Committee.

272. CHAIR: Okay.

273. MISS LIEVEN QC: I'm content with that, sir.

274. CHAIR: Okay. Thank you very much, Mr Johnson.

275. MR JOHNSON: Thank you.

276. MISS LIEVEN QC: So, sir, the next slide is on the ecology of the Wendover arm canal; I think the slide is self evident. I was going to have a local resident speak to it but the point is clear, which is that if the flows fall, as Mr Johnson expects them to do, there will be a significant impact on the ecology of that arm of the canal and then knock on effects on the Grand Union, so I was going to take that slide as read and move on to the green – to the extension proposals and ask Mr Thompson to come back to the box – or to the seat, to talk through those proposals.

277. MR THOMPSON: Hello again.

278. CHAIR: Hello.

279. MR THOMPSON: If I start, I should just say, I'm not a civil engineer, so what you've got here is just a common sense approach we think of how we can mitigate Wendover. The numbers shown here, financial numbers, I think are all derived from HS2 numbers and I'll talk those through as we go. So, just to remind you, the background is we really want, as a first and second choice, a long tunnel through the Chilterns, and this is just our fallback position.

280. So, what I will now do is talk about it in three elements: the north of Wendover, the south of Wendover and the London Road. So, if I could have the next slide please.

281. So, looking at the north. The basic proposal here is to move the current green tunnel, make it 500 metres longer, so it moves the portal away from the corner of Wendover town. What that would do is obviously help in terms of noise. Not changing the alignment means that the green tunnel would slowly rise, so it would be obvious as a hump, as it comes up, but we're using spoil, it would be possible to smooth that into the landscape, so it's not too obvious.

282. MISS LIEVEN QC: Carry on quite quickly, it's fairly basic stuff, sir. We haven't got…

283. CHAIR: Can I just ask, how many people live near that section, which at the moment, isn't tunnelled?

284. MR THOMPSON: I would think down Thornton Crescent, Lionel Avenue and Bridleways, I would guess 1,000 people.

285. CHAIR: Okay. So you think…

286. MR THOMPSON: It's quite close to that corner of the town.

287. CHAIR: So the extension might have an impact, beneficial impact to several hundred people?

288. MR THOMPSON: Yes. If you can show the next slide, you can see the LA max peak noise level and I've kind of said, if we moved it 500 metres out, then that curved line there, would move away to protect the town. So, the cost, we believe, would be about £22 million, it's based primarily on a cost per metre of about £48,000 per metre. It obviously reduces noise disturbance, it helps property blight and obviously reduces visual intrusion.

289. CHAIR: Why have you picked 500 metres?

290. MR THOMPSON: Because I thought that was sufficient to save the corner of the town. We did earlier, suggest maybe taking the extension all the way to Nash Lee Lane. The issue with that is, I'm not sure how far past it you would have to go to get the noise benefit in Nash Lee Lane without being able to do the noise modelling. This was a rule of thumb that said we think 500 metres would be…

291. CHAIR: A practical proposal?

292. MR THOMPSON: Sorry?

293. CHAIR: A practical proposal.

294. MR THOMPSON: Yes, absolutely.

295. MISS LIEVEN QC: Could you just stop on that one for one moment, Brian, and just point to the dotted line and explain where the benefit lies.

296. MR THOMPSON: At the moment, you see the solid green line here, is where the peak noise area is, so it's covering all of Thornton Crescent, top end of Lionel Avenue and Bridleways, by moving across, because at the moment we've got the green tunnel, the peak noise kind of spilling back over, because it's only a fairly short green tunnel. By making it longer, you save that corner of the town.

297. MISS LIEVEN QC: Thank you.

298. CHAIR: Okay.

299. MR THOMPSON: If go to next slide, please.

300. CHAIR: Can I just ask, would that be supported in Stoke Mandeville?

301. MR THOMPSON: That is a very good question I'm about to try and answer.

302. MISS LIEVEN QC: Yes, next two slides, sir.

303. MR THOMPSON: Okay. We've obviously chatted with Stoke Mandeville. Stoke Mandeville, I think have three issues around tunnels. First one was, they were worried about noise. So what I've tried to show here is, depending on which tunnel option you take, and you compare the distance from the corner of Wendover to the corner of Stoke Mandeville, and show the differences, so – the current proposal is very close to Wendover, because it's 300 metres and it's 2,900 metres away from the corner of Stoke Mandeville. That is too far for them to hear it. You know, we believe the noise attenuation would probably be about 1,600 metres, so either way, I don't think noise would be the issue, whichever one of these…

304. MISS LIEVEN QC: And you can see, sir, we've – one, two, three, four are the various different options as to where different tunnels pop out and then on the table, we've related how far that is from Stoke Mandeville, how far that is from Wendover, so without being unduly biased, in favour of Wendover, you can see the distances to Stoke Mandeville from all four are significantly greater. So that's the point of this slide in relation to noise on Stoke Mandeville.

305. MR THOMPSON: If we go to next slide, the next issue is where, if it's a cut and cover tunnel, then basically, the work is where the cut and cover is, and they pile the spoil there and whatever. So, the extension to the cut and cover tunnel wouldn't impact Stoke Mandeville. If it's a bored tunnel, then obviously, you get into the whole debate of how big is the construction camp. The top diagram shows the construction camp showing on the T3i drawing, and the bottom one on the same scale, shows the Crossrail construction camp for tunnelling and a railhead.

306. MISS LIEVEN QC: That's Crossrail at Westbourne Park. The one you see when you come into Paddington station for –

307. MR THOMPSON: Now clearly, Crossrail is constrained by where they're actually operating, but the point I'm trying to make is, with careful planning you can plan the construction camp, not to spread and sprawl, but to be maybe a bit more efficient and a bit further away from the houses in Stoke Mandeville and maybe closer to Wendover; I'm just making the point that both communities need to be consulted on where it would be good if it you were going to do a bored tunnel.

308. CHAIR: I think it would still be very substantial, because you'd have concrete, you'd have lots of vehicles, you have construction compounds, you've got fabrications.

309. MR THOMPSON: Yes, I think that's true. Clearly though, the advantage with Crossrail is that you have a railhead and I know they bring in the concrete road – sorry, the concrete arcs by rail and take the spoil away by rail, so if you could do the same, then it obviously, could be a lot more compressed. And the third one, which, to be honest, until you see the analysis of what the impact is on traffic and whether there's a decision made on whether there is a railhead or not, it's difficult to make a comment on it.

310. MISS LIEVEN QC: I think as far as the traffic impact to Stoke Mandeville are concerned, sir, we're going to leave that to those parties who are promoting longer tunnels, because effectively, it's going to the same tunnel issues. I mean, Mr Thompson, I think it's worth saying, from the perspective of Wendover, would you perceive the permanent benefits of extended tunnel, whether green tunnel or fully bored tunnel, to outweigh, what will undoubtedly be, painful construction impacts on all concerned?

311. MR THOMPSON: I mean we've, obviously, held public meetings and discussed

it with the public. The overwhelming feedback we've got is a long-term solution like a bored tunnel is preferable if there is a finite length for how long the construction period is, and it's mitigated as much as possible, so they are all aware that there will be a large construction camp, you know, to the north of Wendover. Just how big it is, and where it is, we don't know at this point in time. I think Mr Mould showed this one earlier, which was what we believe was a CLP construction camp. What it shows for Wendover, is that the green is the land take given up, running right alongside the town, to obviously have a railhead there, butting up to the business park, and the green, blue which is the existing land take. Now, who's right, who's wrong? I don't know. Next slide please.

312. MISS LIEVEN QC: Thank you. And then we move on to the southern extension proposal. And do you want to talk us through that?

313. MR THOMPSON: Yes. This is two parts; first one is this is predicated on the basis that you're not really changing the vertical alignment of it, so it's the same, so what we're proposing is putting a kind of enclosure on the line, as it runs from Bacombe Lane to where it will go on the viaduct, effectively making it into a surface tunnel. What that would do is obviously save Bacombe Lane, it would save St Mary's and it would save the school to some extent, from the noise. In order to be sure, you would then also want part two, which is to put an enclosure on the viaduct. Now, clearly, that will be quite a big structure, you know, and it will be visually very intrusive. If I could have the next slide please.

314. So, the first two are kind of – talking about technology for doing the surface tunnel and the bottom one was a concept view of what a viaduct enclosure might look like. We absolutely agree that that viaduct enclosure will be quite ugly on the top of a viaduct, but what it would do it ensure the noise profile on the southern end of the town would be saved.

315. CHAIR: So, you extend – how long do you extend the tunnel before you try and mess about with the viaduct, how many metres?

316. MR THOMPSON: Seven hundred metres.

317. CHAIR: Seven hundred metres to the viaduct, and then you're suggesting doing something with the viaduct?

318. MR THOMPSON: Yes, and then doing 500 metres on the viaduct. Because, at the end of the day, the corner of the viaduct is quite close to the playing fields of the school and therefore I believe, although if HS2 give us the noise modelling to show it is feasible not to do that, be open to look at that. But, if I could have the next slide please.

319. MISS LIEVEN QC: And just, sir, for your note, the previous slide shows the relationship between the bit which is the tunnel and the bit which is built on top of the viaduct.

320. MR THOMPSON: So again, this was talking about showing what potentially could happen to the noise profile. Again, without a proper noise modelling, it's difficult to say. The HS2 cost estimate for this proposal is £37 million. It obviously reduces noise reduction property blight, it obviously helps St Mary's and the school and it may save tourism in the long term. The downside is obviously that it's quite a big visual blight, as you come into Wendover from the south.

321. There is an alternative to that visual blight, because rather than keep the vertical alignment the same, we did ask HS2 to look at it, was the lower the alignment and to put the green tunnel under the Chiltern line and under the road. And then come up in a cutting as it goes down Misbourne valley. That would have the effect of doing away with the viaduct completely, doing away with the need for the enclosure on top. It was very expensive, it was £150 million, I'm sure, and that is having netted off saving the – have to build the viaduct. But it would effectively remove that blight from that end. And then, as it moved up the Misbourne valley, it starts off in a cutting rather than on a very high embankment.

322. MISS LIEVEN QC: Next slide please.

323. MR THOMPSON: Okay. Clearly this is the last one which is if we stay on keeping the alignment the same, is to give some relief to the houses down on the London Road, is to put an enclosure on the embankment for a further 600 metres. It would cost about £15 million but would save those homes…

324. SIR PETER BOTTOMLEY: Cost –

325. CHAIR: Fifteen.

326. MR THOMPSON: About £15 million, is my guess, sorry, that isn't an HS2 figure.

327. MR BELLINGHAM: That figure of 15, Mr Thompson, that's based on – is that peer reviewed, is that –?

328. MR THOMPSON: No it's not, it's really…

329. MR BELLINGHAM: So, how's it calculated?

330. MR THOMPSON: We'd tried to guesstimate what the cost of putting these arches on and then guesstimate what the enclosure would be, and it came similar to the £37 million that HS2 said, so we thought it may be about right, but, to be honest, it needs a proper engineering look at it.

331. CHAIR: How many houses?

332. MR THOMPSON: I would suggest probably about 40 houses.

333. CHAIR: Okay, and how far from the line are they?

334. MR THOMPSON: They vary from – some are quite close down Rocky Lane, you know within 50 metres to about four or 500 metres. Because it – the houses are veering away as the line goes up the valley.

335. MISS LIEVEN QC: Is Rocky Lane the lane that's just disappearing off to the bottom of the plan, you can see the word, 'Lane', but you can't see...?

336. MR THOMPSON: Yes, that's Rocky Lane, and you can see it currently goes under the embankment.

337. MISS LIEVEN QC: And the £15 million, is that based on the answer to Frank Dobson about the cost of cut and cover?

338. MR THOMPSON: No, it's based on – because we're using preformed arches on just concrete foundations, but it's an assumption. Next slide.

339. MISS LIEVEN QC: Thank you. The next two slides are probably just summaries, are they, of what you've said already, so the next one – this one is showing

distances being proposed on each element of your proposal, and then the following one is summing up the benefits, but also the – what you don't get from having a green tunnel. Is that right?

340. MR THOMPSON: Yes, absolutely. It does help, but it doesn't solve all the problems, which is why we've been looking for a bored tunnel.

341. MISS LIEVEN QC: Thank you.

342. CHAIR: Right. Any questions?

343. MR MOULD QC (DfT): I'm just going to show you three slides if I may. I don't mind if Mr Thompson sits there or not –

344. MISS LIEVEN QC: Well, yes.

345. MR MOULD QC (DfT): The first one is P7497, you can see the extent of the LOAEL contour to the east and the west of Wendover, under the Bill scheme, and you can see that under the existing scheme, without any northward extension of the green tunnel, as has been proposed, the LOAEL contour is clear of the northern extent of the settlement and you can see that the LOAEL contour to the south is clear of main settlement as well, there are one or two outlying properties, including the church and the school that are within the LOAEL contour. If you turn to P…

346. MISS LIEVEN QC: If we – sorry, as we're doing this through submission – if – I think the point to be made, that Mr Summers would make about this is that this is the LAEQ, not the LOAEL.

347. MR MOULD QC (DfT): Yes, I was going to come to that. With all due respect to you, I'm not going to ask you questions about this, because this is expert noise material. This is just to shorten the proceedings. The position on LA max, you can see from next slide, which is P7498, which is the familiar noise contour map, and you can see that where we are showing impacts which are of significance, the Committee will recall, those properties that are predicted to experience significant change, as a result of the railway, including through an increase in peak noise, they are shown coloured, anything between light yellow and red, and you can see from quick glance at that, that we're not showing any impacts of that kind within the settlement of Wendover, under the

Bill scheme, either to the north, or the south. And so on the methodology that we have…

348. SIR PETER BOTTOMLEY: Anything on the church and school?

349. MR MOULD QC (DfT): Well, I've mentioned that the church and the school are properties that we accept – they're not predicted to experience significant effects, but we accept that there's a special case to be made there which needs to be looked at, that's what we're doing. So, that's the position, on that basis, we say there's no case for substantial expenditure to extend the green tunnel either north or southwards, and if you turn to P7495, just Sir Peter, you anticipated the point really, you can see that we've shown what the balance of expenditure is between focusing measures both at source and at receptor, on trying to ameliorate the noise effects on the Church and the school, and by a combination of £500,000 spent on enhanced trackside mitigation is going to be increasing the noise barrier height from four to five metres, and measures, subject to detailed investigation, to improve the noise performance of the receptor buildings themselves, you can save £36 million minimum in terms of extending the tunnel to the north and £36 million minimum in terms of extending the tunnel to the south and we suggest…

350. CHAIR: Is that for the full six or 700 metres, to the south?

351. MR MOULD QC (DfT): Sorry?

352. CHAIR: To the south, would that be for the full six or 700 metres? Assuming nothing with the viaduct?

353. MR MOULD QC (DfT): Yes, the £37 million is with the – is with the box scheme, and the £150, is if you – if you avoid – what Mr Thompson acknowledge to be, the adverse visual effects of that, which I suspect, Ms Kirkham would not be very happy about. And you put the railway in green tunnel underneath the road in the existing railway and have it coming out to the south of the existing transport infrastructure, beyond the Small Dean viaduct. So the minimum additional spend either north or south, is, in each case, £36 million…

354. CHAIR: Can I just ask a question, it says, 'Tunnel extension south over A413', how far does that come, I mean, is that a problem?

355. MR MOULD QC (DfT): No, that's effectively the scheme that Mr Thompson described to you, which is you basically lid over the railway as it passes all the way from the southern portal of the green tunnel, to the east, or to the south, depending on your orientation of the Small Dean viaduct, so you have a kind of tube effectively, which extends as far as the southern side of the Small Dean viaduct.

356. SIR PETER BOTTOMLEY: You're saying it's school and the church which would – the significant places to benefit from –

357. MR MOULD QC (DfT): They will benefit from spending what we estimate to be £1,200,000 on trackside improvements…

358. SIR PETER BOTTOMLEY: If there were this box extending to the south…

359. MR MOULD QC (DfT): It would be very – you're right.

360. SIR PETER BOTTOMLEY: Those are two properties – views of those two proprieties are the two that would benefit. And you're saying that you can get just about as much, or a significant amount by trackside mitigation and by dealing with the buildings themselves?

361. MR MOULD QC (DfT): Absolutely right.

362. SIR PETER BOTTOMLEY: Can I just ask a final question? Near the school, is there any virtue in having a second barrier on the school boundary to reduce noise that comes into the school?

363. MR MOULD QC (DfT): There may be. I had – that was a thought I had myself as we were listening to the evidence of the head teacher and I will ask for advice on that. As you know, something these things seem like a good idea and one finds that they don't work. But we'll report back on that.

364. CHAIR: Okay. Have you finished, Mr Mould?

365. MR MOULD QC (DfT): Yes, thank you.

366. CHAIR: Thank you Mr Thompson. For a layman, you did very well to explain it.

367. MR THOMPSON: Thank you.