RHS response to HE's REP11-007

Paragraph No	Text taken from HE's REP11-007	RHS response
2. Highways England's comments on Regena Coult's document Representation in lieu of Open Floor Hearing 2 [REP10-021]		
2.1.1	Highways England wishes to clarify that the proposed Cockcrow green bridge (Work No. 35(b)) will have a green element of 25 metres in width and not 50 metres as indicated by the interested party. As has been noted extensively in previous examination submissions, the construction of the green element of Cockcrow Bridge is subject to funding by Highways England designated funds.	No comment
2.2 Amphibian mitigation		
2.2.1	The interested party makes four points with regards to amphibian mitigation. Highways England has responded to each point below.	No comment
	1. Two toad tunnels in Old Lane are not enough as the crossing covers a wider area. There should be a minimum of three, ideally more Highways England's Response	
2.2.2	As explained in response 2.1.5 of the Applicant's comments on Regena Coult's deadline 7 submission [REP8-043], Highways England is in discussions with Surrey County Council about the possibility of moving one of the proposed underpasses on	No comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	Old Lane to a location considered preferable by consultees (as specified by Regena Coult and other attendees at a meeting on 6 January 2020) and also the possibility of providing a third underpass along Old Lane. Provision is made for these matters in the draft highways side agreement, which is being discussed with Surrey County Council, although the agreement is not yet finalised.	
	2. The impact of the new Elm Lane on toads and Great Crested Newts must not be underestimated and the plan to avoid mitigation for this is a contravention of planning guidance rules Highways England's Response	
2.2.3	No further mitigation to that proposed is required in relation to the effects of the new Elm Lane on toads and great crested newts, and planning guidance will not be contravened as the interested party has suggested.	No comment
2.2.4	Common toads and a small population of great crested newts breed in the waterbodies adjacent to Old Lane (the population was assessed as being 'small' due to a maximum combined count of less than 10 individuals being recorded at any one survey of these	No comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	ponds, as explained in paragraph 7.1.6.3. of Appendix 7.11 [APP-097]).	
2.2.5	The mitigation provided in Change 2 as set out in Chapter 4 of the report on proposed Scheme changes [REP4-035] is sufficient to mitigate the increased mortality to the overall common toad population associated with the Bolder Mere Conservation Verge and will also prove beneficial for the dispersal of the small great crested newt population that breeds within the same waterbodies.	No comment
2.2.6	However, as explained above, Highways England is in discussions with Surrey County Council about the possibility of moving one of the proposed underpasses on Old Lane and also the possibility of providing a third underpass along Old Lane and provision for these matters is made in the draft highways side agreement which is being negotiated with Surrey County Council.	No comment
2.2.7	Further mitigation measures on Elm Lane are not required and will not be provided (as explained in section 2.5 of the Applicant's comments on Regena Coult's deadline 6 submission [REP7-006]).	No comment
2.2.8	In addition to the mitigation described in Change 2, there are large amounts of habitat creation and enhancement resulting from the Scheme. These measures will improve biodiversity and will be of benefit for	No comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	amphibian and reptile populations throughout the wider Scheme (as explained in paragraph 2.1.14 of the Applicant's comments on Regena Coult's deadline 6 submission [REP7-006]).	
	3. There is still no certainty as to what will happen with the existing A3 underpass, and if there will be an alternative provided Highways England's Response	
2.2.9	As explained in paragraph 2.1.6 of the Applicant's comments on Regena Coult's deadline 7 submission [REP8-043], the existing culvert under the A3 will be extended and retained. Specific provision is made for this matter as part of Work Nos. 1(e) and 5(d) as listed on page 39 of the draft DCO [REP8-013]).	No comment
	4. If the Wisley bypass is to go ahead as currently planned (I hope it won't be) this would need amphibian underpasses as well Highways England's Response	
2.2.10	Provision has been made for the permeability of the Wisley Lane diversion (paragraph 7.10.43 of the Biodiversity chapter of the ES [APP-052]). This is	No comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	secured by requirement 3(2) and (3) (Construction and handover environmental management plans) of the draft DCO [REP8-013] which requires the Scheme to be constructed in accordance with a construction environmental management plan (CEMP) approved by the Secretary of State. The CEMP must, in addition to other matters, reflect the mitigation measures detailed in the Environmental Statement.	
2.2.11	As explained in 2.6.1 of Highways England's comments on Regena Coult's deadline 6 submission [REP7-006], the mitigation measures will be refined during detailed design but are likely to include environmentally sensitive drainage systems (that are amphibian and reptile friendly), a wide-span bridge over Stratford Brook allowing continuous riparian habitat and wildlife passage under Wisley Lane at Stratford Brook, and an additional wildlife passage under the Wisley Lane diversion in Elm Corner SNCI. This is sufficient mitigation for this new section of road for a range of wildlife, including amphibians.	No comment
2.3 Change 7 – alternative access route at Heyswood Girl Guide Campsite		
2.3.1	The interested party's concerns have been noted with regards to the loss of additional ancient woodland as a result of the optional alternative private means of access to	

Paragraph No	Text taken from HE's REP11-007	RHS response
	Court Close Farm through Heyswood Campsite, as proposed as Change 7 in the Report on proposed Scheme changes 7-9 [REP7-016]. However, as explained in paragraph 3.1.3 of the Report on proposed Scheme changes 7-9 [REP7-016], the decision falls with the ExA as to whether to recommend Change 7 to the Secretary of State and to the Secretary of State as to whether to decide to adopt the ExA's recommendations. It is not for Highways England to respond to the interested party's comments on this matter.	
3. Highways England's comments on The Royal Society for the Protection of Birds' Deadline 10 submission [REP10-020]		
	Response to Reference 3.4.4	
3.1.1	Highways England would like to direct the ExA to its previous responses at Point 2 (pages 5-6) and Point 4 (pages 8-9) of Highways England's comments on RSPB's deadline 7 submission [REP8-046]. This explains the process with regards to agreeing management and monitoring measures with Natural England, Surrey County Council and Surrey Wildlife Trust and confirms that a final version of the management and monitoring plans will be submitted to the Secretary of State for approval under requirement 8 of the dDCO [REP8-013].	No comment

Paragraph No	Text taken from HE's REP11-007	RHS response
3.1.2	Point 4 of Highways England's comments on RSPB's deadline 7 submission [REP8-046] also confirms that the dDCO includes sufficient land and works powers to ensure that Highways England is able to implement the SPA compensatory and enhancement measures which are required as part of requirement 8 of the dDCO.	
3.1.3	Point 4 on page 9 of Highways England's comments on RSPB's deadline 7 submission [REP8-046] explains that the safeguards for in perpetuity management are clearly defined and committed to for these land parcels as part of their international and national nature conservation designations and that Highways England's 20-year management and monitoring period is agreed with stakeholders and is sufficient and appropriate.	No comment
3.1.4	Further information on the scope of the proposed environmental agreements is set out in the detailed summary provided in response to ExAQ 4.1.3 [REP10-008 at pages 5-9].	No comment
	Response to Reference 3.4.5	
3.1.5	Highways England has answered this in the response to question 3.4.5 on pages 18-19 of tits Response to ExQ3 [REP7-004],	No comment

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	which includes the overall objectives of the steering group (as presently drafted). As explained in that response, the precise terms of reference will be determined when the schemes required to be approved by the Secretary of State under requirements 6 and 8 are so approved.	
4. Highways England's comments to Surrey County Councils' document Annex A - Examining Authority's fourth written questions and requests for information [REP10-012		
	Response to Question 4.16.1 and 14.6.2	
4.1.1	Highways England has prepared a draft agreement on this matter for Surrey County Council's consideration and will do all it reasonably can to settle it as soon as possible, although it is unlikely to be possible to settle it by the end of the examination. However, an element of the proposed highways side agreement with the Council (as summarised in paragraph 2.2 of REP-008), is for the parties to use reasonable endeavours to enter into such an agreement before the Order takes effect. The scope of the works, subject to survey information, is to substantially follow the bullet points set out by Surrey County Council in its response to this question. However, with regard to the last bullet point, Highways England is not in a position to amend the design of the approach to Cockcrow bridge in any substantial way as	No comment

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	it is largely determined by the need for the bridleway to reach the height of the bridge as it crosses the A3. Highways England acknowledges that the agreement will need to provide for the Council's input into the design of the works and will also need to be conditional upon any necessary consents, including planning permission, being obtained. Highways England's view is that as the Ockham Bites car park is Surrey County Council's asset, the Council ought to be responsible for obtaining planning permission for the works, if needed, and any other consents needed.	
4.1.2	Highways England acknowledges that it would be sensible and probably cost effective for its contractor to undertake the works whilst carrying out the main scheme works as it will have machinery and a workforce available in the area.	No comment
4.1.3	Although Highways England recognises that the works are desirable it does not take the view that they are a necessary consequence of the DCO scheme. The car park and the café can continue to function notwithstanding. In addition, there is further car parking space available nearby for users of the common at the Ockham Forest Car Park in Old Lane just 300 metres away.	No comment
5. Highways England's comments on Royal Horticultural Society's document Overview [REP10-022]		

Paragraph No	Text taken from HE's REP11-007	RHS response
	Response to Heritage Impacts	
5.1.1	The Statement of Significance [APP-123] prepared for Chapter 11 of the Environmental Statement [APP-056, Table 11.5, page 32)] and DCO, assesses the heritage values of the RHS Wisley Grade II* Registered Park and Garden (RPG). These assessments found that the residual effects of the Scheme on the RPG (taking into account mitigation) would be "Slight Adverse", Historic England's views, as documented in the Statement of Common Ground (SOCG) is consistent with this assessment [REP8-024].	The RHS has provided a detailed account of the impact of the DCO Scheme upon the Grade II* Registered Park and Garden within REP11-047. This concludes that the proposals would cause harm to the designated asset and that this harm could be severe or serious. These conclusions have been reached by applying the established approach to the assessment of impacts on designated assets, and which is recognised in the National Policy Statement and supporting guidance.
	Response to Impacts of temporary works/ land and works agreement	
5.1.2	As explained in Highways England's response to 4.12.4 [REP10-014], Highways England does not accept that there would be any adverse socio-economic effects upon RHS arising from the construction of the DCO Scheme.	The RHS has provided clear evidence within REP6-024 that the imposition of roadworks and speed limits during the construction phase will both increase journey times to and from RHS Wisley and act as a significant deterrent to visitors to the Garden. Highways England's own evidence in REP2-011 confirms that the network "*will operate with a 50mph speed limit and narrow lanes"* and is only able to go as far as stating that "*It has been **assumed** that traffic management will not require the reduction in the number of lanes*", suggesting the very real possibility of lane reductions remains. Figures 11.2 (AM Peak), 11.3 (Inter Peak) and 11.4 (PM Peak) in REP2-011 all demonstrate that the Highways England Traffic Model forecasts a reduction in traffic flows along the M25 and A3 as a result of the construction phase. This is clear evidence that these routes will become less attractive for vehicles to use, supporting the RHS position.

Paragraph No	Text taken from HE's REP11-007	RHS response
		Whilst Highways England have failed to provide any journey time data, it is self-evident that the speed restrictions must increase journey times, let alone any associated congestion caused by traffic slowing on the approaches to the roadworks. On the basis of the evidence presented by Highways England, the RHS has rightly concluded within REP6-024 that journey times to the Garden will increase, resulting in direct socio-economic loss. Furthermore, these increases in journey time, alongside the disruption caused by the roadworks, will deter a significant proportion of visitor trips to the Garden during the construction phase and cause significant economic and financial damage to the RHS and wider local economy.
	Response to Paragraph 22 – 26	
5.1.3	Highways England would like to draw to the attention of the ExA to the 'specialist evidence' referred to by the RHS in paragraph 24 of REP10-022 regarding the single trench excavated on RHS land, for which no conclusive evidence has been submitted linking the roots observed with T184 Redwood. Mr Barrell's report [REP10-034] falls short of any recognised protocol for testing the validity or otherwise of any equipment. Further comments on his report are set out in section 7 of this document.	The statements in 5.1.3–5.1.7 have been responded to in more detail at 7.1.2–8.1.10 below and are not repeated here. However, it is relevant that the evidence submitted at the Deadline 11 [REP11-051] confirms that HE's approach to assessing the adverse impact on irreplaceable trees of unique heritage value is unreliable. As set out in the response at 7.1.2 below, it is standard practice recommended in BS 5837 to show that tree protection measures are feasible through an arboricultural method statement at the "*planning application*" stage of the process. This has not been provided by HE so far. It is essential to have this information before consent is issued to assess whether the protective measures are feasible. If they are not feasible, and consent is issued without the detail, then the trees could be irreparably harmed.
5.1.4	The root mapping investigations were conducted by Highways England to get a better understanding of the lateral spread of the larger roots for the trees in question rather than only relying upon BS 5837:2012, which can be used to identify a root protection area for any tree. The investigations resulted in Highways	See below paras 7.1.2 – 8.1.10

Paragraph No	Text taken from HE's REP11-007	RHS response
	England deciding to re-align its works in this location outside of the A3 verge (and within the prescribed limits of deviation) and with reference to the tree protection plan submitted as document REP5-021. This drawing shows a number of red hatched areas commensurate with the mapped root areas of the trees to which they relate. The red hatched areas cover a larger area than the mapped tree root area, including a 1m offset from the furthest most tree root recorded and squaring the area.	
5.1.5	Whilst the area outside the red hatched areas includes part of the root protection area of the trees and is identified as an area for construction and access activities (cross hatched green on the plan), there would be no excavation work up to the boundary fence adjacent to the trees marked on the plan. Highways England is willing to extend the red hatched areas laterally adjacent to the RHS boundary fence, but no closer to the A3 and will submit a plan to show this at Deadline 12.	See below paras 7.1.2 – 8.1.10
5.1.6	Any works in the root protection areas would only be in accordance with an arboricultural method statement, as informed by detailed design information and construction information. Moreover, any such works would follow the guidance in	See below paras 7.1.2 – 8.1.10

Paragraph No	Text taken from HE's REP11-007	RHS response
	BS5837 for work within root protection areas.	
5.1.7	The impacts on trees of the DCO scheme will continue to be assessed by Highways England as part of the detailed design process and details of trees to be retained and measures for their protection during construction are to form part of the arboricultural method statement required to be included in the CEMP under requirement 3(2)(c)(i) Highways England arboriculturists have been undertaking further tree surveys to obtain additional data in order to inform the detailed design process, including recording more trees around the footprint of the Wisley Lane over bridge.	See below paras 7.1.2 – 8.1.10
6. Highways England's comments to Royal Horticultural Society's document Appendix 3 - Response to Examining Authority's Fourth written questions and requests for information [REP10-025]		
	Response to Question 4.2.1	
6.1.1	In its Deadline 10 submission at REP10-025 RHS has once again returned to the theme that Highways England has not considered whether there are alternative solutions, such as the so-called RHS Alternative Scheme, that could have less impact on the integrity of the SPA. In responding to ExA Q 4.2.1 (the "three scenarios" question – page 1) RHS puts its point as follows:	No further comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	"None of the three scenarios accurately reflect the RHS's case. The ExA rightly notes that the RHS's case is that the DCO Scheme would result in a reduction in visitor numbers to RHS Wisley, but there *is no evidence before the ExA on which it could properly conclude that the associated reduction in vehicular traffic movements to and from RHS Wisley would mean that the DCO Scheme would not have an adverse impact on the SPA. It follows that whether on HE's case (no reduction in visitor numbers) or on the RHS's case (substantial reduction in visitor numbers) the position remains that <u>it would be unlawful for the Secretary of State to confirm the DCO Scheme without first having considered whether there are alternative solutions (such as the RHS Alternative Scheme) which would have less impact on the integrity of the SPA</u>."* (underlining added)	
6.1.2	The point is also made in responding to ExA Q 4.4.1 regarding the Court of Appeal's judgment on FOE / Plan B challenge to the Airports NPS, where the RHS states that: *"The RHS notes the Plan B Court of Appeal judgment, which includes discussion of the "no alternative solution" test of the Habitats Directive. (Please note however that*	No further comment

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	"reasonable alternatives" referred to in ExQ4 4.4.1 is a term derived from the SEA Directive which is not relevant to the DCO Scheme). The Plan B judgement has no particular relevance in so far as the RHS Alternative is concerned, because the RHS Alternative is a feasible alternative solution in this case." (underlining added	
6.1.3	RHS has also made the point (REP8-052 para 26) that: *"In light of all the evidence submitted to date and the new material contained in these Deadline 8 submissions, the RHS reiterates its view that the ExA cannot recommend to the Secretary of State that the DCO Scheme is approved."* (underlining added)	No further comment
6.1.4	HE has responded to the substance of all these points before and it is plainly wrong to suggest that the ExA cannot lawfully recommend, and presumably the Secretary of State decide, that the application should be approved. Most recently, HE set out its position on many of these issues in its own response to Q4.4.1 [REP10-004].	No further comment
6.1.5	In its representations (above), RHS has commented on the relevance to this application of the Court of Appeal's decision on the various challenges to the Airports NPS (submitted as [REP10-025]). In	No further comment

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	considering those points, it is important to properly understand the legal context set by the Court of Appeal's judgment. (NB Although the Court of Appeal's judgment is being appealed to the Supreme Court, that appeal relates only to the FOE / Plan B climate change grounds and not the LB Hillingdon and other Habitats Directive and SEA Directive grounds where the Court of Appeal's decision is final. In this note those challenges are simply referred to as the ANPS challenges.)	
6.1.6	Whilst the Thames Basin Heaths Special Protection Area (SPA) is designated under the Birds Directive, it is nevertheless a Natura 2000 site and, therefore, falls within the protection afforded by article 6 of the Habitats Directive. Articles 6(3) and 6(4) of the Habitats Directive are potentially engaged by the issues raised on behalf of RHS and those provisions are currently transposed into domestic law by regulations 63 and 64 of Conservation of Habitats and Species Regulations 2017.	No further comment
6.1.7	In the Divisional Court judgment on the ANPS challenges the Court held that the appropriate standard of review to be applied when considering whether there has been a breach of the requirements of articles 6(3) and 6(4) of the Habitats Directive is *"Wednesbury irrationality"* (see	No further comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	CA decision at para 69). This was challenged by LB Hillingdon and others in the Court of Appeal who argued that the test is *"proportionality"* and that 'Wednesbury' irrationality is inappropriate as the standard of review. The Court of Appeal rejected LB Hillingdon's position, however, and agreed with the Divisional Court that the test is 'Wednesbury' irrationality (also known as Wednesbury unreasonableness) (see CA decision at para 79). Thus when considering the evidence available on whether the RHS Alternative Scheme is an *"alternative solution"* for the purposes of article 6(4) the appropriate standard of review is 'Wednesbury'.	
6.1.8	The next point relates to the 'objective' of the plan or, in this case, project. In the Divisional Court it was held that the 'objectives' of a plan or project must be both *"genuine and critical"*; that is, the objective must be one which, if not met, would mean than no policy support would be given to the project (see CA decision para 92). This analysis was then applied by the Court of Appeal in para 93 of its judgment.	No further comment
6.1.9	This approach is entirely consistent with that adopted by Highways England in respect of the RHS Alternative Scheme.	RHS responds to this in REP12-xxx

Paragraph No	Text taken from HE's REP11-007	RHS response
	a) First, the policy context is important. The NPS for National Networks states (para 4.66) that: *"The Secretary of State should not grant development consent unless satisfied that all reasonable steps have been taken and will be taken to:* • minimise the risk of road casualties arising from the scheme; and • *contribute to an overall improvement in the safety of the Strategic Road Network."* Thus, road safety has to be an important objective of any HE project seeking to be granted development consent under the Planning Act 2008 regime. b) Secondly, it is a stated objective of the M25 Junction 10 project that it should improve safety along this stretch of the A3. The Client Scheme Requirements are set out at Table 1 of HE's Habitats Regulations Assessment Stages 3-5: Alternatives [REP4-014 (page 6)] and make it clear that it is a scheme objective to *"Reduce annual collision frequency and severity ratio on the main line A3, slip roads and M25 junction 10 gyratory."* c) Thirdly, following pre-application consultation and engagement with RHS, Highways England clearly considered the	

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	RHS Alternative Scheme during scheme development and wrote up its conclusions on this potential alternative in the Scheme Assessment Report: Side Roads Addendum (Nov 017) [REP3-017 pp. 11-12 and 18-19]. The Highways England Consultation Report [APP-026] records at, for example, page 74 that *"The proposed left out access from Wisley Lane to the A3 included in RHS Garden Wisley's proposals cannot be incorporated into the Scheme as it would be unsafe. The distance between the end of the slip road from this merge and the beginning of the slip road to junction 10 would be too short, and the need for vehicles wishing to travel north on the A3 crossing two lanes of traffic, have necessitated this decision. This decision has been considered and ratified by Highways England's chief engineer."* d) Fourthly, the ExA very properly tested Highways England's position during the examination and Highways England responded fully [REP8-047 pp.29-31] on why the RHS Alternative Scheme does not meet DMRB standards such as to be safe. RHS has no adequate answer on this. e) Fifthly, therefore, for the ExA and the Secretary of State to prefer Highways England's position would not be	

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	Wednesbury unreasonable; indeed, it would be the right decision on the evidence.	
6.1.10	Both the Divisional Court and the Court of Appeal drew a distinction between a proposal being considered a 'reasonable alternative' during the SEA, and by extension the EIA, process, on the one hand; and a conclusion that a proposal is not an 'alternative solution' for the purposes of article 6(4) of the Habitats Directive, on the other. The Divisional Court emphasised the 'procedural' nature of the SEA articles and the need to consider 'reasonable' alternatives as part of a process of consultation. This contrasts with what the Divisional Court referred to as the 'substantive' nature of the requirements of articles 6(3) and 6(4) (see CA decision at para 109). The Court of Appeal put it as follows (para 116): *"Under the Habitats Directive, if a suggested alternative does not meet a central policy objective of the project or plan in issue, then it is no true alternative and will properly be excluded. It is not then, and cannot be, an "alternative solution". In short, the Habitats Directive has a determining effect on the inclusion or exclusion of alternatives. By contrast, the identification of "reasonable alternatives" under the SEA Directive is a requirement*	No further comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	designed to inform the following consultation process. …" (underlining added)	
6.1.11	Here the RHS Alternative Scheme emerged as an alternative option during engagement between Highways England and RHS and, as stated above, it was considered by Highways England in the Side Roads Report and reported in the Consultation Report, but those reports – and Highways England's further evidence to the examination such as [REP8-047 pp29-31] - make it clear that the retention of a left-in / left-out solution for Wisley Lane is unacceptable on safety grounds. It was therefore perfectly proper, and indeed reasonable, for Highways England to reject the RHS Alternative Scheme on safety grounds and, having done so, it ceased to be an 'alternative solution' for the purposes of articles 6(4).	RHS responds to these matters in REP12-xxx
6.1.12	Furthermore, Highways England rejects RHS's argument that the proposed development has an adverse effect on the integrity of the SPA, beyond the physical land take within the SPA that would be required for both the Highways England project and the RHS Alternative Scheme; see, for example, REP7-008 section 2.2 and Appendix A. Indeed, the RHS Alternative Scheme would actually take	No further comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	more land within the SPA [point 16 REP9-003]. This just reinforces the point that the RHS Alternative Scheme is not an 'alternative solution'.	
	Response to Question 4.3.2	
6.1.13	As noted by Highways England in REP5-014 (paragraph 2.1.2), the UK Government is currently consulting on bringing forward the date for ending the sales of new petrol and diesel cars and vans from 2040 to 2035 or earlier, and to also include hybrid vehicles within the ban. If this becomes government policy, then it is more likely that sales of electric vehicles would rise, with a reduction in exhaust emissions of all air pollutants. However, this is unlikely to materially affect the conclusions of the air quality assessment, given that the assessment is for an opening year of 2022.	No further comment
	Response to Question 4.3.3	
6.1.14	It is not the case, as RHS assert, that Highways England has consistently refused to provide this information. It was not provided because, it was not considered a necessary requirement for the air quality assessment in line with discussions between Highways England and Natural England.	The RHS stands by what it said in REP10-025 in relation to Q4.3.3
	Response to Question 4.4.1	

Paragraph No	Text taken from HE's REP11-007	RHS response
6.1.15	As explained by Highways England in its response to this question the RHS Alternative was discounted on safety grounds. It is not a feasible alternative.	The RHS responds to this in Penny's Paper
	Response to Question 4.4.7- APIS Documents	
6.1.16	RHS has submitted extracts from the Air Pollution Information System (APIS) website, described by the host CEH as a database. Neither the starter's guide [REP10-028] nor the overview note on ammonia [REP10-027], constitutes "guidance requiring the effects of ammonia on SPAs to be assessed". The starter's guide includes a table showing that road transport is a source of ammonia, while the overview note on ammonia notes on page 1 that ammonia is emitted from catalytic converters in petrol cars. Neither of these points are disputed by Highways England. The UK Government's National Atmospheric Emissions Inventory (NAEI) includes sources of ammonia from road transport from the year 1990. However, it is not included by DEFRA in the Emissions Factor Tool (EFT), which is integral to the Highways England assessment method for road schemes.	The RHS stands by what it said in REP10-025 in relation to Q4.4.7. Ammonia from road traffic should be included as it makes a substantive contribution to nitrogen deposition.
	NEA001 (Natural England Internal Note) - REP10-029	

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6.1.17	RHS state that "at the time of writing the [NEA001] Guidance, the contribution of ammonia from traffic was not fully recognised", however given that the UK Government's NAEI includes emissions of ammonia from road transport from the year 1990, as noted above, this clearly cannot be correct.	See response to 6.1.16 above
6.1.18	None of the paragraphs that RHS has quoted from the NEA001 guidance (para 2.1, para 4.41, para 1.13, para 4.7, para 3.7 and para 5.7) make any specific reference to the requirement to assess the effect of emissions of ammonia on SPAs.	See response to 6.1.16 above
6.1.19	Although paragraph 2.1 mentions ammonia in a list of pollutants, it goes on to state "Each proposal type will have emissions typically associated with its specific activity. For example, ammonia is typically associated with farming or waste management. Combustion sources such as industry or traffic are more likely to be associated with nitrogen oxides and particulate matter".	See response to 6.1.16 above
6.1.20	Paragraph 4.41 gives an example of in-combination effects on nitrogen deposition "from both the emissions of ammonia from a farm source and also from emissions of nitrogen oxides from a traffic source".	See response to 6.1.16 above

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6.1.21	It cannot be said that this internal note constitutes "guidance requiring the effects of ammonia on SPAs to be assessed" since plainly it does not.	See response to 6.1.16 above
6.1.22	Highways England has consulted with Natural England throughout the DCO process. Natural England has not required an assessment of ammonia emissions for this particular project.	See response to 6.1.16 above
	IAQM Guidance	
6.1.23	The IAQM "*Guide to the assessment of air quality impacts on designated nature conservation sites*" was first published in June 2019. The version of the IAQM guide submitted by RHS in response to ExA question 4.4.7 [REP10-030] was only very recently issued (May 2020) It is the 2019 version that has been referred to throughout the course of the DCO examination and which RHS said it would submit (as per email correspondence between Duncan Laxen and Vicki Sykes of 29th May 2020). For completeness, the 2019 IAQM guidance document is submitted by Highways England with this response (TR010030/9.126).	See response to 6.1.16 above. Also, it is clearly most relevant to use the most up-to-date guidance, as supplied by the RHS.
6.1.24	As explained in Highways England's response to question 4.4.7 [REP10-004, page 8] the IAQM document is a guide to	See response to 6.1.16 above

Paragraph No	Text taken from HE's REP11-007	RHS response
	available assessment methods, rather than prescriptive guidance of what must be assessed. The updated 2020 guidance still refers to the use of the DMRB "*for the assessment of the impact of emissions from schemes on the strategic road network*" (para 5.3.6). Para 5.5.4.2 notes that although the DMRB **requires** the assessment of NOx emissions and nitrogen deposition, it does not require assessment of ammonia. The same paragraph notes that although consideration should be given to including ammonia, there is no requirement to do so.	
	CIEEM Guidance	
6.1.25	Leaving aside the appropriateness of RHS disclosing and seeking to place weight on advice that has yet to be published, CIEEM's advice is in draft, and CIEEM has issued no statements on its potential contents, either in publications or as personal communications. This has been confirmed with CIEEM's CEO.	See response to 6.1.16 above
	Response to Question 4.4.8	
6.1.26	The EFT represents the Government's understanding of current vehicle emissions through to 2030 and is available to be used by developers. As Highways England is not the responsible authority for the production	The RHS stands by what it said in REP10-025 in relation to Q4.4.8.

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	of EFT it is not able to comment on any future changes in vehicle emissions either for individual vehicles or changes to the national fleet. The ExA would need to contact the Department for Environment, Food and Rural Affairs (Defra) and the Department for Transport (DfT) for advice on any future changes to the national fleet and individual vehicle emissions.	
	Response to Question 4.4.9	
6.1.27	The HRAs that have been provided are for local plans rather than for road schemes (as discussed in REP6-010 paras 3.15 to 3.17).	The HRAs were addressing the road traffic component of the local plans, so they are relevant to demonstrating that ammonia from road traffic should be included in assessments of nitrogen deposition from road schemes.
	Response to Question 4.4.10	
6.1.28	As per REP9-003 (paragraph 2.1.3), Highways England would urge a degree of caution in interpreting the results from a study that was made from a single road/study area.	The RHS stands by what it said in REP10-025 in relation to Q4.4.10.
	Response to Question 4.4.12	
6.1.29	RHS has stated that this question cannot be answered correctly until the information requested at ExQ4 4.3.3 has been made available by the Applicant. Highways England can only assume this is because RHS consider it necessary to determine if operational nitrogen deposition rates within	The RHS responds to this in REP12-xxx

Paragraph No	Text taken from HE's REP11-007	RHS response
	the established woodland buffer will be greater than the current baseline at such a magnitude that could lead to an adverse change in the woodland vegetation and associated invertebrate resource. This information has been provided. As can be seen in Highways England's response to ExQ4 4.3.3 [REP10-004] and the accompanying table [REP10-007], for all points of the transects within the SPA, the operational nitrogen deposition rates will be lower than the current baseline, even after applying a sensitivity test to account for ammonia.	
6.1.30	As explained in the response to question 4.3.3 on page 6 of Highways England's response to ExQ4 [REP10-004], the receptor points were adjusted for ammonia up to 30 metres from the road, as the contribution of ammonia from road vehicles is noted to be indistinguishable from background levels at distances of over 30 metres from the road (as set out in 3.3.1 on page 28 of the SOCG between Highways England and Natural England [REP8-022]). However, as explained in point 8 on page 9 of Highways England's comments on RHS's deadline 8 submission [REP9-003], even if the change in nitrogen deposition rates were to be doubled for all points as an additional overly precautionary measure to account for ammonia from road vehicles,	No further comment

Paragraph No	Text taken from HE's REP11-007	RHS response
	the operational nitrogen deposition rate would still fall below current baseline levels at every point on every transect within the SPA.	
6.1.31	Although not required for the SiAA, Highways England has carried out these additional sensitivity tests at the request of the ExA, and the tests clearly demonstrate that even when taking these precautionary measures into account, Highways England's fundamental points remain correct: • The Scheme will lead to no discernible effects on nitrogen deposition rates within the habitats upon which the SPA qualifying species rely (i.e. the heathland), and; • The established woodland buffer that separates the heathland from the A3 and M25 will receive lower nitrogen deposition rates than it currently does and will continue to function in the same way and provide the same contribution to the invertebrate resource as it currently does.	The RHS responds to this in REP12-xxx
6.1.32	Therefore, it is clear that there will be no effect whatsoever on the integrity of the SPA as a result of air quality impacts from	The RHS responds to this in REP12-xxx

Paragraph No	Text taken from HE's REP11-007	RHS response
	the Scheme, no matter which sensitivity test one chooses to apply.	
	Response to Question 4.4.13	
6.1.33	RHS is incorrect in its response to question 4.4.13 [REP10-025] when stating that the Thames Basin Heath SPA's conservation objectives for supporting habitat applies to the established woodland buffer. As explained previously in point 1 on page 8 of Highways England's comments on RHS's deadline 8 submission [REP9-003] and again in section 4.3 of Highways England's comments on deadline 9 submissions [REP10-003], the established woodland buffer is not a supporting habitat for any of the SPA qualifying species. It does not provide foraging, nesting or roosting habitat for any of the qualifying species (instead this is provided by the heathland habitat).	The RHS responds to this in REP12-xxx
6.1.34	As explained in point 11 on page 9 of Highways England's comments on RHS's deadline 8 submission [REP9-003], the SiAA identified an adverse effect as a result of physical loss of 14.6 ha of established woodland, based on the precautionary approach that the complete loss of this habitat could reduce the overall invertebrate resource of the SPA.	The RHS responds to this in REP12-xxx

REP12-xxx

Paragraph No	Text taken from HE's REP11-007	RHS response
6.1.35	This does not make the established woodland buffer a supporting habitat as defined by the conservation objectives for the Thames Basin Heaths SPA. The Supplementary Advice on Conserving and Restoring Site Features [REP5-034] explains that the principal habitats supporting the SPA qualifying species are *"lowland heathland and rotationally managed coniferous plantation woodland",* of which the coniferous plantation woodland *"should continue to be managed by providing permanent open space and by rotational clear-fell and re-stocking, which can temporarily create suitable breeding habitat for up to 10 years"* (taken from the introductory text on page 4 and the explanatory notes for the Supporting Habitat attribute for nightjar in Table 1, page 2 and the Supporting Habitat attribute description for woodlark in Table 2, page 8[1]). This is further clarified in the air quality explanatory notes for the Supporting Habitat attribute for nightjar (Table 1, page 2) which describes the supporting habitats as *"nesting, feeding or roosting habitats"* (this description is also referred to for woodlark and Dartford warbler).	The RHS responds to this in REP12-xxx
6.1.36	It is clear from these descriptions that the established woodland buffer, which does not form nesting, feeding or roosting habitat for any of the SPA qualifying species, and	The RHS responds to this in REP12-xxx

Paragraph No	Text taken from HE's REP11-007	RHS response
	is formed of trees of several decades in age (and therefore does not fall into the category of lowland heathland or rotationally managed coniferous plantation woodland of up to 10 years in age), does not form a supporting habitat. Instead the SiAA has simply acknowledged that this established woodland buffer may contribute to the invertebrate resource within the SPA (as indeed, any adjacent habitat that contained any form of vegetation could: for example adjacent road verges contain grasses and scrub that may support invertebrates, but that does not necessarily make them a supporting habitat).	
6.1.37	The function of the established woodland buffer is explained by Natural England on page 4 of its response to question 4.4.11 of ExQ4 [REP10-016]: *"it may help to ameliorate the potential effects of raised nutrient levels from vehicle emissions (by helping to disperse emissions), it helps to provide a barrier against litter arising from the road reaching open heathland and may help to reduce the risk of fires spreading from the roadside and into open heath"*.	
6.1.38	As explained previously in point 2 on page 8 of Highways England's comments on RHS's deadline 8 submission [REP9-003] the qualifying species only occur within the heathland habitat within the Ockham and	The RHS responds to this in REP12-xxx

Paragraph No	Text taken from HE's REP11-007	RHS response
	Wisley Commons SSSI component of the Thames.	
6.1.39	As explained in Highways England's response to question 4.4.13 of ExQ4 [REP10-004], the potential contribution of an invertebrate resource from the established woodland buffer to the SPA qualifying species' diets is restricted to nightjars. There is currently approximately 78 hectares of heathland habitat on the Ockham and Wisley Commons SSSI component of the Thames Basin Heaths SPA supporting seven nightjar territories and therefore in reality the heathland habitats are considered sufficient to provide all of the invertebrate resource that the nightjars need. However, a precautionary approach was taken in the SiAA with regards to the potential reduction in the overall invertebrate resource of the SPA resulting from the physical loss of 14.6 ha of established woodland buffer.	The RHS responds to this in REP12-xxx
6.1.40	This aligns with the response given by Natural England to question 4.4.12 of ExQ4 [REP10-016], where Natural England describe the dietary invertebrate requirements of the three SPA qualifying species, and demonstrates that the established woodland buffer will not contribute to the dietary invertebrate resource of Dartford warbler and woodlark,	The RHS responds to this in REP12-xxx

Paragraph No	Text taken from HE's REP11-007	RHS response
	and is unlikely to play a key role in the diet of nightjars. This is again supported by Surrey Wildlife Trust's response to question 4.4.2 of ExQ4 [REP10-017].	
6.1.41	In RHS's response to question 4.4.13 of ExQ4 [REP10-025], it is stated that "In the absence of specific sensitivity data on moth species or other invertebrate species it is reasonable to apply the critical loads and levels that have already been established by the scientific community as published on APIS and reflected in the Thames Basin Heath SPA's conservation objectives for supporting habitat", with RHS concluding that "if critical loads are being exceeded it is likely that invertebrate populations are adversely affected".	No further comment
6.1.42	As explained in Highways England's response to question 4.4.13 of ExQ4 [REP10-004], the Pollutant impacts by species section of the APIS website states that nightjars are not sensitive to nitrogen impacts on coniferous woodland, indicating that nitrogen changes within this habitat type would not have an effect on nightjars directly or via their invertebrate food resource.	The RHS responds to this in REP12-xxx
6.1.43	However, whether existing exceedance of critical loads within the established woodland buffer has an adverse effect on	The duty is to restore sites through the application of the Conservation Objectives, NOT to restore back to the existing baseline. The Conservation Objective is to restore levels of

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	the invertebrate assemblage that forms part of a nightjar's diet is not the question that the SiAA needs to be concerned with. This is because the existing invertebrate assemblage within the established woodland buffer (which may or may not contribute to the invertebrate resource utilised by nightjars) is the existing baseline for the SiAA, and this has established under the current conditions i.e. the existing nitrogen deposition rates and associated vegetation structure.	nitrogen deposition to at or below critical loads. The HE plan is an impediment to achieving that Conservation Objective.
6.1.44	Instead, the key question that the SiAA needs to address (and indeed has addressed) is whether the Scheme would lead to increases in nitrogen deposition above the existing baseline within the established woodland buffer that could result in changes to the vegetation and associated invertebrate assemblage of such a magnitude as to have an adverse effect on the population of nightjars that occur within the Thames Basin Heaths SPA.	This is incorrect see answer to 6.1.43.
6.1.45	Due to the Scheme's operational nitrogen rates being lower than the current baseline (even under the sensitivity test of doubling nitrogen deposition rates to account for ammonia), Highways England can be certain that the vegetation quality and structure within the established woodland	See answer to 6.1.43

Paragraph No	Text taken from HE's REP11-007	RHS response
	buffer and the associated invertebrate assemblage will continue to exist as it currently does.	
6.1.46	Therefore, the SiAA was correct to rule out an adverse effect on the integrity of the SPA as a result of air quality changes.	See answer to 6.1.43
	Response to Question 4.4.15	
6.1.47	As explained in the response to question 4.4.12 above, the information requested at ExQ4 4.4.3 has been provided in Highways England's response to ExQ4 [REP10-004]. It demonstrates that for all points of the transects within the SPA, the operational nitrogen deposition rates are lower than the current baseline, even after applying a sensitivity test to account for ammonia.	See answer to 6.1.43
6.1.48	Natural England has explained in response 2.4.7d of Natural England's response to the ExA's second written questions [REP5-032], the achievement of favourable condition for the Ockham and Wisley Commons SSSI component part of Thames Basin Heaths SPA is dependent upon improvement of the condition of the existing heathland	The RHS responds to this in REP12-xxx
6.1.49	There is no existing requirement to restore any areas of heathland within the existing woodland buffer, and therefore the SiAA	The RHS responds to this in REP12-xxx

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	correctly assumes that the established woodland buffer will be retained.	
6.1.50	However, should the strategy for achieving favourable condition change in the future and include a focus on increasing the area of heathland, the air quality changes as a result of the Scheme would not make the restoration of heathland within the existing established woodland buffer area any more challenging than the current situation, as the operational nitrogen deposition rates will fall below the current baseline. Furthermore, as Natural England has explained in its response to ExQ4 question 4.4.15 [REP10-016], *"in the event that a decision is made to create heathland or some other habitat in place of the existing woodland buffer raised nutrient levels may be a factor which would have to be taken into account when planning operations but it would not be an insurmountable problem"*.	See answer to question 6.1.43 and the RHS response to this in REP12-xxx
	Response to Question 4.4.18	
6.1.51	Highways England would like to draw the ExA's attention to Footnote 1 on page 8 of Highways England's comments on RHS's deadline 8 submission [REP9-003]. This footnote explains that the claim by RHS that 'Nightjar preferred broadleaved or mixed woodland for foraging' actually refers to an assessment category titled 'deciduous	No further comment

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	woodland', which includes mixed woodland, rural gardens and orchards. This description for the deciduous woodland category can be found in the Figure 3 description on page 572 of the Alexander and Cresswell paper [REP10-031].	
	Response to Question 4.4.19	
6.1.52	As has been pointed out in REP7-004, Highways England's response to EXQ3 3.4.3, it has not been possible to derive information about the background concentration provided for Figure 3 in AQC's study [REP5-049], nor about whether an adjustment factor required for the ALPHA samplers (used to measure ammonia concentrations on the transects out to 100 metres), or the uncertainty in the measurements associated with these types of samplers.	The RHS stands by what it said in REP10-025 in relation to Q4.4.19.
6.1.53	Information derived from AQC's Ashdown Forest SAC report for the HRA for the Wealden Local Plan noted that the background concentrations were made using a different type of sampling method, a DELTA monitor, which is a different type of monitor than that used for the measurements on the transects (ALPHA), and is considered more reliable (as discussed in Highways England's response to ExAQ3 3.4.3 [REP7-004]). Although both	The RHS stands by what it said in REP10-025 in relation to Q4.4.19.

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	of these types of monitors are used in the DEFRA network, it is acknowledged that the ALPHA monitors are less accurate than the DELTA monitors. The ALPHA sampler is described on the CEH website as "*useful as a complementary method for assessing spatial differences in source areas where NH3 concentrations may vary hugely*[2]." This implies that where concentrations are close to background levels, any small fluctuations may not be reliable. To provide an ongoing validation of the ALPHA sampler, the method is calibrated against the DELTA monitors at 12 sites within the network[3]. The differences in measurements made by the two methods (following adjustment of the ALPHA monitors) have been reported as ranging between -23% and +38% in 2018 (Epping Forest Special Area of Conservation, Review of Air Quality Assessment Modelling Methodology Technical Note, February 2020, para 6.3[4]).	
6.1.54	It follows that for a measurement of 0.6 µg/m3 made by a DELTA sampler at background site, it would be reasonable to assume that this would correspond to measurements by the ALPHA samplers of 0.46 µg/m3 to 0.83 µg/m3. As the concentrations measured by the ALPHA samplers at distances of 22 metres and beyond are within this range, this would indicate that the measurements at these	The RHS stands by what it said in REP10-025 in relation to Q4.4.19.

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	distances are within the uncertainty range of the measured background concentration, and thus indicative of background concentrations.	
6.1.55	The acknowledgement that concentrations can be at background levels at a distance closer to the road than 200 metres is supported by earlier research by AQC (2008) for Defra's Local Air Quality Management Technical Guidance. This showed that when looking at NO_2 concentrations at distances from roads '… *it is usually acknowledged that beyond 50m from the road, concentrations approach background levels. Thus, at 100m or more from the road, the difference between the total concentration and the background concentration should be as close to zero as will make virtually no difference. Figure 2A supports this conclusion, showing that while measured concentrations do tend to decline between 50m and 140m from the kerb, these reductions are extremely small. Thus, the background concentration for the M62 survey is assumed to be the concentration measured 123m from the kerb; the background concentration for the A14 survey is taken as that measured 130m from the kerb; the concentration measured 140m from the clockwise edge of the M25 is taken to represent both M25 datasets*"	1. Once again, HE is misrepresenting information to support its non-scientific view that ammonia does not contribute to nitrogen deposition beyond 30m from the edge of a road. In this case, HE is citing a report published by AQC in 2008 [**Appendix A**] that it has not provided to the ExA (RHS has therefore submitted this report at Deadline 12) and doing so out of context. 2. The report was designed to help develop an empirical relationship, ie a mathematical equation, to describe the decline in concentrations of nitrogen dioxide on moving away from the edge of a road. It is recognised in paragraph 3.4 of the report that *"Several authors have recognised that the rate at which NO_2 concentrations decline with distance from roads can be described using logarithmic relationships (e.g. AQEG, 2004; Hickman et al.; 2003; Pleijel et al., 2004; Gilbert et al., 2005). Zou et al. (2006 fitted a shifted power law to measured gradients in Shanghai. All of the data shown in Figure 1 appear to adhere very strongly to a linear relationship with the natural logarithm of distance from the kerb, as shown by the fitted relationships in Figures 2A and 2B"*. Figure 2A is reproduced below. 3. Part of the study was designed to see if a generalised relationship could be developed that would apply across all studies that were included. To do this it was necessary to define a 'road component' by subtracting a 'background'. This was the context for the quote provided above by HE from paragraph 3.10 of the report. This was a pragmatic way of defining a background. 4. The report did conclude that a generalised log-linear model could be built that provided a reasonable fit to the data, despite uncertainties in the monitoring data and the different site types. The outcome is seen in Figure 7 in the report, reproduced below. It is clear from this figure that the generalised relationship

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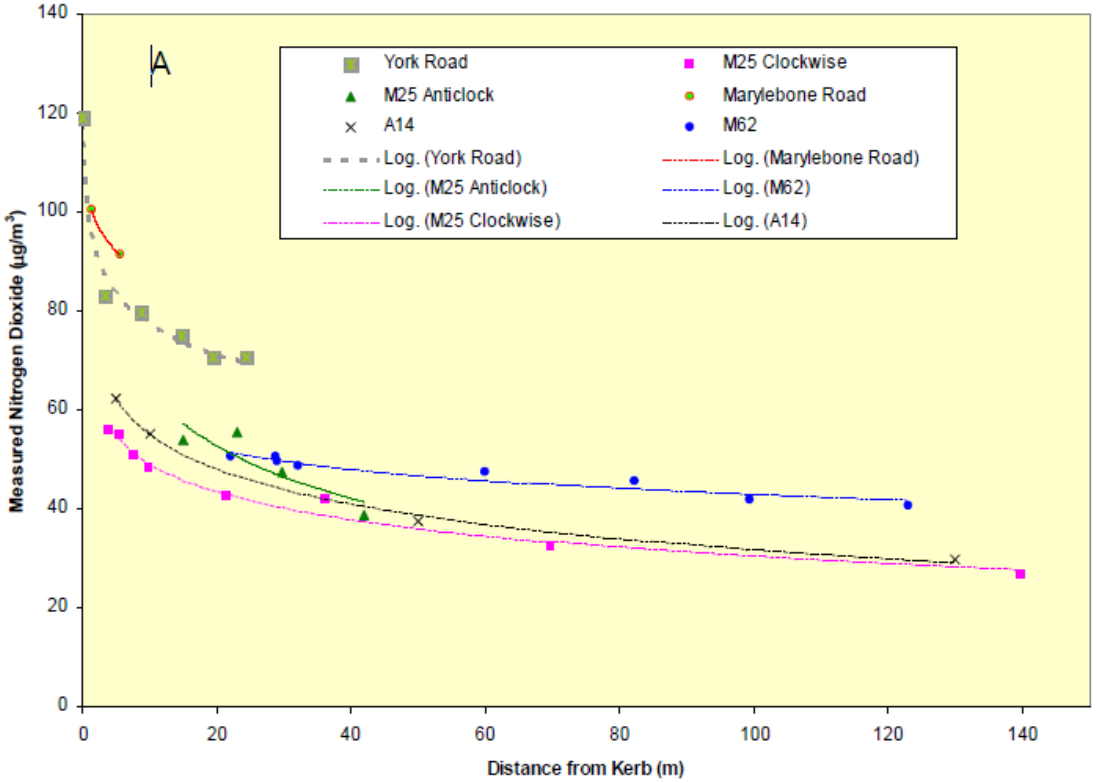
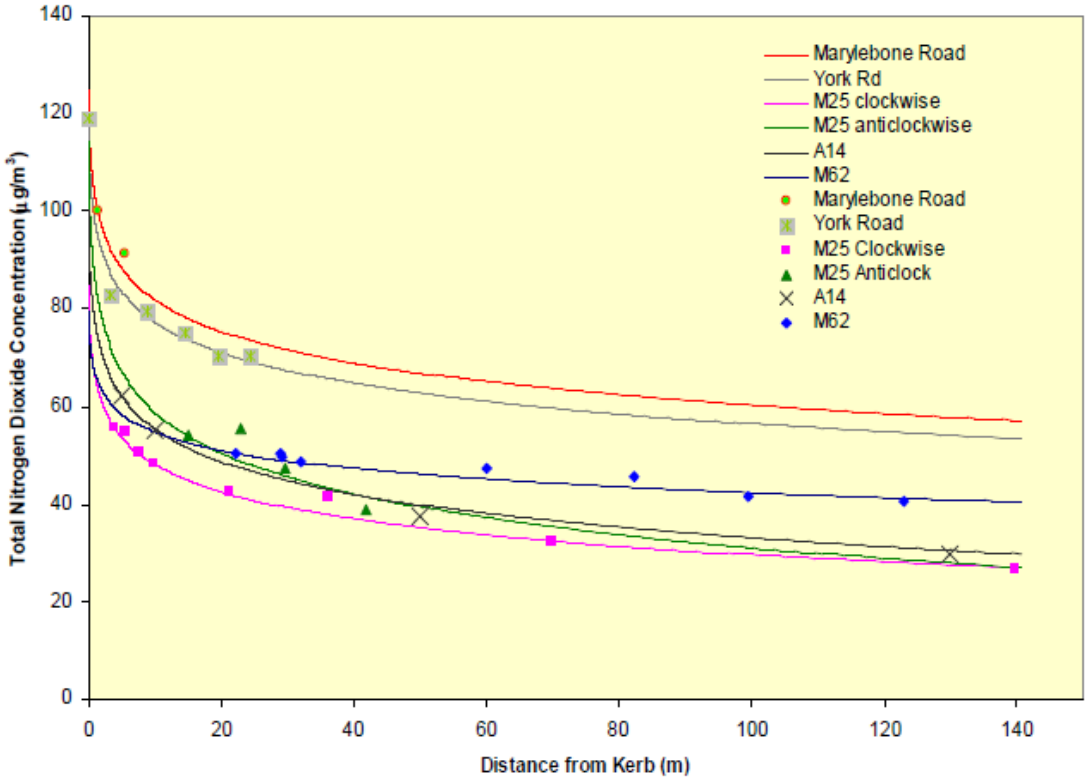
	(AQC, NO2 Concentrations and Distance from Roads, 2008, Para 3.10[5]).	fitted to each site is still declining at 140m from the road, and because of the logarithmic nature will continue to decline beyond this distance. 5. In other words, the AQC study cited by HE (above) is in fact fully in accord with the evidence presented by RHS in REP10-025 in the response to Q4,4,16 on page 16. This included Figure X, which sets out a more recent study by AQC of the fall-off with distance (this time for nitrogen oxides), which is essentially the same shape as for the earlier study by AQC that is cited by HE. 6. The selective quote by HE in no way contradicts the conclusion reached by the RHS in REP10-025 (page 21), namely: *"The evidence that has been presented here clearly supports the view set out by the RHS that concentrations of both ammonia and NOx decline with distance from a road. They will obviously tend towards background the further one is from the road, but will not reach it, even at 200m from the road (as is evident in Highways England's own work). As ammonia follows the same pattern of decline with distance, there is no basis for Highways England to discount the ammonia contribution to nitrogen deposition beyond 30 m and say that ammonia "would not affect deposition rates" 150-200m away (see REP8-022, section 3.3.1, page 29). Instead, the scientific evidence shows that both NOx and ammonia need to be accounted for in the nitrogen deposition calculations at all distances."*

Paragraph No	Text taken from HE's REP11-007	RHS response
		 **Figure 2A - Log-linear Relationships Fitted to Measured NO2 Concentrations at Increasing Distances from Roads.**

Paragraph No	Text taken from HE's REP11-007	RHS response
		 **Figure 7 - Measured Data Used in this Analysis, Alongside the Range of Concentrations Predicted by Applying Equation 4 to the Maximum (i.e. closest to the road) Measurement from Each Study.**
6.1.56	In the same report AQC recognised the importance of the limitations of data analysis and noted in the conclusion (para 6.4) that "The measurements on which this analysis is based are limited and it would be worthwhile to test these conclusions	It goes without saying that more data are always useful, but this does not negate using the best data available, as has been done for ammonia. The science of dispersion and dilution of a gas away from a source (in this case a road) apply equally to ammonia as they do to nitrogen oxides, so it is to be expected that ammonia will follow a log-linear curve as is the case for nitrogen oxides. It is scientifically wrong to say ammonia concentrations from the road will be zero at 30m from the road.

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	against additional monitoring data" thus concurring with Highways England's recommendation for caution when examining the ammonia measurements from a single study (see point 4.4.10 above).	
	Response to Question 4.12.5	
6.1.57	The historic significance of RHS Wisley Grade II* RPG is considered in the Statement of Significance [APP-123] and the assessments presented in the Heritage ES section 11 [APP-056]. The scientific and educational values historically associated with the RPG are noted in these assessments. The Scheme would not affect the RPG's ability to express these heritage values. The method of access to the scientific and educational resources that contribute to its heritage value (public access paid for by overall visitor income) is not a consideration in determining the significance of the asset.	The RHS has provided a detailed account of the impact of the DCO Scheme upon the Grade II* Registered Park and Garden within REP11-047. This concludes that the proposals would cause harm to the designated asset and that this harm could be severe or serious. These conclusions have been reached by applying the established approach to the assessment of impacts on designated assets, and which is recognised in the National Policy Statement and supporting guidance.
	Response to Question 4.13.1	
6.1.58	Highways England do not agree with RHS's statement that "when compared to the existing (Do Minimum) network and routes, the DCO Scheme would result in increases in all journey times, some significantly so" for the following reasons:	HE appears to be suggesting that the RHS Journey Time estimates have unfairly concluded that the DCO Scheme will result in slower journeys than the Existing (DoMinimum) network. However, as noted in REP11-034 and REP11-036, which includes the HE Journey Times (in red), with the exception of the round trip to/from M25(E), all other round trips via the DCO Scheme even on the basis of HE journey times would be slower than the Existing (DoMinimum).

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	• The journey times for the existing and Do-minimum scenarios will not be the same as implied by RHS. Forecast increases in traffic through junction 10 will result in greater levels of traffic congestion and delay in the future without the Scheme and therefore, journey times to and from RHS Wisley will be longer in the future Do-minimum scenarios compared to the existing situation. The estimated journey times presented by RHS [REP10-032] do not reflect this and, consequently, overestimate the increase in journey times to and from RHS Wisley due to the Scheme compared to the Do-minimum scenario. • Highways England traffic modelling shows that return journey times for RHS Wisley traffic to and from the A3 south increase by between approximately 5 and 7 minutes with the Scheme compared to the Do-minimum, depending on whether traffic routes via Ripley or follows the signposted route via junction 10 (Table 2.9 of the Transport Assessment Supplementary Information Report [REP2-011]). Highways England do not consider that these increases in journey times are significant in the context of the overall	REP11-034 and 036 acknowledge that some of the existing congestion at Junction 10 appears to have been underestimated. However, this makes little difference to the overall conclusion (only the M25(E) round trip would draw a different conclusion if RHS journey times are used). Whilst Highways England assert that visitors to the Garden are all travelling long distances to the Garden, and so the increases in journey time are not considered significant, this is factually incorrect. The RHS has demonstrated in REP6-024 that nearly 47% of trips to the garden are under 30 minutes, and 26% are under 20 minutes. In this context, a journey time increase of 6 minutes is clearly significant and will affect individuals' decisions on how frequently they visit the Garden. Whilst the comparison of DCO Scheme journey times against the Existing (DoMinimum) is relevant to the impact the proposals would have on the Garden, it should also be remembered that irrespective of which data set is used (RHS or HE) and irrespective of which time period, the RHS Alternative Scheme results in journey times which are significantly improved against the DCO Scheme, whether the signed route is followed or the modelled route.

Paragraph No	Text taken from HE's REP11-007	RHS response
	typical journey times for RHS Wisley visitors who travel from all over the Southeast of England to visit the Garden.	
6.1.59	Highways England accept that the DCO Scheme would result in longer journey times for all RHS traffic compared to the RHS Alternative Scheme. However, Highway England's comparison of journey times for RHS traffic between the DCO Scheme and the RHS Alternative scheme, which are taken from the strategic traffic models and presented in [REP10-004], demonstrates that the difference in journey times is likely to be substantially less than those indicated by the RHS estimated journey times presented in [REP10-032].	The RHS has outlined within in REP11-034 and 036 the relative variations in journey time assessments between the RHS and Highways England. Whilst there are some notable differences, the broad trends are similar. The RHS has demonstrated (in REP11-034, Table 1) that the overall impact of the different journey time data upon the socio-economic impact upon the Garden is relatively minimal. Even if the Highway England journey time data is used the total economic impact of the DCO Scheme remains substantial (£78.9 million, as opposed to the Hatch Regeneris forecast of £87.3 million) and the RHS Alternative scheme substantially reduces these impacts (by £55.9 million based on the Highways England data, as opposed to the Hatch Regeneris forecast of £65.4 million).
7. Highways England's comments to Royal Horticultural Society's document Appendix 5 – Report prepared by Barrell Tree Consultancy Tree value and root investigations for trees adjacent to the A3 – 2 June 2020 [REP10-034]		
7.1.1	Highways England arboriculturists have reviewed REP10-034 produced by Barrell Tree Consultancy (BTC).	No Comment
7.1.2	As a result of Highways England's root mapping exercise it is no longer intended that the main works in this area will be in the A3 verge, as illustrated by Highways England at deadline 7 in REP7-043. The removal of a proposed crib-wall along the RHS boundary and the re-alignment of A3	The removal of the crib wall is a significant improvement because it removes the need for extensive excavation close to important trees. However, that is just one type of disturbance that can adversely affect trees. As yet, there is no detail of how the root protection areas (RPAs) of RHS trees that extend out into the HE work area will be protected. It is standard practice to show this as recommended in BS 5837 (Table B1, 9.125 Applicant's submission British Standards BS5837:2012 (document accompanying Volume 9.117) under "*Additional information (further details that might reasonably be sought,*

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	outside of the existing verge was based on the extent of infringement into the root protection areas of the trees in accordance with BS 5837:2012 (R010030/9.125) and the extent of infringement into the mapped root zones provided by Highways England arboriculturists.	*especially where any construction is proposed within the RPA.)*" as "*Details for all special engineering within the RPA and other relevant construction details*", required at the "*Planning application*" stage of the process. It is essential to have this information before consent is issued to assess whether the protective measures are feasible. If they are not feasible, and consent is issued, without the detail, then the trees could be irreparably harmed.
7.1.3	The root investigation is not and never has been presented as a primary means of assessing the impact of the proposed works. This was achieved by considering a number of references including, but not limited to, the BS5837 guidance as well as the root investigation work. The technical note submitted as part of Deadline 8 [REP8-045] sought to describe the main areas of structural roots, relating to the structural stability of the tree, by means of sonic tomography. This information assisted in the production of the risk assessment table within the technical note [REP8-045 and as shown in Figure 7 within the BTC report [REP10-034].	Sonic tomography is an unreliable technology when used in isolation, which is particularly relevant to some species of tree, as noted in the HE Technical Note REP8-045 relating to redwoods: "*This species is extremely difficult to test using impulse tomography owing to extensive bark inclusions common to the growth pattern of the species. These inclusions are not necessarily decay or disruption to the structural integrity of the wood but are represented as such through the interpretation of impulse tomography. Resistance drilling may possibly provide more conclusive results.*" Such limitations also apply to the Arboradix technology, it is unproven as reliable in this situation, as demonstrated from the trench investigations in the BTC Report.
7.1.4	It should be noted that the BS5837:2012 provides a theoretical area referenced as the root protection area that encompasses all types of roots within the root system. This will include both structural roots, storage roots and feeding roots. Generally structural roots will tend to be larger although not all larger roots will necessarily	Not relevant and not disputed.

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	be involved in the structural integrity of the tree root system, especially at greater distances from the base of the tree.	
7.1.5	The root mapping was undertaken to provide a better understanding of the tree root systems to assist Highways England in formulating its detailed design for the Scheme. It was not intended for wider publication which explains, in Mr Barrell's words *'the absence of supporting explanations or a published record of any verification process*' (paragraph 3.2 of his report) contained within the reporting. Sonic tomography of trees was developed in 1992 in Germany, patented and presented internationally in 1999. It has been utilised within the industry for the last twenty years. The arboriculturists who undertook the survey have been utilising the technology for the last fifteen years and are highly experienced. The method of adaptation of impulse tomography to remote sensing of roots has been available for the same length of time but has generally been under-utilised.	See 7.1.3 response on reliability of sonic tomography. The application of the technology to roots is equally as unreliable, which is why it is not widely used with any sort of published references on its efficacy in the technical literature. Just because it has been available for a length of time does not add any sort of credibility to the technology. It has been demonstrated as not fit for purpose on this site because it does not identify where all the significant roots over 25mm are located.
7.1.6	The approach to the root mapping was informed by the site conditions. A radial method was the safest to adopt for the trees due to the health and safety requirement for night-time surveying along the A3 verge under traffic management. This approach	As the trench investigations confirmed, this technology does not provide a reliable indication of where all the roots over 25mm are located and so its findings cannot be given any significant weight.

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	involves taking a radial line perpendicular to the position of the sensor placed on the tree. Sensors on the tree are generally positioned on all major buttresses and other prominent points of the circumference at the base of the main stem. A sensor is then tapped at 1m intervals along the radial line until no sound or pulse is received by the sensor on the tree. This exercise provides information on the lateral size/spread of the main underground root system of each tree to enable an in-depth understanding of risks associated with structural root disturbance.	
7.1.7	Mr Barrell's critique of the root mapping exercise is based on the investigative trench shown within the BTC report [REP10-034]. In Highways England's opinion the map (Figure 3) within the BTC report is an inaccurate representation of the position of the investigative trench. The radial lines at which the testing occurred were based upon the locations of the sensors on the base of the tree. These positions could have been ascertained from the technical note submitted as part of deadline 8, based on the orientation and the spacing at which the sensors were placed on the tree. The BTC report relates the position of the trench in relation to the fence line. This fence line is not accurately presented in Figure 3 of the BTC report [REP10-034]. The plan at Appendix A of	The precise accuracy of the sketch plan showing the approximate location of the trench is irrelevant. As the trench investigations confirmed, this technology does not provide a reliable indication of where all the roots over 25mm are located, and so its findings cannot be given any significant weight.

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	this document is based on the information provided in the BTC report. The plan attempts to provide a more accurate representation of the probable position of the trench in relation to the testing undertaken by Highways England.	
7.1.8	The BTC investigative trench is located outside of the radial testing lines to ascertain the presence or absence of roots. Therefore, no positive or negative correlation can be drawn as to whether the exposed roots within the BTC trench were discoverable by the Highways England method of testing with the sonic impulse tomography.	The findings of the trench excavation confirm that the technology is unreliable at identifying where all the roots over 25mm are located and so its findings cannot be given any significant weight.
7.1.9	Furthermore, at 8.5m from the centre of the tree (the distance from the centre of the tree to the trench), the distance between each radial test line is 3.3m. The investigative trench would need to have been at least 3.3m long to ensure that it bisected at least one of the radial lines of testing. It is possible that the location of the trench does bisect one of the radial lines of testing, but this is not verifiable.	This is irrelevant to the main finding, i.e. the technology is unreliable at identifying where all the roots over 25mm are located and so its findings cannot be given any significant weight.
7.1.10	It is the case that the accuracy of the sonic impulse tomography equipment is improved using a grid system approach to the area of soils. This involves testing at a minimum of 50cm centres (dependent on soil type) over	This is irrelevant to the main finding, i.e. the technology is unreliable at identifying where all the roots over 25mm are located and so its findings cannot be given any significant weight.

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	an area of the soils that is marked off a grid. This method is time consuming (given the number of tests to be carried out) and was limited in this instance by safety and environmental factors, namely obstructions in the A3 verge from surrounding trees, understorey plants and boundary fencing.	
7.1.11	The BTC trench has revealed roots that may or may not relate to Tree T184, but BTC have not provided conclusive evidence that these roots are from this tree. No methodology has been employed or explained in the report by which to present the evidence of the exposed roots as either 1) conclusively linking these roots with T184 Redwood or 2) negatively associating the roots with neighbouring trees. Similarly, no references are given to cite the morphological root characteristics of a redwood tree to inform BTC's identification on site.	Redwood roots have a characteristic red colour and are sufficiently different from any other tree in the vicinity that there can be no reasonable doubt that they came from the subject tree.
7.1.12	To conclude that the root testing undertaken by Highways England is seriously flawed, based on the evidence of one explorative trench with no definitive method of identification of discoverable roots only serves to undermine Mr Barrell's report.. As previously explained, the root mapping was undertaken to further understand the impacts of the (then) proposed crib-wall on the trees and	This investigation confirmed that the technology is unreliable at identifying where all the roots over 25mm are located and so its findings cannot be given any significant weight. BS 5837 sets out an appropriate and standard approach to ensuring that trees to be retained are properly protected as explained in the 7.1.2 response above. A standard arboricultural method statement describing appropriate tree protection measure in advance of consent is all that is being requested.

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	particularly upon the structural stability of the trees. This testing will provide a basis to inform the detailed design of the Scheme in this location. i. The root protection areas of the trees will also continue to form the basis of the detailed designs in this location. Accordingly, the discovery by Mr Barrell of some tree roots has no bearing on the approach that Highways England will be taking to ensure that the trees are properly protected.	
8. Highways England's comments to Royal Horticultural Society's document Appendix 4 - Responses to Highways England's response [Section 3 and Appendix 3 of REP8-045] to Royal Horticultural Society's submission [REP7-042] [REP10-033]		
	Response to Question 3.1.4	
8.1.1	The root protection areas as set out within the BS5837:2012 guidance has been used and continues to be used in the assessment of the effects of the DCO scheme.	It has been referenced, but not reliably interpreted because more weight has clearly been put on the Arboradix results that the RPA approach, which is contrary to the recommendations of the BS 5837 guidance.
	Response to Question 3.1.10	
8.1.2	Highways England disagrees with the conclusion reached by BTC. Sonic tomography has been used within the industry for the last 20 years. Its application and assessment enable the presentation of an area known to support tree roots of 25mm diameter and above to augment the use of root protection areas in understanding the risk of de-stabilising the	The investigations confirm the technology, as applied on this site, is not capable of identifying all the roots over 25mm and so it cannot be given any significant weight.

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	tree from proposed works. In this case it facilitated a proposed change to the detailed design in this area as shown on the tree protection plan [REP5-021].	
	Response to Question 3.1.11	
8.1.3	The approach is not flawed, it provided further evidence to facilitate a design change in this location. The BTC investigation is not conclusive and flawed in its approach, as such a conclusion cannot be reached on the evidence of one explorative trench and with no definitive method of identification of discoverable roots or indeed reference material cited in the assumption over the identification of the tree root.	It is flawed because the trench investigations confirmed it does not reliably identify all the roots over 25mm and so it cannot usefully contribute to an assessment.
	Response to Question 3.1.12	
8.1.4	The root investigation is not and never has been presented as a primary means of assessing the impact of the proposed works. This was achieved by considering a number of references including, but not limited to, the BS5837 guidance as well as the root investigation. The technical note submitted by Highways England at deadline 8 [REP8-045] - describes the main areas of structural roots, relating to the structural stability of the tree, by means of sonic tomography. This information assisted in	The root investigation with Arboradix clearly was the primary means of assessing the impact because the assessment of impact was based on the structural root extents, informed by the Arboradix investigations, and did not properly account for RPAs, which extend much further. The Technical Note describes an approach that has been proved to be unreliable in this situation, and so its finding cannot be given any significant weight.

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	the production of the risk assessment table within the Technical Note at Appendix A of REP8-045 (immediately following part 6) and as shown within the BTC report Figure 7 and referenced in the report's summary.	
	Response to Question 3.1.13	
8.1.5	Highways England has used BS5837:2012 to assess the impacts on the trees as well as root mapping. The continued reference to it not being used is incorrect and misleading.	The sonic tomography seems to have been given much more weight than the BS 5837 RPA guidance because it is the only guidance shown on the cross-sections showing the extent of original proposed excavations.
	Response to Question 3.1.14	.
8.1.6	The RPAs are shown within the Alignment Options Assessment report at REP7-043 (drawing HE551522-ATK-GEN-A3_L1_ML-DR-ZM-000001), these show the RPAs (by means of a red dotted line around each tree) without modification. The grounds for Highways England assuming RPAs could be modified to the extent of the A3 verge are based on the historic disturbance and excavation attributed to the construction of a trunk road with associated hard infrastructure; in addition to the competing vegetation on the A3 verge and site topography. This is a perfectly reasonable approach. Whilst the red hatched area of the mapped roots on the drawings at REP5-021 is an area that is known to contains	The HE assumptions for modifying the extent of RPAs into the verge are flawed and do not reliably reflect how tree roots grow. There is no competing ground vegetation on the verge that could reasonably have affected the spread of roots into HE land. Furthermore, the historic disturbance occurred decades ago, which will have allowed new tree roots plenty of opportunity to recolonise the disturbed soil, which will have been very attractive to new root growth, as confirmed by the vigorous vegetation that has grown since the disturbance. For these reasons, there are no reasonable grounds for modifying RPAs as HE has done. The last sentence in this paragraph is misleading because it implies that no plans showing significant disturbance means that none will occur. Excavation is not the only way RPAs can be harmed. For example, heavy vehicles tracking over RPAs can cause significant harm, and it is this risk that is the understated threat. RPAs can be easily protected by producing an arboricultural method statement describing appropriate tree protection, as explained in 7.1.2 above.

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	roots, the RPA will also inform the detailed design in these areas. The technical note [REP8-045] submitted by Highways England at deadline 8 was concerned with the Scheme prior to the design review in this area, where a crib-wall foundation was proposed along the boundary of RHS land, hence the conclusion in the technical note of a 'very high' risk of de-stabilising the trees impacted upon by the works. No plans showing significant disturbance have been presented as part of the intended re-alignment in this location.	
	Response to Question 3.1.15	
8.1.7	Highways England disagrees with BTC's view that the investigations are flawed. BS5837:2012 will continue to form the basis of the assessment of the impacts of the Scheme and will inform the mitigation measures being developed as part of the detailed design of the Scheme. Larger tree roots are associated with the storage of starch as illustrated in submission documents at Deadline 11 TR010030/9.127[6]. Highways England's arboriculturists do not understand the relevance of Mr Barrell's challenge to this fact.	The references about storage of starch are not disputed. The HE assessment of adverse impacts is flawed because it has been based on unreliable investigations that do not identify where all the important structural roots are located.
	Response to Question 3.1.16	.

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8.1.8	As previously mentioned, the root mapping was undertaken to further understand the impacts of the (then) proposed crib-wall on the trees, particularly on the structural stability of the trees. This provided the basis to inform a re-design in this area. The root protection areas of the trees will continue to form the basis of the detailed designs in these areas.	If that is the case, then it should be straightforward to produce tree protection proposals as set out in BS 5837 and explained in more detail in 7.1.2 above.
	Response to Question 3.1.17	
8.1.9	The DCO scheme will in due course proceed to its detailed design stage and Highways England has committed to retaining these trees. The arboricultural method statement required by requirement 3(2)(c)(i) to form part of the approved construction environmental management plan is not retrospectively being prepared, it needs to be informed by detailed designs and construction methods. As has been explained by Highways England, the proposed re-alignment of the main works in this area removes the prospect of major disruption in the A3 verge. The BS5837 will be used to define the protection measures for these trees.	This does not make sense. If it is "*not retrospectively being prepared*", does that mean it is being prepared now? We have not seen any detailed arboricultural method statement showing how sensitive RPAs will be protected and so we cannot comment on that aspect. As explained above in 7.1.2, any disturbance to RPAs that can cause harm, not just major disruption, which is why detailed tree protection proposals for any "*special engineering within the RPA and other relevant construction details*" are required in the form of an arboricultural method statement at the planning application stage, as recommended in BS 5837, table B1. No such measure have been presented to the ExA.
	Response to Question 3.1.18	
8.1.10	To conclude that the root testing undertaken by Highways England is seriously flawed, based on the evidence of	The photographs show that the Arboradix method, as used on this site, is clearly flawed because it does not identify all the roots over 25mm.

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	one explorative trench and with no definitive method of identification of discoverable roots only serves to undermine the conclusion reached by BTC. As Highways England has explained, the root mapping undertaken by Highways England was in order to further understand the impacts of the crib-wall on the trees, particularly on the structural stability of the trees. This provided the basis to inform a re-design in this area. The root protection areas of the trees will continue to form the basis of the detailed design of the Scheme in these areas.	
9. Highways England's comments to Royal Horticultural Society's document Appendix 2 - Response to socio-economic matters arising out of Highway England's D9 submissions [REP9-003] [REP10-024]		
	Response to Reference 2.3.6/7	
9.1.1/2	Question 8 relates to a worse-case scenario and suggests that there will only be this increased journey time to and from the gardens as a result of the scheme. The question does not present respondents with alternative trade-off scenarios to capture this. Instead, respondents are presented with a single hypothetical scenario of the worst-case increase in journey time and then asked to provide their opinion/response to this. Whilst this worst-case scenario presumably represents journeys from the south on the A3 (albeit	The RHS has consistently demonstrated (e.g. REP6-024, REP8-054) that the survey evidence is robust. But even if there was any uncertainty about the survey evidence this would not support HE's unevidenced assertion of a zero impact. On the contrary, the impacts could just as likely be higher as opposed to lower. Highways England have also consistently misunderstood how Hatch Regeneris have applied the survey outcomes. The RHS specifically designed the survey to collect the information necessary to robustly conduct the required socio-economic analysis. For example, there was no requirement to ask a question on all of the other routes to and from the Garden. It would have substantially increased the complexity of the survey and is likely to have reduced the response rate. Instead, Hatch Regeneris applied conservative (not arbitrary, as Highways England state) factors. To put these factors into context, if they were

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	rounded up), journeys from other directions represent approximately 70% of visitors [REP6-024, Table A3] and will have journey times increasing by a substantially smaller amount or in some cases reducing [REP02-011, Table 2.8]. Highways England maintains that a more accurate analysis would have linked the route options in question 5 to possible responses to question 8 (and even for a range of scenarios) rather than applying arbitrary factors. Furthermore, longer journeys which have delays accounting for a small proportion of total journey time would be less sensitive to a behavioural change and the RHS analysis does not appear to have considered the link between the length of journeys [Question 3 of Appendix A of REP-039] and increase in journey time when assessing the impact journey time increase have on visitor behaviour response and visitor trip frequency with the Scheme.	reduced to zero (i.e. no benefit claimed), the central case forecast of economic impacts would fall from £87.2m to £79.1m. Highways England also state that the Hatch Regeneris analysis has not taken into account journey distances and times to the Garden. On the contrary, this is explicitly referenced within REP6-024 where it is highlighted that average journey times to the Garden are 33.5 minutes and around 26% of trips are under 20 minutes. In conclusion, Highways England have not attempted any separate assessment of the socio-economic impacts of the DCO Scheme upon the Garden. They have presented no evidence upon which it can be concluded that there will be zero impacts. In contrast, the RHS has sourced a range of robust data sources (summarised within REP6-024) upon which it can only reasonably be concluded that the DCO Scheme will generate significant negative economic impact and that the RHS Alternative will offset the majority of these impacts.
	Response to Reference 2.3.9	
9.1.4	Highways England's statement that changes in journey times during construction of the Scheme are expected to be minimal is justified and remains evidenced by the strategic traffic modelling undertaken by Highways England, the results of which are presented in Section 11	The RHS has provided clear evidence within REP6-024 that the imposition of roadworks and speed limits during the construction phase will both increase journey times to and from the Garden at Wisley and act as a significant deterrent to visitors to the Garden. Highways England have consistently claimed that REP2-011 provides the necessary evidence that changes in journey times during the construction phase will be minimal. REP2-011 provides no journey time output data and so does not support this conclusion.

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	of the Transport Assessment supplementary Information Report [REP2-011]. Highways England refers to the use of a 2022 strategic traffic model to assess the highway impact of the peak construction traffic assuming a reduced speed limit on the sections A3 and M25 which at this stage would be under traffic management during construction. Highways England will ensure that effective traffic management plans are in place to minimise the extent of delays to transport users during construction and it is assumed that traffic management will not require a reduction in the number of lanes but will operate a 50mph speed limit and narrow lanes [REP2-011, Section 11.4]. The analysis suggests some small rerouting of traffic in reaction to the reduced speed limits during construction and so keeping changes to journey time to a minimum. This is expected since a reduction in the speed limit to 50mph during construction will make no difference to journey times during the morning and evening peak periods as current traffic congestion on the A3 and M25 means that traffic speeds are below 50mph during these periods anyway	REP2-011 does, however, indicate that traffic flows on the M25 and A3 will reduce, indicating that the roadworks will act as a deterrent to travellers.