scheme has been rejected so far. Now, if the evidence turns out indeed to be that the cost could be as little as £50 million then it seems to me that the case for such a tunnel is utterly compelling. Those figures of between 50 and 21 million amount to between 1.2% and 5% not of the budget for phase one of HS2 but of the contingency element of 4.2 billion that is provided for within the overall budget, between 1.2 and 5% of the contingency element for phase one alone.

551. Now, let me say, before I conclude, a few words about the option of the extended green

tunnel, on which you heard evidence from Wendover petitioners before the summer. Now, this is less attractive than a bored tunnel. It would not protect Wendover Dean or London Road, nor address the hydrogeological risks, and because the extension will be built above ground there will be some visual intrusion. And I think, as local people acknowledge, there would be more impact from construction than would be the case in either a deep bore tunnel or the promoter's alternative mitigation package. Nevertheless, that would have advantages over the existing scheme put forward by the promoter. If we can look at slide 1 again please, that was the table there. Just again the figures there for the green tunnel extensions do show more people, more homes being protected, less property blight than under the columns on the left hand side, which are for the current alternative scheme. And they would also protect St Mary's Church and Wendover Manor School completely.

552. Now, if we look at the costs of an extended green tunnel, I mean, there's two ways of estimating this. We can look at the figures that the Transport Minister gave in a written answer to the Right Honourable Frank Dobson MP on 25 November 2013, when he said the cost of the planned Wendover green tunnel was £57,800 per metre, and multiply that by the length of extensions that we are – would be seeking under this model of an extended green tunnel. Alternatively, we can look at the promoter's formal petition response document to Wendover POP, which estimated the cost of a southern green tunnel extension including covering the south – the Small Dean viaduct at £37 million, and gave a similar figure of £37 million for the 1,000 metres northern extension to Nash Lee Lane. I point out here that the Wendover group had been seeking only a northern extension of half that length, of 500 metres not 1,000, and therefore the cost would be less than the estimated 37 million from the promoter.

553. In any case, HS2 and Department of Transport officials told me when they met me in my constituency office following the Committee's statement of 21 July last year – this year, that cost was not a prohibitive issue when it came to the green tunnel extension that the Committee had said it was minded to accept unless a compelling alternative mitigation package could be devised. Rather, their objections were grounded on other factors, that to provide an extension would delay the project, that the visual impact of the tunnel extension would itself be very intrusive, and that the benefits of the tunnel extension would be delivered by other means.

554. If I can take the issue of delay first, HS2 Limited showed over the summer they could

indeed respond with alacrity to the Committee's requests. They devised and presented a new additional provision covering a 1.6 kilometre tunnel extension to South Heath within about 10 to 12 weeks, despite it being the main holiday period. They did not, I'm afraid, act with comparable dispatch over Wendover. When I met officials, as I said, I urged them to talk to local representatives in the village about the cost and benefits of both the extended green tunnel option and the alternative package that they wanted to develop. What happened was what my constituents regard as, at best, half-hearted consultation with insufficient details, and a heavy emphasis throughout on what the promoter thought was wrong about the extended tunnel idea. Noise contour maps which were supposed to provide the basis for an informed local discussion were not even produced until September this year when the Committee was due to resume its work.

555. Visual intrusion first of all, and can we have slide – I've got it down as slide 4. If we can scroll – next one please. That's it. Now, I accept that an extended tunnel would be four metres higher than the noise barrier, because of course it would cover the pantographs, whereas the proposed noise barriers would not, but of course those pantographs would be visible as well as the sound from them audible. Now, in the impression that the promoter has supplied to the Committee to aid it in its decision, we have a striking contrast. The tunnel extension has been shown in a, sort of, high contrast off-white or light grey colour, whereas in the – have we got the one of the – here, of the noise – yes, the noise barrier schemes is the upper one here. If you look to the left, instead of as in the tunnel extension impression at the bottom where it's shown very visibly, the line of the noise barriers has been, I'm informed by HS2 officials, shaded in brown so that it blends better with the landscape.

556. Now, fine, they're presenting their case as best they can, but it is not impossible to devise colour schemes and screening that make for less visual intrusion than that presented on the lower map here. And in fact I've had an example in my constituency of just a few miles away of Arla building the largest fresh milk dairy anywhere in the world in full view of the AONB and the Chilterns Ridgeway, where they changed their plans from painting it brilliant white into painting it a camouflage colour and planting more extensive tree cover than they had first intended, to precisely enable it to blend better with the landscape so that it was less visually intrusive. So I really think that, you know, I have more confidence even in HS2 Limited than to think that they can't do better than they are showing on the lower half of the slide there. I can't help adding, chairman, that if the promoter's concern about visual impact

on the AONB was so strong it is puzzling that they have been so resistant to the longer tunnel proposals, like TBO, that would remove the need for viaducts and embankments in the middle of the AONB.

557. If I can turn to the question of the impact of a tunnel compared with the promoter's scheme, which again, as I acknowledge, is better than what we had previously. If we can look just at a reminder first of all, at the one slide we haven't seen so far. There's this one here. Those members of the Committee who've had the joy back in May of going to Wendover Dean, London Road, will remember standing by the roadside and looking across to the other side of the road and seeing this crane in the field with a black balloon above it to indicate where the line of the railway embankment would pass, as seen from those residents' houses. And you can just see the black balloon if you look below the red line slightly to the left of the line of the crane. So that's just a reminder of what people living in that part of my constituency will face if the – if no tunnel, if in this case no deep cut tunnel, is permitted. And even that model – that red line does not take account of any, sort of, barrier, any false cutting that would be erected on top to try and provide a measure of noise mitigation.

558. I'd like to talk a bit about – briefly about St Mary's Church and briefly about Wendover Manor School, because I know the Committee has taken a close interest in both. The alternative package would indeed help to reduce the impact of noise upon the interior of St Mary's Church, but I've consulted church representatives within the last few days and they say they are still dissatisfied and do not feel fully assured about that. Their own consultants in St Mary's are certainly arguing to them that the noise impact – the noise protection that is proposed by the promoter in the alternative package of noise barriers will not be sufficient, given the church's use as a concert venue as well a place of worship.

559. Secondly, the impact on the churchyard and burial ground and surrounding area still stands to be significant. And local people, my constituents, have emphasised to me when I've discussed the alternative package with them that they are used to the noise, particularly in the daytime, from passing traffic on the road, but that is very different from the pulsating noise patterns of frequent and regular high speed train services which they can expect once HS2 is in full operation. The certainty is that a tunnel would solve that problem. And if we look at the LAeq figures that have been published, as I said, by HS2 itself, the average noise in the church would be almost double under the barrier scheme than if a tunnel were built.

560. Wendover Manor School. Again, there's a difference between a tunnel and the noise barriers in terms of noise impact. I mean, the figures are – under noise barriers would be about 49 decibels and 43 under a tunnel. Because of the logarithmic scale for noise, that would mean a difference of about 50% in terms of the noise experienced by those working at the school, and this does matter. More than two thirds of students at the school have high end behavioural, emotional and social difficulties. They are at all times at risk of extremely challenging behaviour. I've looked at the HS2 report upon the school, and I do think that it has been written under something of a misapprehension that this school is in a period of transition from being a school for students with severe behavioural difficulties to being one that is focussed instead on children with autistic spectrum disorders.

561. I've been in touch with the head within the last couple of days, and he has made it very clear that that is not the case. They are indeed taking a greater number of children with autistic spectrum disorders, but that they are, and intend to be for the foreseeable future, a school that will have a very large number of pupils who are subject to very challenging behaviour indeed. And the head assures me that he is still deeply concerned that the barrier scheme will not provide adequate protection. Now, he has provided me with a short brief on the particular problems affecting his school. I think we circulated that to members of the Committee. The head has asked me if that could be treated as confidential. I'm very happy to supply a copy to the promoter as well in the, you know, the interests of fairness, but it does contain some sensitive personal data about individual –

562. SIR PETER BOTTOMLEY: I think, having read it, on the assumption we're not advised it's procedurally incorrect, I think there's no difficulty in what the headmaster's written being read, but I don't think it needs any further reference. We understand the serious points he's making.

563. MR LIDINGTON: Yes, right. That's fine.

564. SIR PETER BOTTOMLEY: If in some sense it's thought to be improper for the promoters to see it they don't have to, but I can't see an objection.

565. MR LIDINGTON: Yes. I mean, okay. I mean, I think I'm perfectly relaxed about – if they want to.

566. MR MOULD QC (DfT): Well, we have a relationship with the school. We have a

specialist who has met the school, and we heard the school present a case to the Committee in the last fortnight, in which the headmaster spoke about the children and the particular skills of this school, and we responded to that case.

567. SIR PETER BOTTOMLEY: But I think, David, you can assure him that what he said has been read.

568. MR LIDINGTON: That's very helpful. Thank you. In conclusion, chairman, on costs the estimates that HS2 has relied on are opaque. The details have never been adequately explained, and though the assumptions have been challenged and questioned by reputable experts, and a powerful case has been made that it is possible, by looking again at HS2's numbers in the light of experience elsewhere, to reduce costs, significantly those costs for tunnelling options that the promoter has argued up until now are essential if a tunnel were to be built. And if the costs are indeed lower than those previously assumed, then even a long tunnel suddenly becomes much more affordable than might previously have been believed. So I believe that HS2's detailed costings should be subjected to an independent expert analysis commissioned by this Committee.

569. As far as the time is concerned, the additional provision for a significant tunnel extension was put together in a matter of weeks, despite it coinciding with the main holiday period, so I believe that it is possible for HS2 to take such action, comparable action if the Committee agrees to a further tunnelling to protect Wendover, whether a Wendover only tunnel or some sort of part of a longer tunnel, without that harming significantly the timetable for the project. Indeed, by putting the minds of local people at rest it might indeed make subsequent parliamentary passage of the Bill a lot easier.

570. As far as Wendover is concerned, I know the view of local people is that only a bored or mined tunnel on either the TBO model or one of the others would protect residents fully, both in the village itself and in the outlying areas of Wendover Dean, London Road and Dunsmore, and it would remove the need for viaducts, embankments and other infrastructure work, the prospect of which is causing real anguish to large numbers of my constituents. Even a shorter tunnel would – in the form of an extended green tunnel would provide more protection for a greater number of residents and businesses, and would sort out the problems associated with St Mary's Church and Wendover Manor School, and do so conclusively.

571. HS2 Limited and the Department for Transport have accepted that the costs of such an

extended green tunnel are not prohibitive, and indeed are not the reasons that they have given to me for their resistance to this particular option. So I would ask the Committee to reflect very seriously on the evidence that you have received from so many individuals and organisations representing Wendover. I think that the fact that so many people petitioned and so many have come to present their case in person indicates to the Committee members quite how strongly the local community feels about this project. They are not going to derive any benefit from it. If they are being asked to shoulder a significant environmental, and in many cases personal, as well as community cost to serve a project which is judged to be in the national interest by Government and Parliament, then I think it is only just that adequate protection should be provided to them. Thank you very much Mr Chairman.

572. CHAIR: Thank you very much, David. Whilst you're here we also heard from Aylesbury and we had the joy, when we did the visit there, of being stuck in traffic in Aylesbury. And one of the requests we had is to ensure that a road can go all the way around Aylesbury. And the project, I understand, are looking at the proposal to ensure that there's a bridge goes in so that the road can go underneath the railway. I presume that's something you would favour and support?

573. MR LIDINGTON: Yes, I have not come briefed about that today but I am aware that you have discussed that with both the Buckinghamshire County Council and Aylesbury Vale District Council. The position, as the Committee has experienced is Aylesbury is that traffic through the town is becoming increasingly congested. Aylesbury Vale District has one of the fastest rates of housebuilding anywhere in the country. Indeed last year it built more new houses than Birmingham and Nottingham combined. And it is forecast to build some tens of thousands of additional houses, some of which at least will be around Aylesbury itself over the next 10 to 20 years.

574. Now, as a response to that, is that the district and county councils are looking for ways in which to relieve traffic by making provision for roads. Their fear is that without a tweak to the current proposal, that it would become impossible then in the future, to build what would amount to a relief road around the western side of Aylesbury, without having to uproot HS2 and sort of divert the HS2 in some way or tunnel under it.

575. So the view of my county and district councils is that at this planning stage it should be possible to tweak the design of the scheme so that it makes possible, as and when finance is

available, for that relief road around the west of Aylesbury to be built, and I would support that.

576. CHAIR: Thank you very much David. Do you want to make any comment Mr Mould?

577. MR MOULD QC (DfT): In deference to Mr Lidington, on behalf of the Secretary of State, I should perhaps make one or two comments. The first point is that he speaks to you today of course as a constituency MP. But, as a member of the Government, he will, of course recognise that however small a fraction of the overall HS2 budget that the additional costs of a full tunnel may be; expenditure of the order that everybody has accepted will be involved in that tunnel extension must be carefully scrutinised and justified in its own terms.

578. And the Committee, which has heard the essential case for a full tunnel in the hearings in July, expressed its interim conclusions on that case in clear terms, and said that it was very far from convinced that that extra expenditure was justified, for the benefits of the result from it. Now, since that view was expressed by the Committee you have heard evidence from a quantity of experts brought on behalf of a number of petitioners. And you have heard criticisms of costings produced by HS2 and you have heard evidence of a number of refinements to the case for a bored tunnel at various extended lengths, including a full bored tunnel through the Chilterns.

579. Those cases, while presented, as it were, as the silver bullet that cured the problems that were identified in July, had been on analysis, essentially no more than refinements to the case that was presented by the petitioners in July. And the striking factor that is common to all of those cases however much people wish to criticise the capacity or otherwise of the costs that have been put forward by HS2, is that each of them necessarily is founded upon an additional construction cost on many hundreds of millions of pounds.

580. And the only way in which petitioners can overcome that inescapable truth is by attributing a value, in quantitative terms, to matters such as landscape impact and so forth. And that case was considered in July, and so the Committee based its interim conclusion on that evidence having been put forward.

581. So the question I simply invite the Committee to consider, in the light of both the presentation by Mr Lidington, and the evidence, which you've heard from others in recent times, is, is there in fact a clear-cut answer to the interim conclusion that you drew. Or is the

matter essentially, notwithstanding the quantity of expert material, which you have had since then, is the matter essentially, as it was.

582. If one moves away from that point, there has been a consistent theme that HS2 has underestimated the environmental impacts of the scheme as it passes through to the west of Wendover. But in fact, that case itself has been based upon an exaggeration of those impacts, and I take the slide in front of you as a good example of that. It was suggested by Mr Lidington that the balloon represented the height embankment. But in fact, the position that the balloon represents the height of the catenary, and the height of the embankment is about halfway up the image that you have on the screen in front of you. I will give you another example, the case for impact on Wendover House School that you heard a couple of weeks ago. I demonstrated to you, through the information that we had available that as a result of the changes that have been proposed under AP5, the noise environment for Wendover House School is going to be unchanged at worst as a result of this railway, and in fact we are predicting that it will improve. There is no answer to that case, and there is no answer to that case.

583. So I don't give any further examples, but those who criticise HS2 for underestimating impacts themselves, with respect, are guilty of exaggerating those impacts in the cases that they present to you.

584. Finally, in relation to Aylesbury Vale, I have indicated to you that work is ongoing in relation to future proofing the works that are being done to the Princes Risborough line and that, I think, was the point that Mr Lidington was dealing with. So, whilst one understands the concerns raised by the people of Wendover, the reality is, I would submit, on the evidence that you've heard, that the AP5 proposal, assuming that that is brought forward, that that will overcome the great majority of the impacts that were being predicted on Wendover, including the school and the church. And will do so at a cost that is very considerably, by an order of magnitude, lower than those costs that are associated, on anybody's case, with the construction of a bored tunnel, and just for the reference that is amply demonstrated by slide P10778, which you have been shown before, but I simply read that reference into the record.

585. CHAIR: Right, do you want to ask a question, Mr Bellingham?

586. MR BELLINGHAM: Mr Mould, Mr Lidington mentioned the comments by HS2 when they said so far as extending the green tunnel is concerned cost wasn't a prohibiting factor.

But it was about delays, it was about visual impact and it was possibly about a number of mitigating measures being more effective. Now, is it true that cost isn't a prohibiting factor?

587. MR MOULD QC (DfT): It's not cost, because we don't even get to costs in that case because extending the green tunnel wouldn't produce any appreciable improvement in the noise environment, for those who reflect it. That is the message of the slide that I have just mentioned, P10778.

588. MR BELLINGHAM: But that is not what Mr Lidington is telling us.

589. MR MOULD QC (DfT): Well that is the answer to it, on my case.

590. CHAIR: Okay thank you.

591. MR MOULD QC (DfT): You can see that on that slide, Mr Bellingham, that with the AP5 scheme the number of dwellings above the Leq LOAEL reduces to zero and whilst there remain 122 dwellings that are predicted to be above the max level, 60 Db, by at very considerable increasing cost. That number only reduces by a modest amount, as you can see, it goes down by 10 dwellings for the cost of an extra £40 million, and by a further 18 dwellings I think it is in that sort of order, for the costs of an extra £275 million. That is what I mean by the need to consider carefully whether the benefit that is achieved by spending the money justifies the expenditure in question.

592. CHAIR: David, some brief, final comments and thoughts?

593. MR LIDINGTON: Yes please. And I think that and I said during my comments, I have always acknowledged that it is a matter of reality, that the Committee is going to need to consider the cost of any mitigation measures proposed against the value of the benefits that would be provided. But the point I was making today is that we now have a challenge to the published HS2 costings, which suggests that it is possible to reduce those costs, very significantly indeed, by making assumptions about numbers of tunnelling machines; about tunnelling rates, about certain other elements in the published cost data, which are consistent with what experts in engineering, and tunnel engineering in particular, argue is perfectly feasible.

594. And if those costs are indeed as low as TBO Motors claim then that completely alters, in my view, the cost benefit analysis from that on which the Committee came to its provisional

view back in the summer. I think it is also the case that in the TBO proposal, there is not a reliance on attributing a monetary value to landscape, instead it is the other elements that I just described that are the key to the cost reduction that the TBO promoters claim. And I discussed with Ms Wolf, the TBO proposer about a week ago, she was very clear to me that they do not include, in that analysis, the attribution of monetary value to landscape.

595. Now, if the independent cost analysis that I am asking for is carried out and it shows that after all we are still talking about a much more costly scheme and that HS2's figures are indeed robust and stand up to analysis, then that, I think, will go some way to enabling my constituents. I don't think they would agree with ruling out at such a time, but at least feel that that decision had been based upon a really thorough investigation of the cost argument. Whereas at the moment there is no confidence that that kind of detailed analysis has been done.

596. Finally, on the green tunnel, my understanding is that the slide Mr Mould has presented to you, first of all, it makes no account of noise impact up to 50 Db and it also rests on assumptions about there being less noisy HS2 trains by the time the service comes into operation. If we can go back to the first slide that I put up, which is the table of Wendover options again, I think you will see there again that the column, the two columns on the left show the impact of the Wendover noise barrier scheme the promotor is bringing forward. And next along from the left are the columns for the number of houses, and the number of individuals who would benefit were the northern green tunnel extension alone to be adopted clearly for southern green tunnel, sorry if the third one along it's the southern green tunnel that the Committee was considering back in the summer.

597. The northern green tunnel extension the Committee did not comment on in the summer of this year, and there is the Stoke Mandeville issue that I have raised with the Committee before, but again that would aggregate the numbers in. But I think those figures demonstrate that the idea that there is no benefit from the green tunnel extension is not something that I or particularly my constituents accept.

598. And I want to make a response on the school and the church; I don't deny that the promoter has engaged with both, and that their proposals go a way towards addressing those. But from my conversations in the last week, the fears have not been laid to rest; both of those bodies believe that there are still some real difficulties. And I just think it's a great pity that

these questions were not explored in more detail at a much earlier stage then we wouldn't be into discussion about where this was going to threaten the timetable, and I have been raising issues of the church and the school for three or four years now. And basically the homework does not seem to have been done until the very last minutes, and so I think the case is there, in those that there are benefits, even from the modest green tunnel extension, obviously much greater ones if the cost analysis showed that the long bore tunnel was, in the Committee's view, affordable.

599. CHAIR: Thank you very much for your contribution this afternoon; and no doubt at some point we will see you back to talk about other parts of your constituency, David, thank you very much indeed.

600. MR LIDINGTON: Indeed, thank you.

601. CHAIR: I am now going to call 316, FCC Waste Services UK Limited for an update. Right, shall we – you're going to do an update from the prospect of the promoter, and then we will go to the FCC representatives, Mr Mould.

FCC Waste Services (UK) Limited

602. MR MOULD QC (DfT): Thank you, yes thank you very much, the Committee will recall from not long ago that FCC appeared before the Committee in relation to – with their proposal that rather than a replacement for their sidings at Calvert being placed on the eastern side of the line, under the AP4 proposal. That work should be done to investigate the prospects for securing permission for an alternative location to the south of Sheep House Wood, again on the eastern side of the existing Aylesbury line, on the eastern side of the HS2 line, following construction of the railway.

603. And the way matters were left was that I intervened during the course of the debate and said that it would be appropriate for further discussions to take place about taking forward investigations to see that alternative proposal could, on analysis and on detailed consideration, could be proposed in a way that was acceptable in all the specs. But particularly insofar as its impact, potential impact on the Europeans protected bat populations in Sheep House Wood and the other surrounding woodlands, which is the source or particular concern. A concern I think, that was reiterated when you heard from the local wildlife trust in their evidence to you on Monday evening of this week, I think they touched on that point.

604. Now, since that hearing the parties have met on a number of occasions and had telephone conversations with a view to developing options to explore, to find an optimum solution to put forward as a candidate for a southern relocation for the FCC sidings. And it is certainly the case, as I understand it, that FCC are committed to promoting such an option. And indeed, HS2 has made clear, and this is reflected in a letter that has been sent today to FCC's Parliamentary agent, HS2 is perfectly willing to work collaboratively with FCC for that purpose, and indeed to fund the reasonable costs of developing the scheme and promoting it through an appropriate application forward development consent and the necessary consents.

605. But what is of particular concern to the promoter is that that work should not jeopardise the timely delivery of the HS2 Bill and the timely delivery of this railway. And that point is reflected in a letter that was written by the Parliamentary Agents instructed by the Secretary of State, which is at P1123(81), on 5 November, to which there has not been a substantive response, so it represents the most recent exchange between the parties on this issue. And if I can just direct or show you the no, this is P1123(81). If I can just ask you to look at the third full paragraph here, and I will read it out because it really is key to our concern. 'Public interest in the timely delivery of the phase one railway, which is the principal policy of the Bill, requires identification of the appropriate location for the replacement sidings, should not be permitted significantly to delay Royal Assent for the Bill. It is the task of my client to do all that it reasonably can to avoid the resolution of that outstanding issue delaying the timely delivery of the Bill. For its part, the Select Committee' and we hope this was not untoward, 'May reasonably be expected to respond positively to a proposal that enables the case for the sidings being relocated to your client's preferred location to be advanced, whilst preserving the timely delivery of both the Bill and the phase one project.' And that remains our position.

606. Now, we estimate that the work needed, in terms of engineering, environmental assessment and so forth, to enable the development of a proposal for some sidings location is likely to take us up to the middle of next year. And we believe, that it is prudent to assume that the earliest date on which a submission for consent, whether it be through an application for planning permission, or for a transport and works application order, or indeed a submission of an additional provision for consideration by this Committee; that work is unlikely to produce a submittable proposal until, at the earliest, 1 August 2016.

607. And if that is right, and we believe that it is a sensible and prudent approach; that means

that incidentally the delivery of this Bill will be delayed by at least nine months, until October 2017. And the conclusion of the proceedings of this Committee will be delayed by a similar period, say until October, November of next year; that is the earliest that the Committee will be able to report its findings on the Bill. And that point has been conveyed to these petitioners.

608. And so our concern is that we should seek to avoid those delays, it's in the highest degree undesirable in the public interest that those delays should demure and we should seek to avoid them. And we believe that the petitioners will share our concerns in that respect. And therefore we have considered the timeline for a process that would take place in parallel to the progress of the Bill that would enable a southern option to be pursued and if consented to, be delivered in time to enable FCC to relocate in one shift, from the existing sidings to – and that's the southern replacement.

609. And we believe that that is a timeline that is realistic and I will just set it out. We do not require FCC to quit their current sidings until the end of the third quarter of 2019. We believe that the delivery of the southern option, if it is consented, can be achieved by the beginning of 2019, if a Transport and Works Act order is the consent route. And by the summer of 2018, if planning permission is the consent route.

610. And the way that breaks down is this, if you assume the applications, I say, on 1 August of next year, experience suggests that the Transport and Works Act order, even if subject to change, would take some 18 months to secure consent, which takes us up to the beginning of 2018. And we have allowed a construction period of 12 months, taking us to the beginning of 2019. If planning permission is all that is required, then that would – we would expect that even allowing for objection or challenge, that would be secured by August 2017, with a construction period of 12 months, leading us to August of 2018.

611. If one was to follow the AP route, and assume on the same basis that the AP is laid before Parliament at the beginning of August of next year, one would expect, as I say, Royal Assent to follow in October 2017. And the – when one allows for construction, that would effectively deliver, at best, a scheme that is operational only three months in advance of the scheme consented under the TWA route, and considerably later than the scheme that is consented under the planning application route.

612. So, everything on that basis points to a scenario in which the desire of FCC to promote,

to join with us in promoting their southern option, can be accommodated without the need to delay the timely delivery of this Bill. It can be dealt with in parallel with this Bill and the dates and the timelines are such that we can be confident, at this stage, that it's realistic to assume that that scheme can be delivered in that time.

613. Now, my final point is this; it is necessary, in our submission that the AP4 scheme remains within the Bill as an insurance policy. Because it is by no means a given that the alternative southern location will secure consent. I now that FCC's case to you, when they appeared before, was that they were sanguine about the prospects of that case, and they believed that there were no impediments to securing consent. If they are right about that so much the better. But we believe that it is right to have a measure of caution in that respect, and it's important that this Bill is able to be delivered, at least with the full backing if the AP4 scheme, in the event that matters do not proceed as they suggested they would in relation to the subject. Because it's vital that there is a solution in this Bill, to enable FCC's sidings to be relocated in the event that other options fail, and that option is AP4.

614. And we make that point clear on the second page of this letter, at 12382, where we say in the paragraph, which begins 'Your client...' just towards, about two thirds of the way down the page. 'Your client says that there is no sustainable objection to the southern option, if that is correct then the existence of the northern proposal is immaterial since neither the law, nor policy requires that an acceptable scheme should be tested against an alternative proposal, albeit that some may argue that the alternative performs better. Whereas the public interest clearly demands that the northern proposal remains in the Bill in order to secure a deliverable scheme in the event that ultimately the southern option is not pursued, the retention of the northern proposal need not prejudice the southern option. And as an assurance can be provided that my client will not implement the northern proposal in the event that your client's application for the necessary consents for his preferred scheme succeed and that all other requisite consents are secured, for example in respect of land use. On that basis, it is actually in your client's interests that the northern proposal be maintained in the Bill, in case your client's proposal should not turn out to be delivered. It is also worth mentioning that according to your client's own submission, your client would secure no particular advantage in respect of potential liabilities under the common law of nuisance or under statute, arising from the implementation of the southern option under the AP.'

615. And then it goes on to make the point that I've already made that the promoter would

look to postpone for as long as is reasonably practical, consistent with timely delivery of the phase one project, the date by which it requires possession of the proceedings. So that is the reason why the AP4 scheme needs to remain in the Bill, and it does not provide any impediment if the petitioners are right that their scheme is, in every material respect, an acceptable agreement to secure permission. We simply won't develop out the AP4 scheme in those circumstances.

616. Now, that – in the light of those thoughts and those submissions, as I say, we have sent the petitioner today a letter which is at P11288, which sets out a number of assurances. The letter is on the screen and you can see that we say that reference is made to the letter I have just drawn to your attention, that the promotion of an additional provision is unnecessary in order to secure consent for the northern proposal and planning application, or if required, a TWO. It is entirely appropriate for that purpose, regardless of the consent of the route, it will be necessary to secure a bat licence in respect of the development of the southern proposal. It is anticipated that the timescale for obtaining a planning permission would be shorter, compared with the AP route, and I've explained the thinking behind that. And then entirely appropriate Natural England anticipated then these assurances are offered subject to agreements between the parties on terms and wording. 'Firstly that HS2 will not pursue to construction the northern proposal provided the development consent, bat licence and any other necessary consents have been granted for the southern proposal.

617. Secondly, HS2 Limited will seek to postpone as long as reasonably practicable, considering consistent with the timely delivery of phase one of HS2, the date on which it requires possession of FCC's existing sidings. We currently estimate that date to be by the end of third quarter 2019. Thirdly, HS2 will fund, as appropriate, the reasons costs of seeking consent and any other necessary consents for the southern proposal as part of FCC's overall compensation claim. And fourthly, HS2 will fund the reasonable costs incurred by your client developing proposals for relocating the sidings to the south of Sheep House Wood, until the date of submission of the' and if we just go on, 'of the planning application should the proposed development for relocation of the sidings prove to be technically and economically viable.' And it goes on to give the reassurance that we are committed to working with FCC in order to seek to deliver, if possible, their preferred option, which is the southern option.

618. So, that is our position on this but I do just want to, in closing these opening remarks, just re-emphasise that we can see no way around the start of the position that if perusing the

case for a southern option is to be dealt with under the terms of this Bill, it will delay both the work of this Committee but also the delivery of Royal Assent for this Bill, by a minimum of nine months. And that, in effect, would be to allow what is, when all is said and done, accommodation work to drive the timing and delivery of this major public works project for the delivery of this railway. And in my submission everything should be done that reasonably can be done, to avoid that result and I have suggested the way in which that stark and undesirable consequence can be avoided whilst properly protecting the interests of FCC in testing properly, and seeking to secure and deliver their preferred alternative site.

619. CHAIR: Okay, counsel for FCC.

620. MR HUMPHRIES QC: Firstly thank you very much, on behalf of FCC, for this opportunity to update you. I have got a number of points I need to make, I anticipate I'll be about 15 minutes. And I am going to ask you for indications on three things. The first point I'm going to cover is an update on the alternative, because that's what we've been asked to do. We've had a number of meetings with HS2, both with their engineers, and with their ecologists. I am pleased to report that since you gave the indication at our 28 October meeting that HS2 should cooperate. They have, the meetings have been productive and I am grateful to HS2 for that. Those meetings have identified four alternative southern options. You will recall sirs, from the last occasion we looked at an FCC option, which had its sidings at approximately 45 degrees to the angle of the main line.

621. SIR PETER BOTTOMLEY: We haven't got a map.

622. MR HUMPHRIES QC: I'm going to show you some maps in a moment sir. We have been considering two options, with a 45 degree splay from the main line, one with the crossing of the main line as a bridge, and one with an underpass. And then we've also worked up two parallel siding options, southern side options again, one with the bridge, one with an underpass. Now, what has emerged, so far as the favoured option by the ecologist, but as I understand it with the agreement of the engineers; is one with parallel sidings. I can show you all four, it would be easier on or I can just show you the one. What would you prefer?

623. SIR PETER BOTTOMLEY: I just thought the one and then we can see more.

624. MR HUMPHRIES QC: I believe we've handed up, one of the people sitting behind

you, or beside you, will have some plans.

625. SIR PETER BOTTOMLEY: Is that the same one?

626. MR HUMPHRIES QC: Yes. I believe it's not on the system and I apologise for that. So the option that is emerging as the favourite option is what's been called the SK12, you will see it in the bottom right hand corner, the SK12 plan. That has sidings which are parallel to the main line and it has a bridge.

627. SIR PETER BOTTOMLEY: Across the line from incinerator?

628. MR HUMPHRIES QC: Across the line from the incinerator, yes.

629. SIR PETER BOTTOMLEY: Across the line from the waste plant or whatever you call it.

630. MR HUMPHRIES QC: Absolutely, what used to be called the plant formally known as the incinerator sir. The plan has six environmental features that I will draw attention to; the first is that the principle crossing you see, which is a wide green bridge at footpath or bridleway GN28, that's proposed by both FCC's ecologist and HS2's ecologist, to be up to 60 metres wide, with a separate eight metre area for the two-way haul road a large –

631. SIR PETER BOTTOMLEY: Sorry, can your colleague put his finger on where – put your finger on, in the middle of the road, yes.

632. MR HUMPHRIES QC: I'm so sorry that you don't have these on the screen. That's a wider green bridge to allow an eight-metre two-way haul road, a large green corridor down the middle and then in effect a double hedged lane for the existing track, bridleway. And that gives a clear separation between the bats and the FCC vehicles. The second feature I will draw attention to is the bridleway at QUA36, that is the one on the right, over here on the right. That's as per the existing HS2 proposals, I understand in an update earlier in the week, HS2 indicated that the normal green bridges would be a minimum of 25 to 30 metres, we assume that that one would fit that particular criterion.

633. The third feature I will draw attention to and you will remember this is an issue last time, the sidings now do not encroach on Sheep House Wood. We said, on the last occasion, that there was absolutely no reason why they needed to extend that long and that has been

accepted by HS2 and they now do not encroach on Sheep House Wood.

634. Fourthly, you will notice the sidings now are quite deliberately in this parallel solution, located in the gap between, to the left of the plan, HS2's proposed Sheep House Wood mitigation structure, and in the centre of the plan, we are looking at it a moment ago, the 60 metre green overbridge. Now, that is important because HS2 and its ecologist themselves wish to discourage the bats from foraging or crossing other than at its green bridge or mitigation locations. And actually having the sidings parallel in this location actually reinforces the sense of barrier that the bats are not to cross and directs them, or assists in directing them towards the green bridges. And that sirs, is reinforced by the fifth point that I make, which is the extensive mitigation planting that you will see on this plan, which has been discussed with the ecologist, which is to reinforce the way in which bats are either directed north towards the Sheep House Wood crossing, or south to the 60 metre crossing. And FCC would be very happy as landowner, to agree to early planting on its land to facilitate this, through an additional provision in the Bill to further mitigate those effects, many of which of course are there anyway because of the HS2 proposals going through this particular area.

635. The sixth point I will make briefly, you will notice, in red on the plans that you have, that there is a noise and light exclusion fence around the north east side of the sidings facility. That again to prevent any sort of spill of light outward and to contain it within the area of those sidings.

636. CHAIR: We're still showing quite a lot of detail. Essentially your concern is that this should be delivered, and the argument presumably is whether it should be delivered within the Bill or by transport and work type, or a separate planning permission is that right?

637. MR HUMPHRIES QC: Yes, and that is the point I want to come to in a few moments, but I wanted to explain to you what the point is. The point I need to move onto now, the second of my points is timescale for the completion of the sift exercise. For its own reasons, internal reasons, HS2 requires the proposal to go through a sift exercise. FCC are seeking to collaborate on that as we hope you intended, and the aspiration, on both parties is to agree the technical environment information and thereby reduce primary conflicts.

638. We anticipate that that sift report could be completed by 4 December, Friday of next week, and sir, subject to anything of course Mr Mould may say, we suggest that you would

indicate to HS2 that you would find it helpful for the sift report to be completed in that timescale. So that's the first of the things that I am indicating would be helpful if you could indicate; the sift report by the end of next week, it is largely complete.

639. The third point I come to is the Select Committee decision or any recommendations or actually may make on northern or southern solution. We of course, anticipate that you will only want to make any decision in the light of the sift report. It's only fair, of course, that you should have the opportunity to see the outcome of that work. We therefore suggest that there be a further hearing where you can consider this petition in the light of the sift report. We propose the dates of 9 or 10 December, that's the Wednesday, Thursday of the following week in which we say you should receive the sift report. And that's the second thing on which we ask you to give an indication, if you think that is a sensible date. We could certainly be available on those dates. We are keen to press this to some sort of decision at an early date, for exactly the reasons that Mr Mould has indicated; HS2's desire to move swiftly with any proposals.

640. CHAIR: Sorry to interrupt you, may I go back to the letter from HS2, which sets out a plan for how to deliver?

641. MR HUMPHRIES QC: Yes.

642. CHAIR: What you want, with a fall-back.

643. MR HUMPHRIES QC: And that is exactly the point that I come to now the procedure, it's my point number four. HS2 have asked us to promote the southern option by a separate planning permission or Transport and Works Act order. The only reason given for that, and the only reason that there is, relates to potential delay to build. And Mr Mould referred to two letters, he also indicated, perhaps it was a slip of the tongue early on, that we appear to be communicate that we were prepared to promote planning application or Transport and Works Act order. We have made it very clear, very, very clear to HS2 that that is not acceptable to us in meetings. The letter that we received, I literally read it in the corridor with the additional items as to assurances, is quite unacceptable. I can go into the detail of why it is inadequate but I will make some general points.

644. Firstly, clearly, if the AP4, the northern solution, is in the Bill then it will make it very much harder, if not impossible, for FCC to get consent licence or CPO powers for a southern

solution. Because any objector to those applications would simply point to the fact that Parliament itself had deemed the northern solution to be acceptable and that consent exists through what would then be the Act for that solution. It's inconceivable, for example, that we could promote a possibly purchase order over the very few minor interests that we do not own, where we have, as a matter of law, to show a compelling case in the public interest, where another exists and those powers already exist. Any landowner would simply say 'you do not need my land'.

645. It would also be extremely difficult for us to promote such a scheme in the absence of an allocation of local plan and of course, there is not an allocation in the local plan, because the local plan did not anticipate this particular situation with HS2.

646. The next point I make in relation to this, of course this solution by HS2 puts all the effort and to some extent, cost and risk of working up a southern solution, onto FCC; that is quite inappropriate. Even in the offer in the 25 November letter that you have on the screen before, there are various assurances about promoting an order, and the costs of an order. Although it seems that we are only able to cover those costs as part of our overall compensation claim, in other words, at the end of the process, which may last for many years. In the meantime, FCC has to bear those costs.

647. There is also no undertaking there that HS2 will actually bear the costs of constructing those works on our behalf. There are a number of other detailed ways in which that particular letter is quite inadequate, and had we had time, we would have responded to it.

648. The next point I will make in relation to the inadequacy of the particular proposal by HS2, is that it leaves continuing uncertainty as to whether there is to be a northern or a southern option, uncertainty for HS2 itself, for FCC, for the environmental interest and perhaps, more importantly, we shouldn't forget the residents of Calvert. One of the principle reasons why we are seeking to relocate our facility to the south is because of the potential environmental impacts on the residents, people.

649. Fourthly, it is why this proposal is completely inadequate is that it leaves open the potential for an interruption of FCC's waste operations. FCC is not just any old commercial operator, it itself is a provider of infrastructure. It takes the waste from Buckinghamshire and a number of areas of London and if there is any interruption in the period between which it is able to seek the necessary consents for which it may have to fight judicial review, or other

actions. And the time when HS2 needs its existing site, that would lead to an interruption in that service; that is quite unacceptable.

650. Sir, also, we would say, as a matter of principle, it cannot be right, when we are the affected person, by a proposal in a Bill where our land is taken, our operation is interrupted, that we are told, in effect, 'You have to go off affected person and seek consent for your own accommodation works'. That is simply inappropriate and unacceptable to us.

651. As to the timings that have been put before you, those I have not heard before and neither has my instructing Parliamentary agent, we don't accept them. Obviously, we have not had a chance to respond on those, I literally heard them at the same time that you did, but we do not accept that it would take nine months to bring forward a further additional provision. As far as environmental work is concerned, a lot of that has already been done, plans are pretty straightforward, it is a small siding alongside the existing line. There would be a need for a further environmental statement, the land ownership is nearly all in our ownership, but there are some very small areas that are not.

652. Delay, in any event, sirs, is not a sufficient excuse, we would say, for imposing an incorrect solution on us and the residents and forcing us to acquire land by compulsory acquisition. There is no legal or other imperative that says the Bill has to be enacted by a certain date. That clearly is a matter for Parliament and it is for you, sirs, as you are more than well aware, to decide on your own timescales. Of course, we understand that HS2 will want to get on with its scheme but we also have legitimate interests, as do the residents. And HS2 has brought this upon themselves. They could have engaged with us a year ago in relation to this petition, they could have had the discussions we have had over the last two weeks, months and months and months ago. And it's simply not good enough for a promoter of this sort to delay, fail to co-operate fully and then claim that in some way we should pick up the pieces and promote our own scheme.

653. Now, the third thing, and final point I have, my fifth point, is the need to work at the additional provision now. HS2 has stressed the need to avoid or minimise delay. We suggest therefore, and it is the third thing that I ask you to consider, that they be asked to start preparing the additional provision now. If they are genuinely concerned to reduce time then there is no point waiting a few weeks until a decision is made, they should start work now and you should tell them that that is what you expect. And you then, when you come to consider

the matter as you will in a few weeks' time, can decide whether or not a southern solution is to be preferred; but time is not to be lost we say. So sirs, thank you on behalf of FCC. I have asked for those three things in relation to the date of the sift report, the date of any further hearing and that a start on the additional provision is made now and those are my comments to you.

654. CHAIR: Okay.

655. MR CLIFTON-BROWN: Can I ask one question before we go any further; is it legally possible to have two APs in the Bill on the basis that both sides would use their best endeavours to come up with the alternative AP, but if not, the fall-back of the existing AP4 would still be there?

656. MR MOULD QC (DfT): No, you cannot have two alternate options for the same work in a Bill. And so if it is to be promoted under this Bill, a choice has to be made and then acted upon before the Bill is – this Bill needs this Committee.

657. CHAIR: Sir Peter?

658. SIR PETER BOTTOMLEY: After you, thank you very much.

659. MR HUMPHRIES QC: I can certainly see how you can't have two alternatives in an Act, I have not come prepared for that question and I am not sure why it would not be possible to have two alternatives in a Bill, so long as one alternative was removed before it became an Act.

660. MR MOULD QC (DfT): This Bill cannot leave this Committee with alternative proposals for the same work. This Committee is the place of which any difference opinions are resolved upon and any alternative options, a decision has to be made by this Committee. That is the established convention in relation to these Bills.

661. SIR PETER BOTTOMLEY: Maybe I should have been more impatient and pushy. When the Dartford Thurrock Bridge Bill was going through Parliament, which wasn't done precisely but it seemed pretty close, the Committee reported it saying they instructed that the Bill should be changed so that the bridge would have a two-metre high windshield on either side, to stop lorries blowing off into the Thames. Now as the Minister reviewed this and came to the House of Commons and said 'I want the House to refuse to do that'. So that

obviously provides some way of having an amendment to a Bill after it had been reported to Committee. That may not be relevant to what we're actually discussing here, and we do know that there are opportunities for alternative amendments to be considered on the floor of the House of Commons because that's what we did over the Abortion, well – yes.

662. If this Committee, at the end of its hearings, reported that something should be changed, is it possible then for the promoters to bring in a change to the Bill after the Committee has reported?

663. MR MOULD QC (DfT): Not a change to a work, no. You have to – this Committee would have to remain constituted and then hear petitions against that amendment. We would have to promote it by of an additional provision, you would then – it would then have to be publicised in accordance with the procedure at Parliament and then this Committee would have to await the reconvening of its sittings to hear petitions against that proposal, of which I've no doubt there would be at least one, in the light of the evidence you heard on Monday.

664. SIR PETER BOTTOMLEY: Can I then ask, and the question of whether we say that we want it to be by a certain date and two weeks and I suspect that the parties themselves can bring the sift report forward within the sort of timescale that the petitioner is asking for, I don't see that's –

665. MR MOULD QC (DfT): Well I think you – if I may say so, the instructions I have are very clear, a sift report could be prepared by that time, but it would be at a fairly high level and the detailed work –. If there is to be an additional provision promoted to replace a southern option for that which is included in AP4, it is this, the promoter will have to bring that forward. And it's all very well for other people to say it won't take very long to do it, but we are the people who will have to judge –

666. SIR PETER BOTTOMLEY: You're anticipating sensibly that is my next question, which is the comparative timescales of either getting the – let's work on the presumption that the bats will be happy with the Batmobile bridge and that the authorities will go along with that. And let's presume that what is here, the four alternatives is better than what is presently coming into the Bill, and it's desired by the people of Calvert, which seems to be also a matter. Because having industrial works on both sides of the track must be better for the bats and probably better for the people who aren't living quite so close, so that would seem again. Then the alternative questions are how long would it take for an AP, compared to how long it

might take for a works order.

667. MR MOULD QC (DfT): It would be exactly the same time because you are assuming because those factors are neutral as to whether you promote it by an AP or whether you promote it by some alternative means. The less objectionable the scheme is the shorter time it will take to delivery it the development consent and whether it goes to a planning application, for a TWA order or through a provision.

668. CHAIR: Can I ask you as well, counsel for the FCC said that if the Bill has a northern option that makes it more difficult to promote any Transport and Works order, is that true?

669. MR MOULD QC (DfT): No, I don't accept that for two reasons, first of all I've indicated that we have given an assurance and we will make that absolutely clear that in the event that the permission is obtained for the southern option that's outside the Bill, we will unqualifiably commit not to build in that the AP scheme.

670. And secondly, those who – to the degree which it is apparently become clear that the southern option is going to be objectionable. Although the last time we were told it was unlikely to be a source of any concern but anyway, assuming now that it's right and properly cautious, I should suggest, that it will be objectionable; those who object to it will object to it. They will object to it in this House, just as they will object to it in a public enquiry. And the question then is is it acceptable, in terms of its impact on the bats, if it is, then the fact that there is a putative alternative is not a basis for refusing it. If it is objectionable for the bats, it will be objected to here, just as it would elsewhere.

671. CHAIR: Can I ask then promoting a Transport and Works order – HS2 seem to be suggesting that counsel for the FCC said that they ought to promote it and you wouldn't promote it.

672. MR MOULD QC (DfT): No, we have said that we would collaborate in the promotion of it and that we would fund the reasonable costs of doing it.

673. CHAIR: I don't think we want an AP, I think we'd like to help FCC and I think the way forward is the Transport and Works order Act, whatever way of doing it. But I think certainly we would have some sympathy with the petitioners in terms of funding and support in promoting that. And I have a little concern about what the counsel have said about if the

billing corporation option; that might create problems. I think if the Bill is delayed then you can start adding noughts on the cost and I don't think, particularly as a Committee, we want to delay the Bill. In two months, three months, six months or nine months for that very important point that we are talking billions of pounds of public spending.

674. MR MOULD QC (DfT): Can I just make – give some reassurance on the costs; assuming that it is reasonable, FCC as Mr Humphreys has rightly said, the effect of this Bill is to displace FCC from their existing sidings. That is a compensatable loss and it is, in order to seek to accommodate that loss that we have promoted alternative sidings in the Bill. They are suggesting that it would be preferable, for a range of reasons, that that accommodation should be to the south rather than to the north. It is part and parcel of the compensation code that those costs that are reasonably incurred by a person affected by public works, compulsory purchase; those costs that are reasonably incurred, should form part of the compensation claim. That is in effect what I am saying we will do.

675. CHAIR: Given the late exchange of letters and given that the counsel for FCC didn't know some of the dates which you've suggested today, I actually think it would be productive for you to have a further discussion outside of the Committee, and if necessary, come back briefly, a little later.

676. SIR PETER BOTTOMLEY: In two weeks' time, I think.

677. CHAIR: In two weeks' time. See if you can resolve the concerns of FCC in terms of a southern solution and in terms of your support and commitment for the Transport and Works Act.

678. MR MOULD QC (DfT): Yes.

679. CHAIR: And see if you can sort that out and come back to us. If you can't, then we will have to start making some judgements.

680. MR MOULD QC (DfT): Okay.

681. CHAIR: But, clearly, this is all rather last minute, FCC is a very substantial business, who – counsel for them has made some very important points. We don't want to hold the Bill up, but we want a solution to this petitioner's problem.

682. SIR PETER BOTTOMLEY: Three options – I mean, you heard that – either we say, ‘Bring in an AP’, or we say, ‘Trust – get the petitioners to trust in the alternative route’, always assuming this is the best option all round, that’s local people and FCC. Or we say reluctantly, because we don’t want to delay the Bill, ‘We’re going to leave the provision in, but we do feel very strongly that the southern option is the one to be achieved’.

683. MR MOULD QC (DfT): Well, you haven’t reached that judgment yet.

684. SIR PETER BOTTOMLEY: No, we haven’t, no but I’m saying those are the three options that would be in front of us in two weeks’ time.

685. MR MOULD QC (DfT): Yes. I mean, I heard what you said initially a few moments ago about the reluctance to require this as an AP, and I appreciate the point that we should go away and try and give some reassurance on that. I will certainly focus on that and I won’t respond to some of the points that were made by Mr Humphries, although some of them were not accepted, but I needn’t worry you with that. But I do –

686. SIR PETER BOTTOMLEY: That’s probably mutual but I think, coming back in two weeks’ time would be a helpful thing.

687. MR MOULD QC (DfT): Alright.

688. MR CLIFTON-BROWN: Can I just say, because one of the other things that worries me is, if it is not written into the Bill, simply HS2 will just lose interest and we’ll get the northern option by default. I would like to see something written in there, that HS2 will use their best endeavours to support any transport and work, support planning permission submitted by the petitioner.

689. MR MOULD QC (DfT): Yes. And can I say straight away, that the approach that I have explained to you now is based precisely on the fact that we will not lose interest in it, we will assist in every reasonable way we can to promote the merits of a southern option, because that is the fundamental basis.

690. CHAIR: I think it would go in our report to the House. Whether or not it needs wording in the Bill, but certainly, we would want a minister on the floor of the House to give reassurance that the business will not be forgotten and it will be, you know, so I think there are measures that I think could be taken to give reassurance to the petitioner, without delaying

the Bill, but I just think you need to go away and sort it out.

691. SIR PETER BOTTOMLEY: This is working on the basis that this is the right option; that's the first thing to be clear about.

692. MR MOULD QC (DfT): Of course. Well, we can't guarantee that we will succeed, but I can tell you that we will help in every reasonable way we can to seek to secure success. That is our position.

693. MR CLIFTON-BROWN: And I have a final question; what, if any, discussions have been involved with English Nature concerning the bats?

694. MR MOULD QC (DfT): Natural England.

695. MR CLIFTON-BROWN: Natural England.

696. MR MOULD QC (DfT): There haven't been discussions. Natural England's position, as I understand it, which is understandable, is that they are unable to give a formal view on whether they would be able to give a licence for the southern option until the proposal that they are being asked to consider is much more clearly delineated, and that is how they would act in relation to any application, they won't – and that is how they would approach the matter with an AP, just as they would with a proposal being promoted by means of a planning application. So again, that's one of the many features which is really neutral as regards the authorisation process that is followed.

697. MR HUMPHRIES QC: Yes, I think, sir, on that it's fair to say Natural England have been involved in the discussions and they've not raised any objection so far, they've not thrown a red flag at us and said, 'Look, I'm sorry, this is not a – a non-starter, but, as Mr Mould correctly says, they are required to consider these things carefully with respect that, and we are continuing to work with them.

698. CHAIR: Okay. We sort of have a way forward.

699. MR HUMPHRIES QC: Sir, and I am very grateful. We will obviously look at transcripts, study carefully what you have said and Mr Mould has said, we will engage and continue to engage and we will come back to you in light of those comments and whatever the SIFT report throws up. I remind you, but don't need to develop it, we do still have one or two

outstanding points on the AP4 solution anyway, that's a matter of detail we'll continue to discuss that. I mean, technical things, on the way that the sidings would work, but we will come back to you, at whatever appointment you give us, and try and update and be as positive as we can.

700. CHAIR: Okay, thank you very much. Thank you. Right, we now go to 1263, Ross Jordan. Is he here, is he there at the back there? It looks like we're going to go on after the vote, if there is a vote. If there is a vote, we're going to have to go on after the vote.

701. CHAIR: Well, we can see where you are on the screen, if you'd like to kick off.

Ross Jordan

702. MR JORDAN: Okay. Shall I start?

703. CHAIR: Yes.

704. MR JORDAN: Thank you. Am I your last one of the day?

705. CHAIR: No, there's one more, who we've left to the –

706. MR JORDAN: Okay, I will be as brief as I possibly can. I'd just like to be by thanking David Walker, the senior legal parliamentary clerk for flexibility in rescheduling me a number of times, so thank you very much. It is somewhat daunting to present after being here all day and the Committee have my sympathy with the task that they're undertaking, especially after excellent presentations around Wendover from my Member of Parliament and Wendover HS2.

707. I also acknowledge the communications from the Chair of the Committee around petitioners trying not to cover ground that has already been covered. I'll endeavour to do that but I haven't had the 'pleasure' of watching the whole proceedings; I have tried to watch as much as possible, so I may cover some things that you've heard before, so forgive me. Also forgive me if I refer to my notes as well.

708. I'm going to set a brief context of my personal situation and then I will focus on two issues and two issues alone. Firstly, I'm afraid, there is the issue of noise. I will keep that as brief as possible; I imagine the Committee are almost as sick of hearing about noise as we will be of hearing the noise. But by secondly, by way of trying to bring in some new information

to the hearing at this late stage, I want to focus upon concerns around the Construction Code of Practice.

709. Now, I've got some slides, they're not as entertaining as others, but perhaps they're a bit more pictorial. That shows you my property, at 30 Hale Road, which myself and my partner, Ruth, purchased on 30 January 2010, just a few weeks before the HS2 report and the Government's command paper were published in March 2010. Arguably, my surveyors perhaps should have looked beyond their basic remit, but there we are.

710. My mother refers to it as a crummy bungalow, and certainly, it is far from being a listed building. Nonetheless, we purchased this property as our first house, at age of 42 and 39 respectively, and hopefully, our forever house, choosing it as being a peaceful location, overlooking open countryside, within walking distance of an economically vibrant village centre, and we felt likely to be protected from development due to the Area of Outstanding Natural Beauty. Indeed, we subsequently purchased land behind our property to ensure protection from development, in the unlikely event that it would be granted.

711. Just for clarity, we are not seeking to move, or to be forced to move, we are not seeking compensation, but equally, we do not want to be in a situation whereby we need to be compensated. As you can see, the property is a small bungalow and we purchased with the intent of extending the building at the rear, sympathetically, regard to the current property and surrounding houses, and making use of the reasonable sized garden which a bungalow often affords. Whilst we've engaged in the planning process for this extension, we have put it on hold for the last five years, pending a final outcome of HS2 proposals.

712. Partly because I personally have not felt inclined to invest further sums of money, due to the uncertainty, and also my own personal mental disposition in relation to this situation. We feel we may need to adapt our plans for noise mitigation, but that is a great unknown at present. Our intention was to use a local builder, and thus the lack of these works thus far, I feel represents a negative multiplier effect economically of HS2 which is sadly not considered in the calculation to support the business case, something which I'm aware the Committee can do nothing about. Can I have the second slide please?

713. This is the view from the rear of the property looking out towards HS2, from a point one metre away from the living accommodation. You'll notice that many of the trees have already shed their leaves this year, this was taken on Sunday morning, and this tends to mean that we

get more noise in the garden from the roundabout at the A413, when the Sunday motorcyclists and Saturday night joy riders lay down their rubber.

714. This demonstrates the seasonal variations in noise transfer and reverberations from one side of the valley to the other. And, given that when I call the police, as I do on a regular basis – they know me by name – to ask them to do something about the noise, the often cite lack of resources, perhaps also demonstrates the opportunity cost of HS2 as well, something which I'm aware the Committee can do nothing about.

715. In the summer, it is pleasant to sit in the garden and enjoy the peace of the countryside without barrier-ing ourselves behind double glazing, and indeed, overnight, it is pleasant in high temperatures, to have the windows open, a novel idea; I do wonder whether this will be tenable in the future. Slide three, which is my last slide.

716. I am no cartographer, but nonetheless, this map is adapted from HS2 exhibits, and shows the location of our property. In relation to the aforementioned A413 roundabout, from which we hear noise, occasionally, 650 metres away, approximately, the centre of the line, as the crow flies, approximately 450 metres way, and perhaps most significantly for our property, and others on Hale Road, the distance to the tunnel portal is, by my calculations, approximately 475 metres. All these distances could be shortened by 100 metres if you took the line from the bottom of our land rather than from the property itself.

717. Thirty Hale Road is nearly at the brow of the hill on this side of the valley, and as far as I can tell, from the myriad of information which HS2 provides, some of which was received on Friday last week in advance, but only just, of my appearance before the Committee today, we are in a similar elevation to the tunnel portal itself. Being on the other side of the valley and subject to weather and seasonal variations, as well as the south/west prevailing wind, I feel the current work to investigate the noise effects of HS2, at least in this locale, is not fit for purpose. I do not claim to be a noise expert, far from it, but it would seem that recently, Rupert Thornely-Taylor, who I believe is an expert, has raised concerns over lack of clarity of the true geographical effect.

718. Given that the National Planning Policy Framework states that, 'All reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life' and detailed measures related to noise mitigation in Section 123, which I won't repeat, surely is it reasonable to demand of HS2 provision of maps showing the full geographical noise level

changes, as well as clarifying what measures of noise have been used thus far to justify mitigation methods, in layman's language. This is my first request which I would like the Committee to address to HS2 on my behalf.

719. It is also strange that noise maps that I have seen appear to have zero impact when the train is in the tunnel, given that I'm awoken each morning by the first London train, around 5.30, 6.30 on a Saturday, 7.30 on a Sunday, usually by the ground transferred rumble at an otherwise peaceful time. I find it hard to believe there is no impact at all.

720. I'll not trouble the Committee further on noise, you'll be relieved, other than to say that it might all be academic, as pointed out by the Committee themselves numerous times, given that the trains are yet to be designed. Might I suggest that the trains are designed?

721. In order to enable review of the noise effects before construction begins; whilst I appreciate that technology may improve during the years of construction before the rolling stock is ordered, surely there should be data based on present day designs as a benchmark? I retain my view that the best noise mitigation for Wendover is a fully bored tunnel that extends at least beyond the A413 roundabout in the east.

722. That's the first half of my presentation; second half will be about the same length. As the Committee will have read, my petition covered a number of other areas, including air quality, waste, ecology and hydrology. However, in the interests of bringing something new to the Committee, I hope, I would like to conclude my presentation by focusing on the construction phase and specifically, the draft Code of Construction Practice.

723. There are a number of questions I would like to raise as follows: I understand the Code of Construction Practice, whilst it does form part of this hearing process, it does not formally form part of the hybrid Bill, that's what I understand. I urge the Committee to recommend that this element is incorporated into the Bill, in order to ensure that HS2 Limited are held accountable for construction issues, as currently, the Code of Construction Practice appears to have no legal status, and contains subjective elements of measurements, such as the use of phrases such as 'reasonable' and 'reasonable endeavours'. Fundamentally it is unclear what penalties are available for non-compliance.

724. It is arguable as to what extent the following issues related to the Construction Code of Practice specifically affect my situation. Certainly, those of working hours, noise and

environmental safety are directly relevant, in my opinion, whereas other elements of construction site health and safety and transparency of process, perhaps less so. Nonetheless, I cannot see that the process of the Bill allows for these matters to be raised in advance of the construction, tendering, bidding, and awarding process in a format that is open to public scrutiny, and so in the interests of protecting future workers on HS2, who, I imagine will not be petitioning at this particular point, I feel it appropriate to raise the following brief issues:

725. Fundamentally, I would like to see that the Committee recommend that as much of the management of the construction process as possible is in the public domain, to allow greater scrutiny and transparency. For example, the COCP says that the project will employ an environmental management system in accordance with ISO14001. This will need to be independently audited. I feel that the public should be able to view the outcome of those audits, any actions that arise from those audits, and the audit trail of the completion of these actions.

726. ISO14001 has an environmental focus. I would urge the Committee to insist that HS2 manage the construction in accordance with British Standard of Occupational Health and Safety Management System 18001, as this can be closely aligned to ISO14001, in managing the health and safety elements of the construction of the project.

727. The COCP makes reference to lead contractors, plural. I believe it is important for the public to be able to understand the structure and the relationship between HS2 and its contractors in the interests of transparency and to understand to whom complaints and concerns should be addressed. Hopefully, HS2 will appoint a single nominated principle designer in accordance with the construction design and management regulations 2015.

728. The COCP makes reference to contractors method statements, but it is very general in this area. I urge the Committee to ask contractors to be forced to submit site specific method statements which are available for the public to view, as well as full risk assessments. In addition, I urge the Committee to insist on HS2 using an auditable permit to work system for works deemed to be of significant risk. For example working at height, or hot works, and that this information is also publically available and scrutinised by a third party.

729. In addition, the health and safety responsible person should be clearly identified to the public, as should any local, or route wide hazard register, and emergency procedures, and continuity planning, where this would not compromise security, as well as pollution incident

response plans for each construction site. There should also be evidence of testing of all these procedures.

730. The COCP provides for working hours of 8.00am to 6.00pm on weekdays and 8.00am to 1.00pm on Saturdays. However, it also allows for a one hour start up and shut down period, and enables maintenance work and equipment to be carried out on Sunday and Saturday afternoons. There are also numerous caveats for working outside of core hours, e.g. track lane, earthworks, tunnelling. Basically, building a railway. Which are to be managed by the local environmental management plans. I would urge the Committee to insist that an exemplar or best-practice LEMP is constructed, such that a member of the public can understand what strictures are placed upon contractors in terms of the justification of working outside of core hours. This is a critical issue for those of us in Wendover.

731. Finally, the COCP makes general comment around numerous areas of health and safety and environmental practice, which I feel should be clarified as part of this process. For example, construction site safety; there should be a best practice statement which details, amongst other things, for example, how vehicles and plant are segregated from pedestrians, how visitors are inducted into site protocol, and made aware of hazards on site. There should be surveys conducted for each construction site, taking account of light pollution for neighbours. Fire risk assessments and fire strategies, both of which are legal documents, should be made available for public access.

732. Remarkably, in the current COCP, there is no mention of working at height. I would urge the Committee to recommend that that is detailed, including cranes and topple heights, for example. There is of course, much made of noise in the COCP, but other than indicative statements, it seems to be largely left to the lead contractor to manage this. I am concerned that these requirements need to be clarified before tendering the contracts to ensure the bidders do not see noise control as an area for cost-cutting.

733. I appreciate the Committee taking the time to listen to these concerns around the CoCP, as clearly they value the health and safety of workers on an infrastructure project of this size, as well as the health and safety of neighbours to the project. 10 workers died during the construction of the Channel Tunnel. My feeling is that if one worker dies during the construction of HS2, then the management of this health and safety of this project has failed. Thank you for your time.

734. CHAIR: Thank you. Mr Strachan?

735. MR STRACHAN QC (DfT): I do not know whether Mr Jordan has seen these maps, but there is a similar map for the hybrid Bill scheme. If we just zoom in to this location, at this scale, Mr Jordan's property is approximately in this area, where I am pointing with the arrow now, in terms of noise measurement.

736. In answer to his question, we do provide geographical maps of noise effects. Here is one such map. This one shows the effects of the AP5 scheme. I don't think Mr Thornely-Taylor has expressed any concerns over the geographical modelling of noise. To the contrary, he has explained how it's done and the process of the production of these maps. But to provide some level of assurance to the petitioner, if he hasn't seen this material, this is material coming forward for, I think, AP5.

737. The effects on his property for that particular reference point can be seen in the accompanying information we have provided to the Committee, at P11239(14) in the same document. The location I've just shown you is 3693370, Hale Road, Wendover. You can see the noise generated by the proposed scheme at that location is 42 dB during the day, 33 dB at night and 58/61 LAmax. The changes in the Leq levels are 1 dB during the day and 1 dB at night. That is an assessment that's been made of the AP5 proposals with the additional barriers. It doesn't include the effects of the noise barriers that we are suggesting be taken forward with the local authority on the road, the two metres noise barriers.

738. If Mr Jordan is experiencing noise and inconvenience from the road, if that is the case, he stands to be a winner in terms of the introduction of noise barriers along the road as a result, in fact, of HS2 coming forward in that way. I'm not sure whether he's aware of the latest discussions about Wendover, but I just thought I'd let him know about that. It seems to be of some relevance. In terms of the impact of the railway, we don't anticipate any materially adverse effect from the railway in light of what I've just shown you on this property.

739. Can I deal with the Code of Construction Practice? I don't want to take too much time on this, but the draft Code of Construction Practice forms part of the environmental minimum requirements, which the Secretary of State has given an undertaking to comply with. It is one part of a whole host of environmental minimum requirements. That method of enforcement we have discussed and it is the subject of an information paper, E1, if Mr Jordan wants to see

the full range of mechanisms that are involved.

740. Many of the things he's talked about – such as, for example, noise controls – are the subject of licensing or application processes under the Control of Pollution Act, with the relevant local authorities dealing with, for example, the Section 61 under the Control of Pollution Act for noise during construction. There is also a host of other details as to the measures and standards that will be observed in the draft Code of Construction Practice. The local environment management plans are ones for which there is a template in this document, indicating the sorts of things that will be brought forward. Those are very much for discussion with the local authorities to draw up local environment management plans that are suitable for the types of construction that are going on in a specific area. It will be no different for this area, Wendover, where these schemes are being constructed.

741. CHAIR: Right, thank you very much.

742. MR JORDAN: Can I respond?

743. CHAIR: Yes, you can – briefly.

744. MR JORDAN: Can I ask Mr Strachan whether these noise figures here take account of changing wind direction, seasonal variations and so on?

745. MR STRACHAN QC (DfT): They take account of a realistic worst case, which assumes wind that is of a certain strength. Not strong, because that then masks noise.

746. SIR PETER BOTTOMLEY: It makes more noise than the noise.

747. MR STRACHAN QC (DfT): Yes, exactly. The realistic worst case assumes wind moving towards the property. I think it is 'light winds'. They take account of adverse barometric conditions to model a realistic worst case for these properties, including yours, as to what would be experienced. In reality, in many situations the noise levels will be less than are being shown in this realistic worst case.

748. MR JORDAN: My concluding comment would be that I am concerned about the Code of Construction Practice of rigour, detail and enforcement at this stage in the process. I appreciate that the local authority is able to get involved, but, at the moment, what actually comes from the template is a fine starting point, but it is just that – a template. It lacks an

example of what sort of detail should be expected by members of the public in these area.

749. CHAIR: Thank you very much. Thank you for sitting patiently all day.

750. MR JORDAN: Thank you.

751. MR HENDRICK: A gaseous substance is being emitted from a chimney on his house that you showed on your first slide. Is that consistent with the Control of Pollution Act?

752. MR JORDAN: Being a bungalow of that age, it has asbestos in the garage as well – but it is very high-quality asbestos that has not been disturbed. Thank you.

753. CHAIR: Thank you for your time. This is the last petitioner. Sorry you're last. We thought we would give you a rest for a while and then other things got overtaken.

Malcolm and Margaretha Griffiths

754. MR GRIFFITHS: There were slides, but they're self-explanatory. I'm going to roll over them, essentially. Read them if you're interested after, if not at the time. Could we please go to A16561? Thank you. Firstly, my wife Margaretha Griffiths thanks you very much for AP4. It has made a difference to us personally. We still don't know what the situation will be in the long term. She does support the REPA and Potter Row petitions that have gone forward. I also take the same position. All I want to talk to you about now within my petition are paragraphs 28 and 16. They're related broadly to health and safety issues. I will be quick.

755. Could we go to the next slide, 16562? I'm not going to take you through that. I hadn't intended to pursue this, but, Chair, when we were here in July, you said you were thinking about research into the stress, health and noise issues was something someone should do. I answered the question incorrectly. My paradigm was of South Heath. I have quite a background in health statistics and my paradigm was, 'There's not going to be a sensible set of statistics to come to anything meaningful there.' Could we go to the next slide, please?

756. I do think useful research could be done. This slide shows something that came out 8 November 2015. I have certain things where, if someone says something, it just comes into my email. There isn't enough research about knowing the impacts on health of stress and noise. This is about the evidence that HS2 have provided to the Committee here and,

particularly, on the higher level of the maximum, the night time maximum noise. That research was done in 1982. I've looked at it; it would not stand up in the modern day. I have written to Southampton University to ask whether they would like to endorse the position and, not surprisingly, they don't. I really think there is an opportunity, if the Promoter would consider it, to allocate some money to see the impacts that are going on and learn from them – not just for HS2 but more broadly.

757. That is my first request. Stop me for questions if you want, but I'm just going to keep rolling.

758. MR CLIFTON-BROWN: Can I stop you for a question?

759. MR GRIFFITHS: Yes.

760. MR CLIFTON-BROWN: I live under the flight path of Heathrow, in Putney. We are subjected to the noise every morning of the first flight that comes in from Hong Kong at half past four in the morning.

761. MR HENRY BELLINGHAM: Does it go over you first?

762. SIR PETER BOTTOMLEY: It comes over here first.

763. MR CLIFTON-BROWN: Yes, it comes over here first. The body gets used to that. I do not get woken up every morning at half past four, because the body gets used to it. Surely the same will apply with the trains. In fact, the body will probably wake up if the trains do not run on time.

764. MR GRIFFITHS: I do not know, because the research has not been done. If you look at mortality statistics and healthy life expectancy and social life expectancy, there is a huge difference. I have looked at your constituencies and you have differences in your own constituencies. The health community does not really know the case of that. Obviously, things like food, alcohol and smoking is all understood, but the health community does not really know the extent to which stress, probably more than noise, plays into that. Is it the stress that is causing the poor health that is causing the inability to get work, which is making people deprived, or is it the other way around?

765. SIR PETER BOTTOMLEY: All are confounding factors.

766. MR GRIFFITHS: Absolutely.

767. SIR PETER BOTTOMLEY: My constituency, because of the age profile, has one of the highest levels of hearing impairment and one of the highest rates of death, because elderly people come and live in my constituency for a long time, very happily, and then they die. One could say they don't hear the noise but they die anyway – because they are deaf. I don't think this is a point to stay on too long is my point.

768. MR GRIFFITHS: No, the point you make about confounding variables is why I didn't think you could do this project. You've got 42,000 people impacted by something. There is enough of a database there for a piece of research to be done. I will move on.

769. Let's go to number four. I'm going to roll straight thought that.

770. SIR PETER BOTTOMLEY: Are you planning to take us through all of these slides?

771. MR GRIFFITHS: There are 21 slides.

772. SIR PETER BOTTOMLEY: Yes, I did read them this morning. I thought, when you came on, you were going to talk about them. I do not think I want you to do it.

773. MR GRIFFITHS: If you make a suggestion, I'll probably go there. How about slide 7?

774. SIR PETER BOTTOMLEY: I've got 19.

775. CHAIR: Let's keep going. Don't let him put you off.

776. MR GRIFFITHS: Okay, I have a concern.

777. SIR PETER BOTTOMLEY: You think they are going to be running closer headways and they are going to go at higher speeds.

778. MR GRIFFITHS: Yes.

779. SIR PETER BOTTOMLEY: Okay. I don't know whether you are an absolute specialist in this – I know we aren't – but I did raise it earlier on. You may have been here when I did it. Let me put it this way. Can we ask the Promoters to consider the detail of what you put here and respond to it at some occasion when it's appropriate? I don't want you to go through it all, please.

780. MR GRIFFITHS: Part of my concern is that I have had concerns and I can't get anyone to listen to me. If you take this on board and the Promoter is asked to come back or even have a meeting with me, so I know I have passed on my concerns to someone who has influence, that is my final ask, as my fallback ask. Could that be arranged?

781. SIR PETER BOTTOMLEY: We would perhaps like them to consider what you have put, pick up the bits that are relevant, give us a response – and we will make sure you get a copy.

782. MR GRIFFITHS: What do you want me to do?

783. SIR PETER BOTTOMLEY: I don't want you to say any more about it – unless you're an expert in all these various area, which I don't think you are.

784. MR STRACHAN QC (DfT): I've identified the three main issues. The first was on headways and what modelling we have done on that. We have done the modelling on it, and we can set that out in writing.

785. The second was on the design standards and the approach to the design of curves, for example. Again, we have done that. I can provide a note, similarly, on that subject. The third relates to the safe operation of the system and security. There is a paper. That's an issue that has cropped up before in the Committee. There is a technical note on constructing a safe and secure network, which I did previously air in front of the Committee. Again, I can include the reference to that in the note and explain our position on it.

786. Those are the three main issues I thought you were raising, Mr Griffiths. We can write to you on them.

787. MR GRIFFITHS: I think they are. Can I make one comment on the first one, the headway? There are two reports we are looking at here. One of which, by SISRA, is on headway and braking, i.e. the braking arrangement you need to have in order to get to the headway. It is very clear how you need to break in steps. The second report from ARA is the speed along the line, which comes up with the 49 minutes duration.

788. The two reports are inconsistent. They are inconsistent in physics terms. One of them is wrong. If you comply with the SISRA report, then you add between 4-6 minutes to the journey time. If you do not comply with it and you use ARA's way of braking, you do not

have sufficient headway to avoid a collision in the event of one train stopping suddenly.

789. It is not going to help me if HS2 Limited refer me to these reports. I have read the reports. I have FOIs on them asking for any updates and further information. They have no further information; they have done no further work. That sort of isn't going to help. I'd like to start again and not just be referred to these same reports. I want to express what I have expressed to you to someone who can come back to me and say, 'No, you have this wrong' or get to the point where they say, 'You have a point and we will do a bit more work here or think about this,' or, 'We will go back to the Committee and say you were right.' That is pretty unlikely, though.

790. MR HENDRICK: You made that point quite clear. Could HS2 address us on that point in the note they give to us when they give us a note on the three points that Mr Strachan has mentioned?

791. MR STRACHAN QC (DfT): That is absolutely fine. Just to be clear, we have modelled these things and we are satisfied.

792. MR HENDRICK: Can you address that?

793. MR STRACHAN QC (DfT): We will address this with Mr Griffiths. I can outline it now if the Committee wants, or I can put it in a note that will go the Committee and, of course, to Mr Griffiths.

794. SIR PETER BOTTOMLEY: As Geoffrey Clifton-Brown carefully pointed out, I don't think we can ask the regulatory authority on safety to facilitate you meeting them, because I don't think that is for us, but you might get the answer as to who is the body who checks the safety of intended operational design.

795. MR GRIFFITHS: Today?

796. SIR PETER BOTTOMLEY: I would love to say today. Perhaps they can write to you and make sure we have a copy of it, with an answer to that question that comes on page 21, at the bottom. We are not asking them to meet you, necessarily, but you do deserve to have the name of the people who are checking the safety of the design and the operation.

797. MR GRIFFITHS: Yes, someone outside of HS2.

798. SIR PETER BOTTOMLEY: Let us get the answer before you start saying conditions, please. That is very helpful. Other than that, I don't think you have a locus, as a local resident, on most of the things you are raising. I think you have done pretty well.

799. MR GRIFFITHS: I could argue that, but I don't want to start.

800. SIR PETER BOTTOMLEY: Thank you.

801. CHAIR: Right, thank you very much. Thank you for being patient. You have been a good sport.