

RHS further comments on HE's Further Response to RHS's Response to REP3-044

Reference	Highways England Comment	RHS Response	Highways England Further Response	RHS Further Response
REP1-038-1	<p>Highways England has had a lot of discussion with RHS and has provided a very substantial amount of traffic modelling data to RHS. Further requests for information from RHS have been met</p>	<p>TTHC has reviewed the latest 'corrected' version of the traffic model output which was received in GIS format on 18/12/19 against the original Transport Assessment Report (APP-136) and the Transport Assessment Supplementary Information Report (REP2-011) but has been unable to replicate the flows stated in the reports. The outputs from the reports/models are not consistent.</p> <p>Examples of this (for traffic in and around Ripley) were discussed at a further SoCG meeting with Atkins on 21 January 2020.</p> <p>Atkins undertook to check and correct this information. TTHC has since received (on 23/01/20) RHS flow plots and (on 24/01/20) total traffic flow plots which are now being reviewed.</p> <p>TTHC has also requested 2015 base plots from HE which has advised that they are in preparation.</p>	<p>Highways England has provided all the information requested of it by RHS. There will be further discussions with TTHC.</p> <p>The 2015 base plots requested have been provided.</p>	<p>See Response to REP4-005 (Item 3).</p>

<p>REP1-038-2</p>	<p>Access</p> <p>Highways England does not accept that the Scheme would worsen the access to and from the RHS Garden Wisley; to the contrary, it will be improved. The Scheme removes unsafe access from Wisley Lane to the A3 and replaces it with a safe access at the Ockham Park junction, namely the Wisley Lane diversion. The implications of this on changes to journey distances is presented below. Drivers approaching the RHS Garden Wisley from M25 J10 (and A3 north of J10) currently represent approximately 50% of RHS generated traffic. These drivers would experience a negligible change in journey distance approaching the garden and the Scheme would reduce their journey time around M25 J10. When leaving the garden to travel towards the M25 J10 (and A3 north of J10), their journey distance would increase by approximately 2.4 km (1.5 miles) but would involve safer access to the A3. Drivers approaching the RHS Garden Wisley from the south currently represent approximately 34% of RHS generated traffic; with 24% currently approaching via the</p>	<p>Access</p> <p>As noted at ISH2, the RHS maintains its position that the DCO Scheme would result in the worsening of access to and from the RHS Garden and that the RHS Alternative Scheme would result in much improved access arrangements compared to the DCO Scheme.</p> <p>Despite its current poor highway layout, there is no evidence that the existing Wisley Lane connection with the A3 is inherently unsafe. Most of the accidents on the A3 occur as a consequence of queuing back from J10 (shunt type accidents), which the DCO Scheme should reduce. The Applicant's Side Road Addendum (SRA) Report (which the ExA has asked to be included in the Examination Library) states a paragraph 3.1.1 page 18 that 6 accidents over the six-year period between 2010 and 2015 were directly related to the Wisley Lane connection with the A3. At paragraph 6.1.2 on page 66, the same report states that if Wisley Lane were to be kept open with a widened A3, there would on average be one more accident per year.</p> <p>However, there has been no analysis by the Applicant of the consequence of the closure of the Wisley Lane connection elsewhere on the network –in the absence of the connection traffic from Wisley Lane seeking to join the A3 would need to travel</p>	<p>Please refer to the Applicant's comments on the RHS Alternative Scheme in Section 3 above.</p> <p>Accident rates for the A3 are shown below (per million vehicle kilometres). COBALT has a standard accident rates of 0.101 (D3+), 0.077 (D2 between the junction slips) and 0.063 (for a two/three lane motorway) so therefore the A3 has fairly typical accident rate along the majority of the mainline, <u>apart from the merge with Wisley Lane which has at least three to five times more accidents than typical.</u></p> <table border="1" data-bbox="1099 762 1821 1158"> <thead> <tr> <th>A3 mainline</th> <th>Northbound</th> <th>Southbound</th> </tr> </thead> <tbody> <tr> <td>Ockham to Wisley Ln</td> <td>0.06</td> <td rowspan="3">0.06</td> </tr> <tr> <td>Merge with Wisley Ln</td> <td>0.30</td> </tr> <tr> <td>after Wisley Ln to J10</td> <td>0.1</td> </tr> <tr> <td>Through J10</td> <td>0.05</td> <td>0.06</td> </tr> <tr> <td>J10 to Painshill</td> <td>0.10</td> <td>0.09</td> </tr> </tbody> </table> <p>A safety risk assessment (which takes account of the forecast reduction in queuing from the A3 northbound towards M25 J10) has been carried out which has shown that the risk from the existing DCO scheme is reduced, compared to the existing scenario.</p>	A3 mainline	Northbound	Southbound	Ockham to Wisley Ln	0.06	0.06	Merge with Wisley Ln	0.30	after Wisley Ln to J10	0.1	Through J10	0.05	0.06	J10 to Painshill	0.10	0.09	<p>See Response to REP4-005 in respect of specific Wisley Lane junction related accidents. HE has significantly overstated the number of accidents associated with the existing junction arrangement. HE has assumed that ALL accidents between the Wisley Lane junction and the Northbound Off-Slip are directly related to the Wisley Lane junction. HE has thus wrongly increased the number of accidents which are related to the Wisley Lane junction over time.</p>
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	<p>A3 and 10% currently approaching through Ripley. With the Scheme in place, those drivers that decide to route via Ripley would experience a negligible change in distance approaching the garden; whilst those drivers routing via M25 J10 (up to 24%) would experience a 6 km (3.7 mile) increase in journey length to the garden. When leaving the garden, those opting to travel via Ripley would experience a 3.5 km (2.2 mile) reduction in journey length, whilst those routing via M25 J10 would experience a 2.5 km (1.6 mile) increase in their journey. Analysis of changes in journey distances due to the Scheme and proportions of RHS traffic using different routes is provided in the Transport Assessment Supplementary Information Report submitted at Deadline 2 (Volume 9.16).</p>	<p>further on the highway using the new Link and the new connection with the Ockham Roundabout, circulate around the roundabout passing the other arms of the junction before joining the northbound on slip and joining the A3 to the south of where it would have connected with the retention of the Wisley Lane connection. None of the implications of this extra travel has been assessed by the Applicant. The Applicant's assessment is therefore flawed both in terms of decisions which resulted in the DCO Scheme and in the context of the RHS Alternative Scheme.</p> <p>Further, the Applicant has sought to increase the number of accidents it associates with the Wisley Lane access to the A3. Within REP1-044, it was noted at paragraph 5.10 that the September 2019 Technical Note (see Appendix B of REP1-044) suggested that a Wisley Lane access onto the A3 northbound would result in two extra accidents per annum rather than the one suggested in the SRA noted above.</p> <p>However, more recently, in the BDB Pitmans letter of the 24/12/19 [Overview REP3 - 051 Appendix 4], it has now been suggested by the Applicant that accidents</p>	<p>Collision assessment has been carried out to support this assessment This has involved analysis of 5 years DfT 'Stats 19' accident data from 1.12.13 – 30.11.18 and shows personal injury collisions (PICs) at the following locations:</p> <ul style="list-style-type: none"> ● Total of 20 PICs <ul style="list-style-type: none"> ○ 4 slight injury collisions on the slip road, resulting in 5 casualties; 	
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specifically related to weaving from the Wisley Lane connection with the A3 amount to some 20 accidents for the five-year period 1/12/13 to 30/11/18.

However, a check against the Accident Plot provided by the Applicant on the last page of its September 2019 Technical Note (Appendix B of REP1-044) shows that with the exception of just 1 accident, the Applicant has incorrectly assumed that every accident which has occurred on the A3 from Wisley Lane to a point 900m north has been a result of the Wisley Lane junction, which clearly cannot be the case –as set out above, most of these are “shunt” type accidents related to queuing back from Junction 10.

Further discussions are being undertaken with the Applicant in this regard in order to advance the SoCG.

Journey distances have been checked against the Applicant’s CAD plans and it is expected in conjunction with the SoCG that the key distances north and south will be agreed.

Trip distribution data in relation to RHS-related activity has been collected by different sources by the Parties and, although similar, these sources are not directly comparable. There are discussions

- 8 slight and 1 serious injury collisions at the merge point, resulting in 12 casualties;
- 7 slight injury collisions in the weaving zone (within c.150m downstream of Wisley Lane), resulting in 15 casualties

Stats 19 collision data provides some basic information regarding the causes of collisions, however this is limited and it is not always possible to be certain about the root cause. Where nose-to-tail collisions are recorded, congestion or a braking event is normally the cause. What is not clear from collision data, is what has caused a braking event (this is relevant at this location where late ‘swooping’ manoeuvres are often seen for the northbound off-slip). Whilst at peak times queuing is likely to be involved, at off peak times, merging and diverging (weaving) traffic is likely to be a factor.

The current arrangement is challenging for drivers as they are required to carry out a merging manoeuvre onto a high speed road, which is especially difficult when they are required to join free-flowing London-bound traffic from an often congested lane This is made all the more difficult as they are competing for road space with diverging traffic that is leaving the A3 for the M25 J10 exit.

In order to merge safely and avoid conflicts with adjacent traffic (and those ahead) drivers are required to have good awareness of what is happening around them. They need to be aware of

ongoing in respect of the SoCG which seek to 'narrow the gap' between these sources.

This, along with traffic modelling of RHS trips, will then be used to provide an agreed range of potential effects of the DCO Scheme in respect of the changes in vehicle travel and to consider the wider safety implications of the DCO Scheme and RHS Alternative

traffic movements ahead, whilst at the same time using their mirrors and over the shoulder 'lifesaver' observation to check blind spots and judge the speed and distance of approaching mainline traffic.

Given the complexity of this task, it is unsurprising that there are a high number of nose-to-tail and lane change collisions at this location, these are likely to be caused by hurried merging manoeuvres or drivers concentrating on traffic alongside and behind them and colliding with slow moving or stationary traffic ahead. Given the demands on drivers' observation skills, it is also understandable that the contributory factor 405 – 'Failed to look properly' is by far the most common recorded, appearing as the primary contributory factor in 10 of 20 collisions. This rate of 50% at the Wisley Lane merge is compared to the national rate of 38% reported by Highways England's annual casualty report.

Collision summary (Stats 19 data):

- On the Wisley Lane slip road there were 4 collisions – all 'shunts' all during peak periods.
- Within 150m downstream of the Wisley Lane merge there were 4 peak and 5 off-peak collisions (suggesting that congestion is only part of the problem)

There were 7 other northbound A3 collisions in the vicinity – 3 peak and 4 off-peak

With the Scheme, the route via Ripley to and from the A3 south for RHS Wisley Garden visitors is shorter and quicker than following the signposted route via J10. The traffic modelling reflects this, with all traffic to and from the A3 south routing via Ripley. The Transport Assessment of impacts [APP-136] has therefore been undertaken on the most likely distribution of traffic on the road network. Should some of the RHS Wisley Garden traffic decide to follow the signposted route via J10, it is highly unlikely to have a material impact on the conclusion of the Transport Assessment, since the volume of traffic involved would be negligible in comparison to forecast traffic flows on the A3 and circulating M25/J10.

It is agreed that the trip distribution data in relation to RHS related traffic generation has been collected by different sources, both of which have different merits and shortcomings. However, the results are relatively similar. RHS's trip distribution is based on a sample survey of its members. Consequently, it does not capture visitors that are not RHS members, nor does it capture staff trips and

deliveries, which would very likely alter the distribution if included. Highways England's ANPR survey only covered a single day and may not therefore reflect day to day variations in trip distribution, but does

			<p>capture all vehicle trips including visitors (both RHS members and non-members), staff and deliveries. Highways England maintains its previous position on this matter as stated in Applicant's Comments on Written Representations [REP2-014].</p>	
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<p style="text-align: center;">South facing slip</p> <p>Please see response to Questions 1.13.6, 1.13.7, 1.13.11, 1.13.15, 1.13.18 of the Highways England's the Examining Authority's Written Questions (Volume 9.18). Retention of Wisley Lane's direct "left out" connection to the A3. We have demonstrated in the schematic provided in our Technical Note dated September 2019 that the actual weaving length (Lact) is only 953 m. The minimum weaving length required by design standards is 1 km and therefore the RHS Alternative scheme does not comply with the appropriate standards. With regard to weaving, we disagree with the suggestion by RHS that it is only the Wisley Lane traffic which is heading northbound on the A3 towards London which actually results in a weaving component from the slip. There will be traffic joining the northbound A3 from the Ockham Park junction wishing to get from Lane 1 and Lane 2 to Lane 3 and Lane 4 to continue north into London on the A3. There will also be traffic in lane 3 and subsequently lane 4 through and beyond the Ockham Park Junction that will want to access the diverge leading to the M25. The introduction of a merge from Wisley Lane will introduce additional vehicles and weaving movements, which drivers will not be expecting. Therefore, it will increase the risk of accidents,</p>	<p style="text-align: center;">South Facing Slip</p> <p>Whilst it is noted that the Applicant states (within REP2-013) its proposals do not preclude the future implementation of the south facing slips at Ockham, they note various 'challenges and constraints' to their delivery. This is within the context of more than 3 years of design development which has sought to address similar issues elsewhere within the DCO Scheme.</p> <p>Firstly, third party land would be needed to provide south facing slips at Ockham but such issues have not prevented the promotion of the DCO Scheme where third party land is of course required for other components of the proposals.</p> <p>The enlargement of the Ockham Roundabout (to deliver south facing slips) is as shown on the attached plan (TTHC drg M16114-A-052A). The modifications within the Flood Zone are relatively modest, particularly within the context of the new Wisley Lane link provision.</p>	<p>Although there are challenges and constraints in providing south facing slips at Ockham Park Interchange, as Highways England ha explained the reason that they have not been provided in the Scheme is because they are not necessary to meet the Scheme's objectives. Therefore, the absence of south facing slips is not an issue that needs to be addressed.</p> <p>We disagree that a 1km weaving length between Ockham junction and Ripley services can be achieved with a DMRB compliant design for the Ockham south facing slip roads.</p> <p>Please refer to the Applicant's</p>	<p>See Response to REP4-005 (Item 3).</p> <p>The DCO Scheme would result in a significant worsening of access to/from RHS Wisley.</p> <p>The DCO Scheme will result in traffic diverting away from the SRN (Ripley Bypass) in favour of routeing via the LRN, including through Ripley and Send.</p> <p>The provision of South Facing Slips would directly address the most significant deficiencies with the DCO Scheme.</p> <p>In this regard, the RHS Alternative seeks to provide the shortest possible routeing via the simplest, most direct, junction arrangements which would avoid the unnecessary impacts the DCO Scheme would create.</p> <p>With regard to design matters associated with the South Facing Slips, including those raised in REP4-005, HE supplied RHS with their working drawings for the slips on 19/2/20. RHS has reviewed this information and can confirm that the RHS Alternative Scheme can be achieved with maximum slip road gradients of less than 5% as shown on Drawing M16114-A-074 attached, whilst still achieving the 1km weaving length in both directions. Subject to further design checks, there may be a need for some</p>
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	<p>particularly because the vehicles merging from Wisley Lane will be slow moving.</p> <p>Highways England maintains that TD42/95 is the design standard for Major/Minor priority at grade junctions, which is what this particular element of the Scheme should be, but the design standards do not allow this type of junction on Dual 3 lane All Purpose (D3AP) roads and therefore by implication it is not permitted for use on Dual 4 lane All Purpose (D4AP) roads. As proposed by RHS, Highways England maintains that CD122 is not the correct design standard to be used for the RHS Alternative Scheme.</p>	<p>In respect of the weaving distance to Ripley Services, TTHC drg M16114-A- 051 shows one means of how the 1km weaving distance could be achieved for both directions of travel on the A3.</p> <p>Improved Wisley Lane connection to A3 Northbound</p> <p>The review of the proposed RHS Alternative Wisley Lane connection to the A3 Northbound against highway standards is currently subject to SoCG discussions. At this stage the parties continue to disagree.</p> <p>Within REP1-044, TTHC provided a response to the Applicant's position in respect of this matter.</p> <p>Confirmation that Wisley Lane will be subject to a 30mph speed limit in the DCO Scheme will enable the standard applied by TTHC to some components of the RHS Alternative to be less onerous than that assumed to date</p>	<p>comments on the RHS Alternative Scheme in Section 3 above.</p> <p>The parties are continuing to discuss this matter, however Highways England's position remains that this arrangement would be non-compliant and unsafe.</p>	<p>Departures from Standard in respect of the southbound on-slip 'Nose Length' and potentially in respect of 'Near Straight' components. It is expected that the existing laybys between Ripley Services and the South Facing Slips would be removed.</p> <p>Further discussions have taken place between RHS and HE in respect of design matters associated with the Wisley Lane connection to the A3 Northbound carriageway.</p> <p>Since the original RHS Alternative was developed, design standards have been amended (from TD22 to CD122, which was published in Sep 2019). CD122 has different requirements in respect of some components of the Wisley Lane slip. The two which have a bearing on the RHS Alternative are the 'Near Straight' and 'Horizontal Curvature' components.</p> <p>The CD122 Near Straight design standard seeks a near straight section of at least equal to the Nose (in this case 85m) to be provided at the back of the nose. The RHS Alternative scheme would be subject to a Departure from Standard.</p> <p>The need for a Departure is not</p>
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an indication in itself that the DCO Scheme would not be permitted. Indeed, as advised by Atkins during SoCG discussions, the DCO Scheme itself is understood to be subject to 'many' Departures details of which are not before the DCO process.

The horizontal curvature (radius) of the Wisley Lane slip within the RHS Alternative Scheme adopted a radius which exceeds the radii of three or the four 'slip road to slip road' components of the DCO Scheme J10 improvement.

HE has suggested that a larger 90m radius is required for the Wisley Lane slip in accordance with Connector Road provisions but is seemingly not requiring that of their own design at J10. A 90m radius could be accommodated whilst still delivering the 1km minimum weaving distance.

REP1-038-3	<p>Highways England does not accept that the RHS Alternative Scheme would result in much improved access arrangements compared to the Scheme. The RHS alternative contains two additional elements to the Scheme: a left out from Wisley Lane on to the A3 and south facing slips at Ockham Park junction. First, the existing junction between the A3 and Wisley Lane is unsafe. The operation and continued retention of the junction already breaches current standards set out in the Design Manual for Roads and Bridges relating to separation, weaving and merging distances and there is evidence that its presence is a significant contributory factor in the poor accident record of this section of the A3.</p> <p>This is because there would be greater conflict between traffic merging from Wisley Lane and traffic on the A3 northbound carriageway manoeuvring in to the two nearside northbound lanes in preparation for exit at M25 junction 10. The nearside of the two exit lanes would also be free-flowing at junction 10, which is a further important safety factor as traffic is likely</p>	<p>Responses to the Applicant's safety claims in respect of the existing Wisley Lane junction are provided above. Also, the proposed RHS Alternative provides an improved slip road arrangement which has been designed to meet the highway standards set out in CD122 as explained in REP1-044. These are matters which are being discussed as part of SoCG exchanges.</p> <p>Within the 1km weaving context, the 2-lanedrop described by the Applicant during ISH2 is not precluded by the standards. Indeed, there is less than 1km weaving distance between J12 and J13 of the M60 Motorway junctions and a two lane drop downstream. This section of Motorway has recently been improved to Smart Motorway standard and yet these characteristics have been retained, despite being one of the busiest sections of motorway in the UK (170,000 veh ADT).</p> <p>The Applicant states that their traffic modelling shows Wisley Lane traffic routing via Ripley but that they have a</p>	<p>The parties are continuing to discuss this matter, however Highways England's position remains that this arrangement would be non-compliant and unsafe.</p> <p>The M60 motorway between J13 and J12 is not a direct comparison with the RHS Alternative Design for Wisley Lane. Vehicles are joining the M60 southbound carriageway from the grade separated junction 13 via a single lane gain and not are not having to merge with the mainline, which would be the case for Wisley Lane. Additionally, the alignment of the on-slip from junction 13 joins the mainline at a much shallower angle and radius than the 90-degree angle and 30m radius proposed by the RHS Alternative Design.</p> <p>With the Scheme the route via Ripley to and from the A3 south for RHS Wisely Garden visitors is shorter and quicker than following the signposted route via J10. The traffic modelling reflects this, with all traffic to and from the A3 south routing via Ripley.</p>	<p>See previous response to existing Wisley Lane accident record.</p> <p>HE has significantly mis-represented this position. The southbound section of M60 J13 to J12 is subject to significant weaving movement (from nearside two lanes to offside two lanes and vice-versa).</p> <p>The 'shallower angle' again misrepresents the position – the RHS Alternative has auxilliary lane provision. The 90 degree angle is a complete red-herring.</p>
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to be moving more quickly. Highways England is not aware of any other examples of such a side road junction being retained on a D4AP road and where there is a 2-lane drop within 1 km of the next junction.

Secondly, the retention of a left turn out of Wisley Lane would not comply with the relevant design standards. Fundamentally, there is insufficient space between Wisley Lane and M25 junction 10 to achieve an acceptable standard of merge lane for traffic exiting from Wisley Lane. For these reasons, a left turn out should not be retained and the Scheme therefore makes provision for an alternative access road to be provided, namely the Wisley Lane diversion. The traffic modelling shows traffic routing via Ripley in the morning and evening peaks although it does not follow from this that in reality Ripley High Street will become the preferred route for all Wisley Lane movements to and from the south. This is because the modelling cannot reflect the impact that the signage strategy will have on users as it assumes that all traffic takes the lowest cost route in terms

signing strategy that will promote the A3 route (with its numerous u-turns). However, the Applicant doesn't know how much traffic will follow the signed route and that the modelling is therefore a worst-case assessment for Ripley in this regard. Aside from the points made in respect of signage in REP1-044 (from paragraph 4.16), and in addition to the Applicant not knowing how much traffic will use their proposed signed route as opposed to Ripley, we also know that the Applicant has been unable to validated traffic models of Ripley which reflect the congested conditions which already occur. There can simply be no confidence in the Applicant's proposals or their assessment of the effects of the DCO Scheme.

The Applicant suggests there is no justification for providing south-facing slips at Ockham. The RHS maintains that south facing slips are justified and should have been assessed as a reasonable alternative to the DCO Scheme.

The RHS Alternative Scheme must be considered in the context Habitats Regulations Assessment as an

Should some of the RHS Wisley Garden traffic decide to follow the signposted route via J10 (Highways England accepts that it cannot predict with certainty the proportion of traffic that would route through Ripley), it is highly unlikely to have a material impact on the conclusion of the Transport Assessment [APP-136], since the volume of traffic involved would be negligible in comparison to forecast traffic flows on the A3 and circulating M25/J10.

Regarding model validation, the provision of south facing slips at Ockham and the consideration of alternatives under the Habitats Regulations, these points are dealt with in Sections 2 and 3 above.

Refer to Point 13 of Section 2 of this document

of distance and time. The modelling is therefore a worst-case assessment for Ripley in this regard.

Moreover, there is no highway justification for providing south-facing slips at the Ockham Park junction on account of the Scheme. The traffic modelling results presented in the Transport Assessment Report (see section 7.6) [APP-136] shows that the Ockham Park junction will operate within capacity in the future with the Scheme in place.

The modelling and assessments also conclude that the Scheme would have a limited effect on the operational performance of the local road network through Ripley, and there is no justification to bring forward south-facing slips as mitigation for the Scheme's limited impact on that settlement.

alternative which would cause less harm to the Thames Basin Heaths SPA as it would generate 3.3 million fewer miles/annum and consequently reduce the levels of Nitrogen deposition.

Nor would there be sufficient justification to provide the slips as mitigation for the effect on the RHS Garden Wisley's visitors who travel to the Gardens from the south. These journeys would, as a result of the Scheme, lose the benefit of direct access to Wisley Lane from the A3 and would incur an increase in return journey times of approximately seven minutes if they follow the signed route. However, the volume of traffic that would benefit from south-facing slips would be small in absolute and relative terms and insufficient to justify their inclusion in the Scheme. It is also important to recognise that any effect on Wisley Lane traffic should be balanced against the significant benefits that the Scheme would deliver in providing a safer alternative access.

South facing slips at Ockham Park junction are not required to mitigate any impacts due to the Scheme and, consequently, they do not form part of the Scheme.

The Scheme does not preclude future implementation of south facing slips at Ockham Park junction. However, it is evident that there are several challenges and constraints associated

The guidance on consideration of alternative solutions is clearly set out in the Commission notice "Managing Natura 2000 sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC". This document has been provided to the inquiry in full as it has been referred to by Mr Baker in his evidence and will also assist the ExA on other issues. Section 3.7.4 (p57) examines the consideration of alternatives. Of relevance is the fact that alternatives cannot be ruled out on cost alone and that the absence of alternatives 'must be demonstrated.

with providing them, including the likely need to acquire land outside the highway boundary, which would need to be overcome to demonstrate that they are deliverable without detriment to either the free or safe operation of the A3, affordable and offer the most appropriate solution to the identified problem. These include that:

- the Ockham Park roundabout would need to be enlarged and the B2215 Portsmouth Road, the B2039 Ockham Road North and the Wisley Lane diversion connections with the Ockham Park Roundabout would need to re-aligned. The roundabout is located within the Stratford Brook flood zone (Zone 3) and adjacent to both a Site of Nature Conservation Importance (SNCI) and a historic landfill site, so these factors would need to be taken into account in any provision of new slips.

- the Ripley services on the A3 are located only 1.5 kms south of Ockham Park junction. Consequently, there is insufficient distance between the junctions to provide a design with a standard compliant weaving length between the merge and diverge sections of the respective on

and off slip roads. A minimum weaving length of 1000 m is required for a compliant design where only approximately 650 m northbound and 690 m southbound can be achieved. Therefore, the accesses off the A3 to the Ripley services would have to be relocated to accommodate south facing slips at the Ockham Park junction to achieve a compliant design; and

- third party land outside of the boundaries of both the public highway and the DCO would be required to construct the enlarged roundabout and to realign the side road connections and the slip roads.

On 26 October 2017 a Ministerial Statement was made in the House of Commons to confirm that south-facing slips at Ockham would not be provided as part of the Scheme, reaffirming that the funding commitments in the Government's Road Investment Strategy only relate to improving the junction 10/A3 Wisley interchange and the Painshill junction.

Whilst Highways England's position therefore remains that there

<p>is no case for providing south-facing slips at Ockham as part of the Scheme, the construction of the Scheme would not prevent the delivery of south-facing slips at Ockham Park junction at some point in the future, should they be justified in planning terms, and should suitable funding be secured</p>		
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<p>REP1-038-4</p>	<p>Highways England does not agree that the Scheme will adversely affect the SPA as a result of changes in NOx concentrations and nitrogen deposition rates at locations in near the A3.</p> <p>As set out in paragraphs 7.2.40 (construction) and 7.2.52 (operation) of APP-043, Highways England assessment does not show an adverse effect within the SPA as a result of changes in nitrogen deposition rates. This is because the wooded area close to the A3 acts as a buffer for the heathland (as documented in paragraph 7.4.4 of APP-043) where the qualifying features occur.</p>	<p>HE is required to show that that Nitrogen Deposition will NOT adversely affect the SPA, i.e. they have to prove a negative. Where there is uncertainty or gaps in the data a negative effect must be concluded.</p> <p>The RHS evidence shows that there are significant gaps in the data. The ExA has no choice but to conclude that there is a negative effect. The requirement to demonstrate no adverse effects is clearly set out in the guidance Commission notice "Managing Natura 2000 sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC at paragraph 3.7.3 where it is stated 'Where doubt remains as to the absence of adverse effects on the integrity of the site linked to the plan or project being considered, the competent authority will have to refuse authorisation (C-127/02 paragraph 57).'</p> <p>The evidence of Professor Laxen and Mr Hibbert clearly demonstrates that there is considerable doubt over the extent and magnitude of impacts from reduced air quality arising from the scheme.</p> <p>The evidence of Professor Laxen and Mr Hibbert also demonstrates that the deposition modelling grossly underestimates the magnitude and the extent of N dep. The actual levels arising from the scheme, both in isolation and in combination with</p>	<p>Refer to Point 13 of Section 2 of this document.</p> <p>In addition, Point 11 of Section 2 of this document sets out clearly why the woodland that separates the heathland from the A3 and M25 acts as a buffer.</p> <p>The case of Land south of Wallisdown Road, Poole, Dorset (Talbot Village Trust) APP/Q1255/V/10/2138124 (27 February 2012) as referred to by RHS determined that the appropriate assessment should take account of the restoration of a site to favourable conservation status, as opposed to taking a view that the proposed Scheme would not have an effect because, as a result of poor condition of the site, the interest features are not present.</p> <p>This is very different to the situation that the Ockham and Wisley Commons SSSI component of the Thames Basin Heaths SPA, where the qualifying species (i.e. the interest features) are present, but do not occur within the woodland buffer where the changes in air quality will occur. In addition, as explained in point 11 of Section 2 of this document, the removal of conifer trees to extend the open heathland is not part of the current management of the site or required to achieve Favourable Conservation Status.</p>	<p>This is incorrect. The Talbot Village Trust case related to the distribution of nightjar within the SPA which was next to the development site. It was argued by the applicant that the development would not harm the interest features of the SPA because they were deemed not to be present in certain areas due to the lack of suitable habitat. The Talbot Village Trust case is therefore completely analogous.</p>
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other plans or projects is therefore unknown.

The basic argument HE is presenting is that it is acceptable to increase nitrogen loadings within the buffer as this area does not support the interest features of the SPA. This approach is unlawful. It is a fundamental tenet of the Birds Directive (Directive 2009/147/EC) that member states must take steps to ensure that degraded habitats are restored.

Article 3 states,

1. In the light of the requirements referred to in Article
2. Member States shall take the requisite measures to preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Article 1.2. The preservation, maintenance and re-establishment of biotopes and habitats shall include primarily the following measures:
 - (a) creation of protected areas;
 - (b) upkeep and management in accordance with the ecological needs of habitats inside and outside the protected zones;
 - (c) re-establishment of destroyed biotopes;
 - (d) creation of biotopes.

It is clear that the coniferous forest within the site should be managed (in this case removed and converted to heathland) to improve the ecology of the site and increase the carrying capacity of the SPA for the interest features of the site. Indeed, removal of conifer trees is part of the current management of the site.

This precise point was tested at a previous inquiry into Land south of Wallisdown Road, Poole, Dorset (Talbot Village Trust) APP/Q1255/V/10/2138124 (27 February 2012), in refusing an appeal the inspector stated that an appropriate assessment should 'take account of the

	<p>As discussed in the response to the RHS Air Quality Representation [REP1-041], even though the RHS Alternative Scheme has not been assessed, there is no basis for the proposition that it would have a notable effect on nitrogen deposition rates within the SPA compared to the Scheme. This is because the traffic modelling undertaken by Highways England has predicted that all the traffic travelling to and from RHS Wisley from the A3 south will access the gardens via Ripley and the results of the air quality assessment in the Environmental Statement, Chapter 5: Air Quality [APP-050] take this into account. Accordingly, the effect of this routing would be the same as the south facing slips forming part of the RHS Alternative Scheme in air quality terms. The assessment has shown that even with this traffic, changes in NO2</p>	<p>potential for the restoration of the site to favourable conservation status, as opposed to taking the view that the proposed scheme would not have an effect because, as a result of the poor condition of the site the interest features are not present'.</p> <p>As the HE has conceded the RHS Alternative Scheme has not been assessed and therefore HE has not demonstrated the absence of a reasonable alternative that would be less damaging to the SPA</p> <p>Further comments on Ripley are provided the response to point 4.2.2 in REP2- 022, where it is pointed out that the new calculations are not valid.</p> <p>Further comments on the assessment of traffic using the signposted route are provided in the response to point 2.1.2 in REP2-022.</p>		
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concentrations at receptors in Ripley near the High Street would be small or imperceptible, and still below air quality criteria. Hence, even though the RHS Alternative Scheme has not been assessed, it can be considered that it would not have a significant effect on NO2 concentrations at receptors in Ripley. To provide further clarification, an additional assessment (please see Response to RHS-DL-1 AQ REP1-041, Volume 9.17) was carried out to assess the effect of the traffic using the signposted route (i.e. via junction 10) and the additional traffic was shown to be unlikely to have any measurable effect on the reduction in species-richness as a result of changes in the nitrogen deposition rates and would still not cause an adverse effect on the integrity of the site.

Although the RHS Alternative Scheme has not been assessed by Highways England, it can be considered that any reduction in CO2 emissions as a result of this Alternative would be negligible. Estimates of CO2 emissions as a result of the two routes that could be taken

by traffic travelling between RHS Wisley and the A3 to the south are provided in Table 1 of the Response to RHS- DL- 1 AQ REP1 -041, Volume 9.17. The key driver to reducing CO2 emissions will be through national policy measures, such as the move to zero emission vehicles.

REP1-038-5	The Statement to inform Appropriate Assessment (SIAA) [APP- 043] has been carried out correctly. The findings of the SIAA identify an adverse effect on the Thames Basin Heaths SPA as a result of the land take required by the Scheme (paragraph 7,4,7 of the Habitats Regulations Assessment: Stage 2 [APP-043]. However, an adverse effect as a result in changes in air quality was ruled out. This assessment of changes in air quality	See comment above on errors and omissions.	
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was correctly carried out, as explained below. The HRA has followed the process as outlined in:

- The Planning Inspectorate (2016) Habitat Regulations Assessment Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects;
- Highways England (2009) The Design Manual for Roads and Bridges (DMRB) Volume 11, Section 4, Part 1 Assessment of Implications (of Highways and/or Road Projects) on European Sites (Including Appropriate Assessment) (HD 44/09)

As detailed in 5.3 Habitats Regulations Assessment Annex B [APP-041], the HRA process, including the methods for assessing air quality impacts on the SPA, both alone and in combination, was agreed with Natural England (refer to item 2.0 of meeting minutes for 27 March 2018, as found in A.13 of the Statement of Common Ground with Natural England [APP-138]).

The SIAA considered the nitrogen deposition (Ndep) levels at six transects within the Ockham and Wisley Commons component of the Thames Basin Heaths SPA (N dep levels are reported in Tables 7 and 8 in 5.3 Habitats Regulations Assessment: Stage 2 [APP-043], transect locations are illustrated in

The SIAA (APP-043) used incorrect data to inform the assessment, as it did not consider NO_x concentrations against the critical level, used incorrect deposition velocities to calculate Ndep, did not include ammonia in the Ndep calculations, and did not allow for traffic to RHS Wisley following the signposted route. It also did not carry out a valid in-combination assessment. These matters are explained in more detail in the responses to REP2-022.

HE has omitted to set out the critical load for coniferous woodland that are cited on the APIS website for Thames Basin Heaths (App.Y).

Refer to Point 13 of Section 2 of this document Also, see responses in section 5 below.

In developing the recently published DMRB air quality assessment methodology, Highways England had engaged extensively with representatives from Natural England on its proposed approach and in particular the use of Natural England's published report, "*Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance*" (NECR210), March 2016, to inform a competent expert for ecology on

<p>Figures 4 and 5 of the Habitats Regulations Assessment Figures [AS-012]).</p> <p>The assessment considered nitrogen deposition levels at a range of distances from the road edge for each transect, allowing comparisons of the existing 2015 baseline, 2022 with no Scheme and 2022 with the Scheme.</p> <p>As agreed with Natural England, the assessment focused on increases of greater than 1% of the critical load when comparing the 2022 with no Scheme data against the 2022 with the Scheme data (refer to item 2.0 of meeting minutes for 27 March 2018, as found in A.13 of the Statement of Common Ground with Natural England [APP-138]).</p> <p>The critical loads were taken from Air Pollution Information System (APIS) website, which gave three critical load class habitat types for the Ockham and Wisley Commons SSSI component of the Thames Basin Heaths SPA:</p> <ul style="list-style-type: none"> • Fen, marsh and swamp –Valley mires, poor fens and transitional mires (critical load 10-15 kg N/ ha/year); • Dwarf shrub heath –Dry heaths (critical load 10-20 kg N/ ha/ year); and, • Dwarf shrub heath –Northern 	<p>The lead author of NECR210, Dr Simon Caporn, has confirmed to Prof. Laxen that this part of the report was not designed to provide a basis for defining significance. It merely demonstrates the changes in Ndep affect species richness. HE has taken this evidence out of context and applied it inappropriately. Notwithstanding the errors in the calculations of Ndep one cannot take Table 21 in NECR210 to justify an increase in Ndep because it is too small to cause a loss of one species.</p> <p>The approach is flawed, how could HE know that the current levels of Ndep are not close to a tipping point that would cause a species to disappear? If this were the case, then a tiny increase could result in the loss of a species. Neither does this approach take into account the past loss of species due to Ndep and the requirement to reduce Ndep levels to at or below critical loads. It is the view of Mr Baker and Prof. Laxen that the use of Table 21 in the way proposed is a completely unscientific approach and a distortion of the data presented in the NECR210 report.</p>	<p>the judgement of significant air quality effects. It is for the promoting authority to determine the sources of evidence they use to develop their judgement.</p> <p>Natural England’s guidance document “<i>Natural England’s approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations</i>” (NEA001), July 2019 in paragraph 5.49 signposts the use of NECR210 in decision making under the heading, “<i>Consider the best available evidence on small incremental impacts from nitrogen deposition</i>”, para 5.49, “<i>When assessing likely adverse effects on site integrity, the Natural England Commissioned Report 210: Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance (referred to above) may be of relevance.</i>”</p> <p>The use of the evidence in Table 21 is not illogical as suggested by Mr Laxen, rather the need for larger changes in deposition rates leading to the loss of 1 species at higher background critical loads, is more a reflection on the fact that the remaining species are more tolerant of higher nutrient nitrogen loads.</p> <p>Natural England’s policy in paragraph 5.45 of NEA001, describes that worsening would not undermine the site objectives, “<i>Which value you use</i></p> <p>HE does not know how far from the roads the impacts of air pollution will extend because HE has not correctly calculated the effects of the project (see above). It therefore cannot be certain as to the absence of effects on the SPA</p>
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wet heath (critical load 10-20 kg N/ ha/ year)

In addition, as outlined in paragraphs 7.9.23-7.9.26, the Environmental Statement Chapter 7: Biodiversity [APP052] also assessed the changes between 2022 with no Scheme and 2022 with the Scheme for every point of each transect within the Ockham and Wisley Commons SSSI, against the increase in nitrogen deposition required to reduce measured species richness by one, as taken from Table 21 of Natural England Commissioned Report NECR210.

The approach to the air quality assessment with regards to the SPA, SSSI, and in combination was agreed with Natural England. The methodology aligns with the existing guidance and the advice from Natural England. In addition, the methodology and findings of the appropriate assessment were also reviewed and agreed with Natural England, the RSPB and Surrey Wildlife Trust (as recorded in the meeting minutes on 28 June 2018 (Item 4.0) and 09 October 2018 (Item 5.0, page 64), in the Habitats Regulations Assessment Annex B [APP-041]). As noted in the response to the points raised in REP1-041, NOx concentrations were correctly projected forward using the LTTE6 factors in accordance with Highways England's Interim Advice Note (IAN) 170/12 v3, as noted in paragraph 5.5.23 of APP- 050).

There is no statutory requirement for ammonia to be included in the air quality assessment as discussed in the response to REP1-041. Paragraph 5.8 of the National Policy Statement for National Networks states that the air quality assessment should be consistent with Defra's published future national projections. Ammonia is not included in Defra's emission factors toolkit,

The statement 'There is no statutory requirement for ammonia to be included in the air quality assessment' is incorrect. Under the Habitat Regulations there is a legal requirement to ensure that any HRA fully assesses all the pathways which may have an adverse effect upon a European site. This was established in the case law eg *Briels* Case C-521/12, para 27 'The assessment carried out under Article 6(3) of the Habitats Directive cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned (see, to that effect, *Sweetman and Others* EU:C:2013:220, paragraph 44 and the case-law cited).'

Further comments on deposition velocities are provided in the response to point 2.8.1 in REP2-022. The air quality assessment has not shown the in- combination impacts of other plans and projects. This is discussed further in the response to point 2.9.1 in REP2-022.

HE has not carried out the assessment correctly.

will depend on what type of habitat you are looking at. Figure 3 [in NEA001] shows an example of nitrogen deposition trends at Breckland SAC. Nationally predicted declines in nitrogen deposition on heathland at Breckland SAC from 27 kg N/ha/year in 2005 to 24 kg N/ha/year in 2014 could mean that some increases in nitrogen from a plan or project (alone and in combination) may not impede this downward trend. Taking into account all relevant factors and information, it may be possible to consider some increases as temporary and reversible, which would be unlikely to undermine site objectives. In other words, we can still expect - even with the plan/project - the overall environmental loading will return to below critical level and loads within an appropriate timeframe."

In RHS's comment it is suggested that the heathland habitat within the Ockham and Wisley Commons SSSI component of the SPA may be close to tipping point. Refer to Point 11 in Section 2 of this document for an explanation of why that assumption is not correct.

The *Briels* Case does not require an assessment of ammonia, as a matter of law and to assert that it does is misleading. It is a case which is

<p>REP1-038-5</p>	<p>nor is it included in Highways England DMRB guidance, and so there is no requirement for assessment. A sensitivity test was carried out to show the potential effect of including the contribution of ammonia as discussed in the response to REP1-041. This showed that there would be no material effect to the conclusions of the SIAA.</p> <p>The nitrogen deposition calculations were undertaken using the correct deposition velocity in the DMRB guidance at the time, however since then the deposition velocities have been revised. The revised nitrogen deposition calculations are provided in the response to REP1-041 and still show no adverse effect on the qualifying features of the site. This is further discussed in the response to 3.4 below.</p> <p>The air quality assessment takes into account traffic from other plans and projects in the wider area, in addition to the Scheme, as documented in paragraph 5.11.3 of APP-050, and therefore allows for in combination effects. Therefore, Highways England is able to confirm that the assessment was carried out correctly</p>	<p>As set out above, the HRA is not legally compliant.</p>	<p>primarily concerned with the distinction between what may be acceptable as a mitigation measures and what should, instead, be recognised as a compensatory measure. Paragraph 27 was simply setting out an established principle that an assessment under the Habitats Directive must be 'complete'. Whether it is necessary for ammonia emissions to be included in an assessment to render it 'complete' will be a case by case decision. In this regard the case of <i>Boggis</i> is of relevance as this case established another important principle that, whilst it is correct to recognise that an assessment under the Habitats Regulations is concerned with a 'risk' rather than a probability of an impact, the Court ruled that <i>'there must be credible evidence that there was a real rather than a hypothetical risk'</i>.</p> <p>As noted in Figure 1 of REP1-041, monitored ammonia concentrations in the Ashdown Forest SAC reduced rapidly from the edge of the road, such that background levels were reached by 30 metres from the road. As the qualifying features of the SPA are only present at 150 metres from the road, there would therefore be no discernible effect at this location.</p> <p>Further responses on deposition velocities are provided in section 5 below.</p>
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The Habitats Regulations Assessment: Stage 2 [APP-043] is compliant with case law and guidance on the carrying out of habitats assessments under the Habitats Directive and Habitats Regulations. Paragraph 39 of the Ecology and Habitats Regulations Assessment representation [REP1-043] submitted on behalf of RHS concludes that 'the TBHSPA is already receiving nitrogen deposition that is far in excess of critical loads and the conservation objectives for the site include an objective to reduce these levels to at or below the critical load'. As explained below, this is not correct.

As stated in paragraph 4.21 in Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (Natural

As stated above, the HRA is legally compliant. Refer to Point 11 of Section 2 of this document which explains why the HRA complies with legislation.

England(2018)), “If none of the site’s sensitive qualifying features known to be present within 200 m are considered to be at risk due to their distance from the road, there is no credible risk of a significant effect which might undermine a site’s conservation objectives”.

The reference to the Ockham and Wisley Commons SSSI component of the SPA exceeding the critical load for nitrogen deposition in paragraph 7.2.31 of the Habitats Regulations Assessment: Stage 2 [APP-043] is referring to the lower limit of the critical load range (10 kg N/ ha/ year).

The lower limit of the critical load range was selected for assessing 1% of the lower limit of the critical load range when comparing the 2022 with no Scheme data against the 2022 with the Scheme data as it is the most sensitive value. The lower limit of the critical load range for heathland (taken from the APIS critical loads for habitat types within the Ockham and Wisley Commons SSSI component of the SPA, as explained in paragraphs 7.2.29 and 7.2.30 of the Habitats Regulations Assessment: Stage 2 [APP-043]) was used in the SIAA to maximise the sensitivity for detecting any increases in nitrogen deposition by 1% of the critical load.

However, critical loads are presented in APIS as a range. The critical load range for heathland habitats within the Ockham and Wisley Commons SSSI component of the SPA is 10-20 kg N/ ha/ year.

Whilst the SIAA [APP-043] considered the lower limit of the range, this was selected as a precautionary approach to investigating risks. The Natural England Commissioned report NECR210 (2016) Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance used the upper limit when determining if critical loads were exceeded.

The Thames Basin Heaths SPA is designated for its qualifying species (Dartford warbler, nightjar and

These statements on the range of critical loads are misleading. HE asserts that their assessment is precautionary and therefore their assessment is likely to err on the side of caution. This is not the case.

Professor Laxen’s evidence demonstrates that a key sources of nitrogen deposition (e.g. ammonia from road traffic) has been omitted from the assessment. The NERC210 (2016) report does NOT advocate the use of the upper limit when determining critical loads. Indeed, the report in fact explicitly states the opposite for example at section 5.7 it is stated richness. ‘The implication of this is that ecosystems may be showing sensitivity to N deposition at much lower levels of N deposition than previously thought and certainly at the lower end of the critical load ranges.’

This statement shows a fundamental lack of understanding of basic ecological principles. The qualifying species are reliant on the quality of the habitat to support their populations. Increased nitrogen causes reduction in species diversity and loss of flowering plants. It increased ground level shading (reduction in bare ground) which is likely to have

Refer to **Point 13 of Section 2** of this document which explains why:

- (1) the spatial extent of the air pollution impact is confined to the established woodland that separates the heathland from the roads, and acts as a protective buffer; and
- (2) Highways England can be confident that woodland does

woodlark) rather than its habitats.

The APIS data for the qualifying features of the Thames Basin Heaths SPA (<http://www.apis.ac.uk/srcl/select-a-feature?site=UK9012141&SiteType=SPA&submit=Next>) shows that nitrogen deposition loads are below the upper critical load threshold for dry heaths for all three of the qualifying features of the SPA and therefore the nitrogen deposition loads within the SPA do not exceed the critical load threshold for nitrogen deposition. Therefore, in terms of Advocate General Kokott's opinion, the critical loads for nitrogen depositions are not

adverse effects upon invertebrate species and thereby reduce the availability of food sources for the interest features of the site.

APIS presents critical loads as a range but makes clear that the minimum of the critical value range should be applied during screening, with any modifying factors considered and applied at the detailed assessment stage (page 9 of App.X). The recommended values for use in a detailed assessment are 10 kgN/ha/yr for both dry heaths and coniferous woodland (page 6 on App.X http://www.apis.ac.uk/sites/default/files/downloads/APIS%20critical_load_range_document.pdf)

These statements on the range of critical loads are therefore misleading. The NERC210 (2016) report does NOT advocate the use of the upper limit when determining critical loads. Indeed, the report in fact explicitly states the opposite for example at section 5.7 it is stated, 'The implication of this is that ecosystems may be showing sensitivity to N deposition at much lower levels of

not itself support any of the qualifying species as a foraging or nesting habitat.

Point 11 of Section 2 of this document also explains that nitrogen deposition levels will be lower than the current baseline, giving certainty that the woodland buffer will continue to function in its current state.

HE does not know how far effects from increased nitrogen deposition will extend into the SPA as the calculations are not complete (for the reasons RHS has already highlighted). As highlighted in the RHS REP5 XXX Response to REP4-005 this is a circular argument and does not reflect the legal protection afforded to the SPA,

The baseline levels are still exceeding critical loads and levels. (see REP5 XXX REP4-005 for further details.

<p>exceeded within the heathland habitats where the qualifying features of the SPA occur.</p> <p>The SIAA considered the nitrogen deposition levels at six transects within the Ockham and Wisley Commons component of the Thames Basin Heaths SPA, comparing nitrogen deposition data for 2022 with no Scheme data against 2022 with the Scheme.</p> <p>As agreed with Natural England (see item 2.0 of meeting minutes for 27 March 2018, as found in A.13 of the Statement of Common Ground with Natural England [APP-138]), the SIAA assessed whether the 2022 with Scheme calculations would lead to a significant change (increases of greater than 1% of the lower limit of the critical load) in nitrogen deposition rates, when compared to the 2022 without Scheme data. In addition, the Environmental Statement assessed for increases of 0.8 kg N/ha/yr.</p> <p>After taking into account the updated air quality data (as described in Appendix B of the comments response to</p>	<p>N deposition than previously thought and certainly at the lower end of the critical load ranges.'</p> <p>The upper critical load is not relevant. The APIS website clearly states that lower levels should generally be used for assessments. This statement is consequently incorrect. See App.X.</p> <p>The discussion of increases does not take account of the contribution of ammonia to N deposition. Thus, the values in the Table are not correct.</p>		
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<p>the Royal Horticultural Society air quality representation [REP1-041]), the increases of 1% or greater between the 2022 without Scheme and 2022 with Scheme data are confined to within 50 m of the road.</p> <p>The qualifying species occur within the heathland habitats of the Ockham and Wisley Commons SSSI component of the SPA. As demonstrated in Figures 4 and 5 of the Habitats Regulations Assessment Figures [AS-012], there is a belt of Scots pine-dominated woodland along the edge of the A3 and M25, forming a buffer of at least 150 m between the road and the heathland where the qualifying species occur.</p> <p>This woodland buffer protects the habitats that the SPA qualifying species utilise from the nitrogen deposition emissions from the road. For each transect, the distance of the heathland from the road, and the nitrogen deposition rates (2022 with and without Scheme) for that distance (up to 200 m from the road) are listed below, based on the updated air quality data.</p>	<p>As highlighted above, the extent of the increased nitrogen deposition has not been calculated correctly and the actual deposition arising from the scheme is likely to be significantly higher than that which is current erroneously predicted by the HE. Therefore, even notwithstanding the need for restoration, effects may extend beyond the current extent of the so-called conifer woodland buffer.</p>		
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As can be seen, at the distance that the heathland is situated from the road, there is negligible difference between the nitrogen deposition loads for the 2022 without Scheme and 2022 with Scheme, with either no perceptible change, or in the majority of cases, minor improvements. On this basis, the SIAA correctly ruled out adverse effects on the SPA as a result of air quality changes resulting from the Scheme, either alone or in combination, and is therefore robust.

<p>REP1-038-6</p>	<p>The RHS Alternative Scheme cannot be provided because the left-out merge junction from Wisley Lane to the A3 northbound is not safe, and it cannot be provided in accordance with DMRB design standards. Accordingly, it would not meet the Scheme objectives and is not a feasible alternative. Further, if it were possible to provide a compliant design, the RHS Alternative Scheme would require SPA land to be taken.</p>		<p>As explained in Point 11 of Section 2 of this document, when taking into account all of the points described, it should be clear to ExA that no reasonable scientific doubt remains as to the absence of adverse effects to the integrity of the SPA in the SIAA, and that Highways England are certain that the changes in air quality as a result of the Scheme (alone or in combination with other plans and projects) will lead to no adverse effects on the Thames Basin Heaths SPA as a result of changes in air quality.</p>	<p>This statement is not correct. HE's assessment remains flawed for the reasons set out above. There remains significant doubt about the levels of air pollution that will be generated by the project AND HE has not correctly assessed whether the integrity of the SPA will be affected especially when compared to the benefits of reduced annual mileage which the RHS Alternative would bring about. The ExA must therefore conclude that effects upon the SPA from this impact pathway cannot be ruled out.</p>
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The Scheme has been designed to minimise the amount of land take (both permanent and temporary) from the SPA, and an additional substantial permanent land take cannot be considered a less damaging solution.

However, it is important to note that Highways England has indeed identified an adverse effect to the integrity of the SPA as a result of the land take required by the Scheme, and in accordance with Article 6(4) of the Habitats Directive, has undertaken a consideration of alternative solutions, assessed imperative reasons of overriding public interest and designed a suite of compensatory measures.

Therefore, due to the adverse effect to the integrity of the SPA occurring as a result of the land take, any alternative scheme that would require additional land take from the SPA cannot possibly be considered as a less harmful alternative.

<p>REP1-038-7</p>	<p>Highways England does not agree with the level of reduction in visitor numbers to the RHS arising from the Scheme as set out in the Hatch Regeneris report included with the RHS Written Representation [REP1 -039] nor that the Scheme would have a severe economic impact on the RHS.</p> <p>In outline, the Hatch Regeneris report is flawed in a number of respects: The RHS data overstates distances and journey times. The journey distance and time changes in Table 4 and 5 do not accord with Highways England's data and Highways England hopes that the recent data sharing exercise will address this</p> <ul style="list-style-type: none"> • Some of the key questions in the RHS survey were leading and have produced a misleading and in some instances exaggerated outcome. <p>For example, the response to Question 9, states that over a third (36% of visitors) felt that</p>	<p>The RHS commissioned a survey to formally canvas opinions on the potential impact the scheme will have upon the frequency of visits. The sample size, whilst relatively small, is still of sufficient size to provide credible insight into the views of the wider population of visitors to RHS.</p> <p>HE has provided no evidence to support their opinion that there DCO Scheme will have no impact upon RHS visitor numbers.</p> <p>The RHS considers the journey distances used within its analysis are broadly consistent with the HE data and will not materially affect any of the outcomes of the RHS economic analysis.</p> <p>The HE journey time data is reliant upon the accuracy and predicative capability of their traffic models. The RHS has previously indicated its concerns with some of the local calibration and validation of the baseline model on routes leading to / from RHS Wisley Garden and this remains the case.</p> <p>The questions in the RHS survey were not "leading" but were designed to portray, in a simple self-completion survey format, the negative traffic delay and disruption that resulting from the RHS Scheme. The survey was administered by fully trained and briefed market research staff (Plus Four Market Research).</p> <p>The responses to Question 9</p>	<p>Please refer to Highways England's written summaries of oral case for Issue Specific Hearing 2 [REP3-009] and evidence provided above.</p>	<p>In response to specific points made by HE on the Visitor Survey within the Issue Specific Hearing 2 [REP3-009]:</p> <p>HE have stated that the Visitor Survey sample is unacceptable by quoting the number of responses as a percentage of total population. Firstly, HE have applied the wrong population. The 1.1 million represents annual visits, not annual visitors (i.e individual people). Since many individuals make multiple visits to the Garden the actual estimated number of visitors is 370,000 individuals, from around 170,000 households. Since the survey was conducted on groups arriving at the Garden (not individuals), the 170,000 figure is the most relevant population size.</p> <p>Secondly, a direct percentage assessment is a spurious approach to assessing the representative nature of a sample. Appropriate sampling is a reflection of the 'confidence level' you wish to have in your sample (industry standard = 95%) and the 'error rate' by which you want to be able to replicate your population. The error rate can vary based upon the distribution of responses received. The sample size obtained by the RHS enables it to have 95% confidence that the sample responses are, at worst, within +/- 5.75% of the overall population responses and, for some questions, this will be considerably lower.</p>
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it [the changes to the journey times] would impact how frequently they would visit. The response does not explain that approximately 58% of the respondents stated that the additional journey time would not affect how frequently they would visit the garden.

- On the basis that only those travelling along the A3 from the south would be affected on their journey to RHS Wisley, and that this represents approximately 24% of total visitors, the RHS forecast reduction in total visitor demand of 6.5% implies that a quarter of these visitors would cease to visit. This would be unlikely on account of such a small increase in journey distance and time.

- The additional distances that RHS Wisley Gardens visitors will need to travel to the Scheme (that does not include south facing slips at Ockham Park junction) is dependent on whether visitors from the south choose to follow the signposted route to and from the A3 via Junction 10 or choose to route via Ripley.

clearly include the 58% of respondents who stated the additional journey time would not affect their frequency of travel. These responses are fully accounted for within the RHS analysis and no negative impacts are attributed against these individuals.

HE trip distribution assumptions are derived from a single Automatic Number Plate Recognition (ANPR) survey on Tuesday 16th May 2017, 6am to 7pm. Table 3.6 of the Motion Report (REP2-040) shows daily visitor profiles and indicates that Monday and Tuesdays have under 50% of the daily visits than any other day of the week. Whilst not disputing the accuracy of the ANPR data, the RHS do not consider it to be representative of all visitor trips to the RHS Wisley Site. The data used by RHS is drawn from its database of visitor trip origins across the year and so provides a more representative assessment across a typical year.

The RHS agree with this observation and had already taken this into account within its analysis. The HE model forecasts that 100% of trips will divert via Ripley but the RHS considers this, in part, reflects the limitations of the HE traffic model in accurately representing delays. The proportion of trips diverting via Ripley will also depend on whether mitigation measures are introduced

The RHS maintains that the Visitor Survey is not biased and the results have been applied in a robust manner.

RHS has estimated that Wisley Gardens will attract approximately 1.494 million visitors a year due to their 10-year

in Ripley that will encourage RHS traffic to remain on the A3.

The figures presented by HE for the two options appear inconsistent with each other. The RHS await revised figures.

investment plan [Appendix M of REP1-044], which will generate approximately 626,650 vehicle arrivals and departures annually. Although Highways England does not know the expected growth profile of RHS Wisley, if all this growth is assumed to occur by 2022, then the total annual additional distance due to the Scheme would be approximately 355,400 kms (213,700 miles) if visitors to and from the south choose to route via Ripley, or approximately 1.9 km (1.16 miles) if visitors to and from the south choose to route via J10 (the signposted route). Note that these figures include visitors travelling to/from other directions as well as from the south.

- The RHS analysis overlooks the significant improved road safety provided by the Scheme.
- The Hatch Regeneris report is based on a worst case scenario and therefore cannot be relied upon as evidence of the likely economic impact on the RHS Wisley.

Highways England is considering the Hatch Regeneris report in more

The RHS consider the RHS Alternative Scheme to be as safe as the DCO Scheme and so the RHS do not consider there will be any material difference in road safety. In addition, the HE analysis demonstrates that the distances travelled by RHS visitors will increase and so the exposure to accident risks could, potentially, increase.

It is recognised that there are differences in opinion between RHS and HE in relation to the input variables, but the RHS do not consider there to be anything within its approach that represents an inherent worst-case scenario.

detail and will be providing a response as soon as possible.

<p>REP1-038-8</p> <p>Highways England does not agree with the wider economic impacts associated indirect and induced impacts to the RHS arising from the Scheme as set out in the Hatch Regeneris report included with the RHS Written Representation [REP1 - 039] nor that the Scheme would have a severe economic impact on the RHS.</p> <p>In outline, the Hatch Regeneris report is flawed in a number of respects:</p> <ul style="list-style-type: none"> • The sample was small and taken in late autumn and so the responses may differ from those that would be received in peak season. Whilst the report notes that the sample matches well with typical Wisley visitors; it does not provide details on the similarities and account for scaling the result up from the sample of 645 (from 293 questionnaires) to represent impacts on annual trips. • The questionnaire as reported asked visitors about the impact of an additional journey time of 10 minutes on journeys to Wisley, implying a 10 minute increase on a 1 way trip to 	<p>The RHS has conducted its wider economic impacts in line with DfT Transport Analysis Guidance and HM Treasury Green Book requirements. Whilst it is accepted that HE and RHS have differences of opinion on various input data, the RHS consider there can be no dispute on the overall approach adopted by the RHS.</p> <p>HE has indicated they do not believe that the DCO Scheme would have severe economic impact on the RHS but they have presented no analysis to support this claim.</p> <p>The sample size, whilst relatively small, is sufficient to be statistically representative of the annual visitor population. As the survey was conducted in the Autumn half-term holidays, the profile of visitors is similar to those that would be received in peak season. This is evidenced in terms of the ratio of members to paying adults, as well as the age distribution of respondents. The RHS, therefore, maintain that the sample provides credible insight into the views of the wider population of visitors to RHS.</p> <p>The DCO Scheme would result in different journey times impacts for individuals' depending on whether they are travelling to and from the RHS Site. To counter this challenge, the survey was administered by qualified survey staff who provided a briefing on the wider context and</p>	<p>Please refer to Highways England's written summaries of oral case for Issue Specific Hearing 2 (ISH2) [REP3-009] and evidence provided above.</p> <p>Highways England remains of the view that the economic analysis undertaken by Hatch Regeneris is flawed in a number of important respects, not least in overstating distances and journey times, as discussed at ISH2.</p> <p>To put it in the context of the overall Scheme, the Hatch Regeneris report [REP1-039] is concerned solely with the claimed economic impacts upon RHS Garden Wisley and does not consider the wider economic benefits of the Scheme.</p>	<p>Previous disagreements between RHS and HE over journey distances were relatively minor in nature. These have now been agreed and there is negligible difference to the numbers applied within the original RHS analysis and so the changes will have no material impact upon the outcomes of the economic analysis.</p> <p>The RHS maintain that the HE modelling is flawed, in that it does not accurately represent underlying congestion on local roads in the base model. This results in flawed future year forecasts of journey time impacts. As evidence of this point, HE have admitted that their traffic modelling cannot predict the level of traffic that will divert off the A3 through Ripley. The RHS consider that it is a fundamental and most basic role of the traffic model to be able to predict traffic behavior resulting from the DCO Scheme.</p> <p>The RHS analysis has demonstrated within REP1-039 that the economic benefits from implementing the RHS Alternative Scheme far exceed the costs of delivering the scheme.</p>
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RHS. However, the calculations appear to use the survey responses about the impact of the 10 minute increase on visit numbers in relation to the estimated increase in round journey time to and from Wisley, thereby overstating the impact.

- The questionnaire only asked for respondents' reaction to one potential increase in journey time (10 minutes). As noted in the report, it is likely that visitors' response to increased journey time will not be linear and responses to shorter increases in journey time should have been asked.

explain the variety of impacts.

As HE has indicated, the RHS analysis already indicates that the impacts may not be linear and this has been taken into account within the RHS assessment. At the time of the survey, HE had not provided data on potential journey time impacts; however, the selection of 10 minutes represented a tangible change in journey time from which the RHS could base its analysis.

Increasing visitor journey times is, by definition, a negative impact. Presenting a scale of "not frustrated" through to "highly frustrated" is considered to represent the only reasonable response to this question.

<ul style="list-style-type: none"> • The phrasing of the questionnaire tended to invite negative responses by presuming the additional journey time would cause frustration rather than asking a more neutral question such as how respondents would feel about the increase in journey time. • The report doesn't give sufficient information to fully replicate the calculations and it seems there may be some additional uplift factors included. Indeed, the basis for the 15% reduction in trips for the additional RHS anticipated scenario is not clear. The report refers to the view that the disruption of construction impacts may be more off putting to visitors than their current estimate allows for (but this would apply only to the years of construction whereas the example applies the higher rate of visit reduction to operational years too). 	<p>No additional uplift factors have been included, with all elements stated within the report. The disruption during construction has only been applied during the forecast years of construction.</p>	
<p>REP1-038-9</p> <p>Highways England has raised a number of points above that show it does not agree with the economic analysis provided in relation both to those points above as well as this one.</p>	<p>The RHS analysis of the RHS Alternative Scheme is based upon the same robust set of survey data, trip distribution evidence, journey distance, and journey time data used in the assessment of the DCO Scheme. This evidence demonstrates that the provision of south-facing slips and retention of</p>	<p>The RHS Alternative Scheme is not an appropriate alternative and in any event it cannot be delivered as part of the DCO Scheme. There is therefore no value in carrying out an economic assessment in respect of it.</p> <p>Highways England does not</p> <p>HE have not fully assessed the RHS Alternative Scheme (e.g. through traffic modelling) and so they have no evidence upon which to conclude whether it is appropriate or otherwise.</p> <p>HE have conducted no assessment of the economic impact of either the DCO Scheme</p>

		the left- turn egress from Wisley Lane onto the A3 will negate the significant economic disbenefits of the DCO Scheme.	accept that there are significant economic dis- benefits of the Scheme either generally or to RHS.	or the RHS Alternative and so they have no evidence upon which to conclude whether it is appropriate or otherwise.
REP1-038-10	A construction sequence and programme is set out in section 2.4 of the Environmental Statement, Chapters 1-4: Main Report [APP-049]. Following the appointment of the principal contractor, Highways England will facilitate discussions between the appointed contractor and the RHS regarding the construction programme.	Whilst additional detail on the impact of the DCO Scheme construction phase has now been presented by HE (REP2-011), this focusses upon the level of traffic that may divert from the strategic road network onto the local road network. It remains unclear how much additional journey time will be incurred by visitors travelling through the roadworks to RHS Wisley Garden. This is a critical element of the assessment of socio-economic impacts of the DCO Scheme, as the level of traffic delay translates directly into lost economic output.	Overall construction impacts have been considered in the Scheme's benefit-cost ratio. Highways England's approach will be to minimise so far as practicable adverse impacts during construction on all affected parties, and will be liaising with RHS and others affected accordingly.	HE state the construction impacts have been considered in the Scheme's benefit-cost ratio. If this is the case HE should be able to provide an assessment of the level of delay experienced by vehicles travelling through the roadworks. The RHS has seen no evidence of this data.
REP1-038-11	Tree root surveys have been undertaken and the results are still being analysed to inform on the potential to retain the trees. This analysis will include detailed design reviews in these locations to see if any bespoke engineering solutions can be used to enable their retention should the survey results show that to be necessary.	The RHS reserves its position in this regard.	Information has been provided to RHS and the matter has also been discussed above.	

<p>REP1-038-12</p>	<p>RHS has not explained why it considers the land take to be excessive. Plot 11/2 is included to provide permanent rights to enable works to be undertaken and maintained to improve the biodiversity of this field and woodland fragment to ensure that it is suitable to be considered as part of the SPA compensation land.</p> <p>The field at Plot 11/2 has been selected due to its location and potential to be enhanced as an invertebrate resource (which would benefit the qualifying features of the SPA). The size of the plot (6.1 ha) is appropriate to provide a 1:1 ratio to compensate for the loss of permanent land take from the SPA (5.9 ha). An additional SPA compensation land parcel (Old Lane Compensation Land, 2.0 ha) has been provided to ensure that the adverse effects of the permanent loss of 5.9 ha of SPA are offset and to ensure that a 1:1 ratio is maintained. Further detail on the selection process of the SPA compensation land is provided within the HRA Annex C Report [APP042].</p>	<p>To be dealt with at the CPO Hearing. N/A</p>	
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<p>REP1-038-13</p> <p>It is not possible to remove the skew from the orientation of the bridge and keep the existing access to and from Wisley Lane and Elm Lane open during construction. Furthermore, the bridge cannot be straightened without taking more land from the SPA. The RHS alternative would not, therefore have a lesser effect on the SPA and so cannot be regarded as a feasible alternative solution for the purposes of the assessment required under the Habitats Directive.</p>	<p>The RHS does not accept this proposition.</p>	<p>RHS has not explained why this proposition is not accepted.</p>	
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RHS further comments on HE’s Further Response to RHS’s Response to REP3-050

<p>2.1 Effect of Excess Distance Travelled to Access RHS Wisley</p> <p>2.1.1 The results of the air quality assessment that are provided in the ES [APP-050] and tables 5.7.10 and 5.7.12 of APP-080 are based on the data provided by the traffic model. The model assumes that with the Scheme, all traffic travelling to and from RHS Wisley from the south travels through Ripley rather than the longer signposted route via the A3 and M25 junction 10. The traffic data used in the assessment was based on the more conservative design fix 2 (DF2), rather than that which was revised for design fix 3 (DF3), as documented in paragraph 5.5.12 of APP-050.</p>	<p>It is accepted that for the ES, HE modelled all RHS Wisley traffic to and from the south as passing through Ripley. This is one worst-case assumption. The other worst-case assumption is that all this traffic would follow the signposted route and use the A3 up to junction 10, passing by the SPA. This was not modelled in the ES but has since been modelled with the results presented in REP2-022. The impacts arising from both these worst-case assumptions would be avoided with the RHS Alternative Scheme.</p>	<p>There would not be any difference to the conclusions of the air quality assessment documented in APP-050 nor to the conclusions of the SIAA as a result of the RHS Alternative Scheme, as explained in REP2-022.</p>	<p>It is still the case that the impacts that arise within the SPA would be avoided with the RHS Alternative Scheme.</p>
<p>2.1.2 However, an assessment has been carried out to determine the changes in NOx concentrations and nitrogen deposition rates within the Thames Basin Heaths SPA assuming that all the traffic which is currently travelling via Ripley to and from the Ockham junction to RHS Wisley would use the signposted route, based on the traffic data provided in the Transport Assessment</p>	<p>HE accepts that it had not modelled the worst-case for traffic on the A3 north of Ockham junction, which is that traffic would follow the signposting to RHS Wisley. It is this traffic that will pass the SPA, and the published ES has therefore not covered the impact of this traffic.</p> <p>Results are now presented by HE for the worst-case assumption that all RHS Wisley traffic to and from the south follows the signposted route in</p>	<p>As recorded in response to REP1-038-5 in the Applicant’s comments on written representations [REP2-014] for each of the transects within the SPA, the heathland habitats occur at a distance of 150 m or greater, and therefore, any points closer than 150 m fall within the woodland buffer. At this distance there would not be a discernible effect with the additional RHS Wisley traffic using the signposted route, and with the revised nitrogen deposition velocities. The nitrogen deposition calculations at the</p>	<p>The results in the Table are not consistent with those in REP2-022, Appendix A and Appendix B. The results also are only presented for receptors well away from the A3. Highways England has agreed to provide a new set of N deposition Tables to replace those in APP-080 and APP-043 taking account of the new deposition velocities and the worst-case assumption that RHS Wisley traffic from the south uses the A3 route. These tables should also include the</p>

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<p>Supplementary Information Report (Volume 9.16 submitted to the Examining Authority at Deadline 2). As documented in the response to point 3.1. of REP1-038, this is an</p>	<p>REP2-022for N deposition, but not for NOx. They show that N deposition would be up to 1.5% higher (Appendix A in REP2-022)than the values presented in the ES. If</p>	<p>location of the qualifying features are provided below. These calculations include the revised nitrogen deposition velocities and the RHS Wisley traffic using the signposted route.</p>	<p>contribution of ammonia to Ndep. RHS will accept that this can be approximated by assuming the road contribution from NOx is doubled. RHS invites the ExA to request that Highways England provides the new tables showing the full impact of the Scheme on Ndep.</p>
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<p>unlikely scenario, as it is considered that some of the traffic will use the shorter route through Ripley, as it does now. The results for the four transects in proximity to the A3 are provided in Appendix A. The traffic data for these movements were only available for DF3, hence the original assessment for the receptors in the SPA using the DF2 traffic was additionally revised to provide the results for DF3. The results have also taken into account the revised nitrogen deposition velocities as discussed in the point below. This shows that with the additional traffic, the largest change in nitrogen deposition rates would be an increase of 0.15 kgN/ha/yr at receptor point R149, located 5m east of the A3.</p>	<p>ammonia had been included in the calculation, then the N deposition would be up to 3% higher. The RHS Alternative Scheme would remove this adverse impact on the SPA.</p>	<p>Estimated Nitrogen Deposition Results (kgN/ha/yr) for Ecological Transect Points in the Thames Basin Heaths SPA, including RHS Wisley traffic using signposted route, and revised velocities</p>						
		Receptor ID	Distance from road centre (m)	2015 Base	2022 DM	2022 DS	2022 Change	Change as % of Lower Range of Critical Load
		Transect West of A3 (north of Wisley Lane)						
		R132	150	16.32	13.88	13.85	-0.03	-0.3
		R133	200	16.01	13.59	13.56	-0.03	-0.3
		Transect East of A3 (near Boldermere)						
		R139	150	16.80	14.35	14.29	-0.06	-0.6

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		R140	200	16.33	13.91	13.85	-0.06	-0.6	
		Transect West of A3 (close to junction 10)							
		R147	150	17.34	14.64	14.64	<0.1	<0.1	

	R148	200	17.05	14.40	14.40	<0.1	<0.1	
	Transect East of A3 (close to junction 10)							
	R155	150	17.77	14.84	14.81	-0.03	-0.3	
	R156	200	17.23	14.46	14.46	<0.1	<0.1	
	Transect South of M25 (west of junction 10)							
	R163	150	17.51	14.90	14.90	<0.1	<0.1	
	R164	200	17.05	14.49	14.49	<0.1	<0.1	
	Transect South of M25 (east of junction 10)							
	R193	150	17.69	14.93	14.90	-0.03	-0.3	
	R194	200	17.27	14.58	14.55	-0.03	-0.3	
	2.1.3 Table 5.7.11 of APP-080 shows that the background nitrogen deposition rate used in the assessment for the Thames Basin Heaths SPA was 12 kgN/ha/yr in the opening year of 2022. As documented in paragraph 7.9.24 of APP-052, to reduce the measured species-richness of a lowland heath habitat by one species, an increase of 0.8 kgN/ha/yr is required where the site has a background nitrogen deposition rate of 10 kgN/ha/yr. As the highest change of 0.15 kgN/ha/yr is below this level, there is unlikely to be any measurable effect on the	The data cited by HE from Table 21 of the Natural England Commissioned Report NECR210, have been used illogically to define the significance of impacts in the SIAA. Prof. Laxen has spoken to the author of the report NECR210, Dr Simon Caporn, who said that this table was not designed to be used as a basis for defining significance. The role of Table 21 is purely to show that as nitrogen deposition increases the species richness declines in a non-linear way, this being one of the adverse effects of additional nitrogen input to a habitat.	In developing the recently published DMRB air quality assessment methodology, Highways England had engaged extensively with representatives from Natural England on their proposed approach and in particular the use of Natural England's published report, " <i>Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance</i> " (NECR210), March 2016, to inform a competent expert for ecology on the judgement of significant air quality effects. It is for the promoting authority to determine the sources of evidence they use to develop their judgement.	It is stated that Highways England 'engaged extensively' with Natural England, but it is not confirmed that Natural England has signed-off on the final text used in LA 105. RHS asks that this is confirmed. RHS maintains that the use of the 'single species' approach as set out in LA105 is illogical as a basis for saying that an impact is not significant, and should not be relied upon (as per RHS text to the left).				

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reduction in

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<p>species-richness as a result of the additional trips by the RHS Wisley traffic with the Scheme. Hence there would be no material effect within the SPA.</p>	<p>Use of Table 21 is based on the argument that as long as the increase in nitrogen deposition represents the loss of less than 1 species then it is insignificant. This is illogical for at least two reasons. Firstly, using the example of a deposition rate of 10 KgN/ha/yr, the table shows that the addition of 0.8KgN/ha/yr would be associated with the loss of 1 species, whereas, at 20KgN/ha/yr the loss of 1 species would arise from the addition of 1.7 KgN/ha/yr. The HE has thus implied that the more polluted the site is above the critical load, the more additional pollution can be added without it being a significant increase. This is not consistent with the need to reduce nitrogen input to a habitat to restore conditions where the critical load is being exceeded, which would be made that much harder the more polluted the site is. Secondly, this approach does not recognise whether or not the site is on the tipping point whereby a very small increase in nitrogen deposition might cause the loss of a species. It is, therefore, the professional view of Prof. Laxen and Mr Baker that the criterion of loss of one species cannot be used as a significance criterion and its use in this way in the SIAA is not valid.</p>	<p>Natural England’s guidance document <i>“Natural England’s approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations”</i> (NEA001), July 2019 in paragraph 5.49 signposts the use of NECR210 in decision making under the heading, “Consider the best available evidence on small incremental impacts from nitrogen deposition”, para 5.49, <i>“When assessing likely adverse effects on site integrity, the Natural England Commissioned Report 210: Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance (referred to above) may be of relevance.”</i></p> <p>The use of the evidence in Table 21 is not illogical as suggested by Mr Laxen, rather the need for larger changes in deposition rates leading to the loss of 1 species at higher background critical loads, is more a reflection on the fact that the remaining species are more tolerant of higher nutrient nitrogen loads.</p> <p>Natural England’s policy in paragraph 5.45 of NEA001, describes that worsening would not undermine the site objectives, <i>“Which value you use will depend on what type of habitat you are looking at. Figure 3 [in NEA001] shows an example of nitrogen deposition trends at Breckland SAC. Nationally predicted declines in nitrogen deposition on heathland at Breckland SAC from 27 kg N/ha/year in 2005 to 24 kg N/ha/year in 2014 could mean that some increases in nitrogen</i></p>	<p>Highways England has been selective in its quote, as the next paragraph in NECR210 says <i>“However this evidence is not appropriate for use to justify further exceedence on designated sites alone ...”</i> (para 5.50). This makes clear that decisions should not rely on NECR210.</p> <p>RHS stands by the advice of its experts that the use of Table 21 from NECR210 is illogical, as set out in the RHS Response in column 2 of this document.</p> <p>The quotation provided by Highways England from NEA001 is incomplete and concludes with an important sentence <i>“In other words, we can still expect - even with the plan/project – the overall environmental loading will return to below critical level and loads within an appropriate timeframe.”</i> This shows the importance of critical level and critical load exceedences. The loss of a single species approach in LA 105 treats</p>
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		<p><i>from a plan or project (alone and in combination) may not impede this downward trend. Taking into account all relevant factors and information, it may be possible to consider some increases as temporary and reversible, which would be unlikely to undermine site objectives. In other words, we can</i></p>	<p>relatively large increases as being 'not significant'. There has been no analysis by Highways England of how these large increases will affect the SPA returning to below the critical level and loads within an appropriate timeframe. The large increases will certainly delay the site returning to below critical level and loads, and may even prevent it from doing so. This further emphasises the concerns RHS has about use by Highways England of the 'loss of a single species' criterion.</p> <p>In addition, Highways England has been selective in its quotation, as the next paragraph, 5.46, qualifies the suggestion that some increases may possibly be considered to be temporary and reversible, saying "<i>While this may be a useful factor to consider in some cases, it should not be applied blindly.</i>"</p>
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	<p><i>still expect - even with the plan/project – the overall environmental loading will return to below critical level and loads within an appropriate timeframe.”</i></p> <p>In RHS’s comment on REP1-038-5 in the RHS response to REP2-014 [REP3-044] it is suggested that the heathland habitat within the Ockham and Wisley Commons SSSI component of the SPA may be close to tipping point with regards to nitrogen deposition levels, and that this would cause one of the qualifying species to disappear. Highways England can demonstrate with certainty that this is not the case. The Thames Basin Heaths SPA was designated for its Dartford warbler, nightjar and woodlark populations in 2005, and this included the Ockham and Wisley Commons SSSI component. Therefore, the Ockham and Wisley Commons SSSI supported sufficient numbers of Dartford warbler, nightjar and/or woodlark in 2005 to qualify for designation as part of the Thames Basin Heaths SPA.</p> <p>As can be seen from the APIS website (http://www.apis.ac.uk/srcl/select-a-feature?site=UK9012141&SiteType=SPA&submit=Next), the nitrogen deposition trend shows a clear reduction in nitrogen deposition levels within the Thames Basin Heaths SPA over time since it was designated in 2005. Therefore, since the nitrogen deposition levels were considerably higher when the site was designated as an SPA than the current levels, then the heathland habitats within the Ockham and Wisley Commons SSSI component of the SPA cannot possibly be close to tipping point at their current levels of nitrogen deposition. In addition, the future reductions from the current baseline, when assessing the operational Scheme in</p>	<p>This is a complete misunderstanding of the point RHS was making. The point being made is that when you are on the continuum of the dose - response relationship as set out in NECR210, it cannot be known how much extra deposition is required to lose the next species- it may be extremely little. Also, NECR210 is about species of vegetation, not species of bird, so the point being made by Highways England is irrelevant anyway, as it is referring to bird species.</p> <p>RHS disagrees with Highways England’s assertion that nitrogen deposition in 2005 was considerably higher. The graph of total nitrogen deposition to the Thames Basin Heaths is shown below, from the APIS website. The top line is deposition to forest, the bottom to short vegetaion. There is no way the slight downward trend evident in this graph could be interpreted as showing 2005 deposition rates were ‘considerably higher’, which negates the arguments being put forward by Highways England.</p>
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		<p>combination with other plans and projects, will ensure that the heathland continues to support the SPA qualifying species.</p>	<p>Total Nitrogen deposition</p> <table border="1"> <caption>Total Nitrogen deposition (kg N/ha/yr)</caption> <thead> <tr> <th>Year</th> <th>Yellow Line (kg N/ha/yr)</th> <th>Red Line (kg N/ha/yr)</th> </tr> </thead> <tbody> <tr><td>2006</td><td>25</td><td>14</td></tr> <tr><td>2007</td><td>23</td><td>13</td></tr> <tr><td>2008</td><td>24</td><td>14</td></tr> <tr><td>2009</td><td>24</td><td>14</td></tr> <tr><td>2010</td><td>25</td><td>14</td></tr> <tr><td>2011</td><td>23</td><td>13</td></tr> <tr><td>2012</td><td>22</td><td>13</td></tr> <tr><td>2013</td><td>22</td><td>14</td></tr> <tr><td>2014</td><td>22</td><td>13</td></tr> <tr><td>2016</td><td>21</td><td>13</td></tr> </tbody> </table>	Year	Yellow Line (kg N/ha/yr)	Red Line (kg N/ha/yr)	2006	25	14	2007	23	13	2008	24	14	2009	24	14	2010	25	14	2011	23	13	2012	22	13	2013	22	14	2014	22	13	2016	21	13
Year	Yellow Line (kg N/ha/yr)	Red Line (kg N/ha/yr)																																		
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<p>2.2 Other Points 2.2.1 Other points that were raised under this heading included a discussion on the critical levels (paragraph 3.2 of REP1-041), and the alternative scheme proposed by RHS Wisley (paragraph 3.6 of REP1-041).</p>		<p>N/A</p>																																		
<p>2.3 Critical Levels 2.3.1 As documented at paragraph 5.3.3 of APP- 050, the critical levels for the protection of vegetation are set in the UK regulations (SI 2010/1001). Schedule 1 of the regulations provides details of the location of sampling points where the critical levels apply, which are documented in paragraph 5.3.3 of APP-050. Paragraph 5.3.3 also notes that it's Natural England's policy to apply the critical level for nitrogen oxides as a benchmark to all designated conservation sites.</p>	<p>The SIAA has not included an assessment against the critical level for NOx. The ExA therefore does not have the necessary information to provide an informed Appropriate Assessment.</p>	<p>As noted previously at 2.5 of REP2-022 Natural England did not request information on changes in NOx concentrations to be included within the SiAA.</p> <p>At a further meeting with Natural England held on 24th January 2020, they confirmed that they had not changed their view. This information will be documented in a further draft of the SoCG with Natural England.</p> <p>Nonetheless the NOx concentrations are provided within the air quality assessment at table 5.7.10 of APP-080 and provided in the table below for the transect points within the SPA where qualifying features would be present. At the receptor points within the SPA there would not be any exceedances of the</p>	<p>It remains the view of RHS that NOx concentrations across the whole of the SPA should have been considered in the SIAA and without this the ExA does not have the necessary information to provide an informed Appropriate Assessment. Highways England is saying that impacts within 150 m of the roads can be ignored.</p>																																	

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There is therefore no contradiction to what has been stated at paragraph 2.2 at Appendix A2 of REP1-041.

critical level at the location of the qualifying features, as shown in the table below.

Estimated Annual Mean NO_x concentrations µg/m³ for ecological transect points in the Thames Basin Heaths SPA

Recept or ID	Distan ce from road	2015 Base NO _x	2022 DM NO _x	2022 DS NO _x	2022 NO _x Chang e

	centre (m)					
Transect West of A3 (north of Wisley Lane)						
R132	150	25.5	18.8	18.4	-0.4	
R133	200	23.4	17.1	16.8	-0.3	
Transect East of A3 (near Boldermere)						
R139	150	28.7	21.6	21.0	-0.6	
R140	200	25.5	18.9	18.5	-0.4	
Transect West of A3 (close to junction 10)						
R147	150	32.2	23.3	23.1	-0.2	
R148	200	30.2	21.9	21.8	-0.1	
Transect East of A3 (close to junction 10)						
R155	150	35.6	24.8	24.6	-0.2	
R156	200	31.8	22.4	22.2	-0.2	
Transect South of M25 (west of junction 10)						
R163	150	33.4	24.8	24.9	+0.1	

		R164	200	30.2	22.3	22.3	<0.1	
		Transect South of M25 (east of junction 10)						
		R193	150	35.0	25.4	25.1	-0.3	
		R194	200	32.1	23.1	22.9	-0.2	
<p>2.4 Alternative scheme</p> <p>2.4.1 The RHS Alternative includes south-facing slip roads for the A3 at Ockham roundabout. The south-facing slip roads at Ockham roundabout are not included in Highways England’s Scheme, and have not been assessed. However, it would not be unreasonable to assume that the effect on the Thames Basin Heaths SPA would be similar to that assessed in the ES, as both the Alternative Scheme and the Scheme as assessed route traffic from the south to Ockham Park junction via south facing slips (Alternative scheme) or via Ripley (Scheme) and not via a u-turn movement at M25 j10.</p>	<p>This hinges on what people will do in practice. The RHS Alternative Scheme will ensure that neither the impacts on the SPA nor the impacts on Ripley would arise. This will not be the case with the DCO Scheme, as one or the other (the SPA or Ripley) or both would be affected by the DCO Scheme. The RHS Alternative Scheme will avoid these impacts and its adoption will therefore be beneficial in terms of reducing the effects of the scheme on residents in Ripley and the habitat within the SPA.</p>	See response to 2.1.1 above.						<p>The RHS position remains as set out in column 2 of this document.</p>
<p>2.5 NOx concentrations should be included in the SiAA</p> <p>2.5.1 The method for the SiAA was carried out in agreement with Natural England, who requested information on the changes in nitrogen deposition rates, as noted in the minutes of 27 March 2018 and documented in 5.3 Habitats Regulations Assessment Annex B</p>	<p>See comment on 2.3.1 above.</p> <p>There are exceedances of the critical level for NOx, but there is no assessment of the extent of this exceedance nor the implications.</p>	See response to 2.3.1 above.						<p>The RHS position remains as set out in column 2 of this document.</p>

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[APP-041]. The NO_x concentrations for the Thames Basin Heaths SPA were calculated as part of the air quality assessment and are included in Table 5.7.10 of Appendix 5.7 [APP-080].

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<p>2.6 NOx concentrations should be projected forward correctly</p> <p>2.6.1 The ES notes that the assessment was undertaken in accordance with Highways England's Interim Advice Note (IAN) 170/12 v3 on the assessment of future NOx and NO2 projections on long term trends[paragraph 5.5.23 of APP-050]. Although not explicitly stated in the ES, the NOx concentrations were correctly projected forward using the LTTE6 approach, and the results are provided in Appendix 5.7 of APP- 080.</p>	<p>It is accepted that the NOx concentrations in Table 5.7.10 of APP-080 have been projected forward using an LTTE6 approach. However, it is still the case that the rate of reduction predicted, for NOx, as shown in Table 2 of REP1-041, is higher than that of NO2, which is contrary to the detailed survey of UK measurements over the period 2010 to 2018, as cited in paragraph 3.11 of REP1-041. Thus, it is still the case that the predicted future year NOx concentrations are likely to have been reduced too much, and this will affect the assessment of impacts. The assessment has therefore not followed a precautionary approach as is required for an HRA.</p>	<p>Paragraph 3.11 of REP1-041 notes that Highways England should be required to apply the LTTE6 method to derive future NOx projections. RHS have now accepted that this method was followed.</p> <p>However, RHS have now responded by criticising the Highways England's LTTE6 method, noting that future projections do not match the rate of reduction in NOx concentrations in the Air Quality Consultant's report on NOx trends in the UK, as documented at para 3.11 of REP1-041.</p> <p>However, Air Quality Consultants have recently updated their trends report with additional NOx data for 2019 (Nitrogen Oxides Trends in the UK 2013 to 2019, January 2020, Air Quality Consultants), available at:</p> <p>https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=af089039-6a2f-49b5-9533-fe31205f3134</p> <p>The executive summary notes that <i>"the average rate of reduction over the period 2013 to 2019 is considerably steeper than that for the 2010 to 2018 period reported previously. This is particularly true at roadside sites and is principally because of the non-linearity of the trend, with the steepest reductions occurring since 2016... NOx concentrations at roadside sites have been reduced by an average of 5.14% per year since 2013 with the average reduction since 2016 being greater than this."</i></p> <p>This therefore leaves no reason for doubting the rate at which the NOx projections are declining for the air quality assessment for this project and supports the evidence that the LTTE6 trends are precautionary as stated at section 3.1, IAN 170/12v3.</p>	<p>The RHS recognises that predicting future year concentrations is uncertain. Whatever approach is used, it makes no substantive difference to the outcome, as the NOx concentrations still exceed the critical level within the SPA.</p>
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2.7 Ammonia should be Included in the SiAA

2.7.1 There is no requirement for ammonia to be included in the air quality assessment given that it is not included in the Highways England DMRB guidance (HA207/07). As noted in paragraph 5.8 of the Department for Transport's National Policy Statement for National Networks (available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387222/npsnn-print.pdf), the air quality assessment should be consistent with Defra's published future national projections based on future factors toolkit, and available at <https://laqm.defra.gov.uk/review-andassessment/tools/emissions-factors-toolkit.html>). The emissions factors toolkit provides emissions data for four pollutants: NOx, PM10, PM2.5, CO2 but not ammonia.

The calculations of Ndep have not included the contribution of ammonia from road traffic. As REP1- 041 sets out in Appendix A4 starting at page 18, ammonia can make significant contribution to Ndep alongside roads (see in particular Figure 3 on page 22). These results are based on a comprehensive monitoring programme over two years across the Ashdown Forest SPA and show ammonia contributing over half of the Ndep in 2015-17. The evidence is that the nitrogen oxides emissions will decline with time but ammonia is likely to remain constant, thus the proportion of ammonia to nitrogen oxides in the Ndep will increase with time. On the basis of these results, the ammonia contribution in 2022 would be expected to be well above 50% and thus the Ndep results presented by HE would need to be more than doubled to account for ammonia.

The inclusion of ammonia in the calculation of traffic contributions to Ndep is a feature of current modelling being carried out for local plans, for example by Wealden Council for impacts on the Ashdown Forest SAC, by Epping Forest

As noted previously at 2.7.1 of REP2-022, ammonia is not within the suite of tools produced by DEFRA for air quality assessment as documented in paragraph 5.8 of the DfT's National Policy Statement for National Networks, hence there is no requirement for assessment.

In any case, the monitoring data for ammonia in the Ashdown Forest SAC to which RHS refer shows that in Figure 1 of REP1-041 concentrations of ammonia decrease rapidly from the edge of the kerb such that by 30 metres they are at background levels. This indicates that the contribution of ammonia to nitrogen deposition rates at the distance at which the qualifying features of the SPA are present would be comparable to the background rate, rather than attributable to a road source, and hence unlikely to have a discernible change at this distance.

The RHS position remains as set out in column 2 of this document, with further support provided in the RHS response to question PD-010.

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Council for impacts on Epping Forest SAC and by Havant Council for impacts on various SACs and SPAs.

It is insufficient to say that ammonia should not be included because the guidance does not say it should be. Professional judgement and current practice elsewhere clearly justify the need to include ammonia in Ndep calculations. It is therefore critical

	<p>that ammonia from traffic is taken into account in the assessment presented to the ExA.</p>		
<p>2.7.2 Furthermore the Institute for Air Quality Management (IAQM)'s more recently published guidance "A guide to the assessment of air quality impacts on designated nature conservation sites", available at https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2019.pdf, makes no explicit requirement to include ammonia within an air quality assessment, noting that the majority of emissions in the UK are from agriculture(paragraph D.6.1).</p> <p>2.7.3 Even if the changes in nitrogen deposition rates with the Scheme, using the revised nitrogen deposition rates as discussed in the point below (paragraph 2.8.1), and presented in Appendix B of this response were to be doubled, this would mean that the largest change would be 0.92 kgN/ha/yr at a location 5 m east of the A3 (receptor point R149). Although this change is above the 0.8kgN/ha/yr threshold for a change in species-richness of a lowland heath habitat by one species, as discussed in the point above (paragraph 2.1.3) there are no qualifying features for the SPA in this area close to the A3 which acts as a buffer for the heathland (as documented in</p>	<p>See response to 2.7.1 above.</p> <p>The 0.92kgN/ha/yr is a 9.2% increase in the N deposition rate, which is well above the 1% used by Natural England to identify a 'likely significant effect' at the HRA screening stage.</p> <p>Furthermore, the calculations in Appendix B of REP2-022 do not include RHS traffic from and to the south following the signposted route via the A3 to junction 10. Appendix B of REP2-022 shows that this could increase N deposition by 1.5% at receptor R149, thus the total increase with the scheme could be around 10.7%at this receptor.</p>	<p>Response as per 2.7.1 above</p> <p>The revised nitrogen deposition calculations taking into account the RHS Wisley traffic using the signposted route and the revised nitrogen deposition velocities have been calculated and are provided in the response to 2.1.2 above.</p> <p>As recorded in response to REP1-038-5 in the Applicant's comments on written representations [REP2-014] for each of the transects within the SPA, the heathland habitats occur at a distance of 150 m or greater, and therefore, any points closer than 150 m fall within the woodland buffer. At the distance that the heathland occurs (i.e. the key supporting habitat for the SPA qualifying species which is potentially sensitive to deterioration in air quality, and for which the critical loads and levels are derived), there would be no discernible change in nitrogen</p>	<p>Response as per 2.7.1 above</p> <p>The RHS position remains as set out in column 2 of this document, but with the caveat that impacts are relevant across the whole of the SPA and not just 150 m from the roads.</p>

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paragraph 7.4.4 of APP-043). The change would be below 0.8 kgN/ha/yr by 10 m east of the A3 (receptor point R150), with a change of 0.68 kgN/ha/yr.

deposition rates.

<p>2.7.4 Therefore the contribution of ammonia does not materially affect the conclusion of the SiAA.</p>	<p>See comment above (2.1.3) in reference to loss of species.</p>	<p>As per response to 2.1.3 above.</p>	
<p>2.8 The Ndep calculations should use appropriate deposition velocities</p> <p>2.8.1 The air quality assessment was undertaken in accordance with the relevant Highways England DMRB guidance (HA207/07). However, since the ES (APP-050) was published, IAQM’s 2019 guidance for air quality impacts on nature sites, as discussed in the point above, was issued recommending the use of AQTAG deposition velocities. The revised DMRB guidance (LA105) issued in November 2019 also advocates the use of these deposition velocities. The nitrogen deposition calculations that were presented in Table 5.7.12 in APP-080 for the transects within the Thames Basin Heaths SPA have been updated to include the latest information, and have used the nitrogen deposition velocity for forests, given that the majority of the transect points are in forested areas. As expected, with the revised deposition velocities the nitrogen deposition calculations are higher, and are provided in Appendix B. As discussed in the response to RHSRMCo.1, the largest change is</p>	<p>HE has accepted the advice of Prof.Laxen. This illustrates that it is not always appropriate to rely on the published guidance.</p> <p>The result is that N deposition rates will be much higher than the values presented in the ES (APP- 080, Table 5.7.12). For example, Receptor 149 has a 2022 DS deposition rate of 16.22 kgN/ha/yrin the published ES(APP-080, Table 5.7.2), but it is now accepted by HE that this should be 25.45 kgN/ha/yr(REP2-022, Appendix B). The published HRA was thus based on incorrect deposition values. (This is without the addition of ammonia from traffic and the worst-case assumption that RHS Wisley traffic to and from the south will follow the signposted route along the A3 to junction 10, which would increase N deposition rates, as discussed in response to 2.7.3 above.</p> <p>The buffer argument used by HE does not stand up to scrutiny. Firstly, there is no legal basis for effectively downgrading those part of the SPA which are not in favourable condition and do not therefore support the interest features of the SPA. It is a fundamental tenet of the Birds Directive (Directive 2009/147/EC) that member states must take steps</p>	<p>Highways England has accepted that the professional air quality community position on use of deposition velocities has been updated since the air quality assessment was undertaken in 2018. The update to the DMRB guidance was published in November 2019, and it is for this reason that the revised velocities were applied to the nitrogen deposition rates. This does not imply that it is not always appropriate to rely on published guidance.</p> <p>As noted in the response above to 2.7.3 there would be no change in nitrogen deposition rates at the location of the qualifying features in the SPA.</p> <p>Regarding the woodland acting as a protective buffer this was accepted as appropriate within the recent judgement of the High Court in the Compton Parish Council vs Guildford Borough Council case (available at https://www.welhat.gov.uk/media/15858/EX175-Compton-PC- High-Court-Judgement- /pdf/EX175-Compton_PC_High_Court_Judgement_.pdf?m=637123680593970000).</p> <p>Para 199 – from 2019 Addendum 3.1.4 The woodland area serves “<i>an important function through buffering and protecting those areas of the SPA which do support bird territories and foraging habitat</i>”</p> <p>In addition, refer to Point 11 of Section 2 of this document sets out clearly why the woodland that</p>	<p>HE does not know how far effects from increased nitrogen deposition will extend into the SPA as the calculations are not complete (for the reasons RHS has already highlighted). As highlighted in the RHS REP5 XXX Response to REP4-005 this is a circular argument and does not reflect the legal protection afforded to the SPA,</p>

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<p>0.46 kgN/ha/yr which as noted in the responses above is considered unlikely to cause a measured reduction in species-richness of a lowland heath habitat. In addition, as explained in response 3.4 to Royal Horticultural Society Ecology and Habitats Regulations Assessment representation</p>	<p>to ensure that degraded habitats are restored. Article 3 states, 1. In the light of the requirements referred to in Article 2, Member States shall take the requisite measures</p>	<p>separates the heathland from the A3 and M25 acts as a buffer.</p>	
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<p>(REP1-038), there is a woodland buffer of at least 150 m between the road and the heathland where the qualifying species occur, and all changes in nitrogen deposition are contained within this woodland buffer. Therefore, the changes in air quality will not cause an adverse effect on the qualifying features of the SPA.</p>	<p>to preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Article 1.</p> <p>2. The preservation, maintenance and re-establishment of biotopes and habitats shall include primarily the following measures:</p> <ul style="list-style-type: none"> (a) creation of protected areas; (b) upkeep and management in accordance with the ecological needs of habitats inside and outside the protected zones; (c) re-establishment of destroyed biotopes; (d) creation of biotopes. <p>From 2b it is clear that the coniferous forest within the site should be managed (in this case removed and converted to heathland) to improve the ecology of the site for the SPA birds. Indeed, removal of conifer trees is part of the current management of the site.</p> <p>This precise point was tested at a previous inquiry into Land south of Wallisdown Road, Poole, Dorset (Talbot Village Trust) APP/Q1255/V/10/2138124 (27 February 2012), in refusing an appeal the inspector stated that an appropriate assessment should 'take account of the potential for the restoration of the site to favourable conservation status, as opposed to taking the view that the proposed</p>	<p>An explanation of why the case of Land south of Wallisdown Road, Poole, Dorset (Talbot Village Trust) APP/Q1255/V/10/2138124 is not relevant to this Scheme can be found in the response to REP1-038-4 in this document.</p>	<p>See response above</p>
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	scheme would not have an effect because, as a result of the poor condition of the site the interest features are not present'.		
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<p>2.9 The in-combination Assessment for the SiAA should be carried out correctly.</p> <p>2.9.1 The method for the appropriate assessment was agreed with Natural England, as noted in the minutes of 27th March 2018 and documented in 5.3 Habitats Regulations Assessment Annex B [APP-041]. The assessment takes into account traffic from other developments in the wider area, in addition to the Scheme, as documented in paragraph 5.11.3 of APP-050, and therefore correctly allows for in-combination effects.</p>	<p>Secondly, as highlighted above the extent of the increased nitrogen deposition has not been calculated correctly and the actual deposition arising from the scheme is likely to be substantially above that which is currently predicted by the HE. Therefore, even notwithstanding the need for restoration of the area within the buffer woodland back to heathland, significant effects may extend beyond the current extent of the so-called conifer woodland buffer.</p> <p>An in-combination assessment requires the calculations of concentrations and deposition rates for three scenarios:</p> <ol style="list-style-type: none"> (1) baseline with no additional traffic from other plans and projects and no Scheme traffic; (2) baseline with additional traffic from other plans and projects and no Scheme traffic; and (3) baseline with additional traffic from other plans and projects and no Scheme traffic. <p>The (3) minus (2) becomes the Scheme impact and (3) minus (1) the in-combination impact. The assessment carried out by HE only presents the Scheme impact as defined above, (3) minus (2). No attempt has been made to carry out</p>	<p>An in-combination assessment requires the decision maker to consider the effects of a project either alone or in combination with other plans and projects. The Courts (refer <u>Walton</u> [2011] CSOH 131) have established that a decision maker is entitled to exercise judgment as to the projects with whose effect the subject proposal has to be considered and emphasises that there must be a degree of flexibility in assessing the other plans and projects with which a particular proposal should be regarded as having an in-combination effect. The decision maker therefore has some discretion as to how the in-combination requirements are satisfied. It is incorrect to say that an in-combination assessment requires the calculations for the three scenarios referred to. Such an approach may be sufficient to satisfy the requirements for any given scenario but it does not follow that a different approach cannot also do so. The key question is whether the combined contributions represent a threat to the integrity of the site, or not. In this case the spatial scale over which traffic is likely to arise which may utilise the roads at junction 10 of the M25 is extensive. A pragmatic</p>	<p>The Walton judgment provides no support to the Highways England argument that the RHS approach (set out in column 2 of this document) is wrong. It is about the construction phase of the Aberdeen Western Peripheral Route, not the operational phase, as is relevant here, and it was about which in-combination impacts to include in the assessment, not about how to carry out the in-combination assessment (see paras 74 and 75 in the judgement). It therefore has no bearing on the Highways England response that <i>"It is incorrect to say ..."</i>, It does not challenge the RHS position as set out in column 2 of this document.</p>
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	<p>the calculations to allow an in-combination assessment as defined above, (3) minus (1).</p> <p>The need for this approach is evident in recent HRA assessments, including those carried out by Wealden District Council, Epping Forest District Council and Havant Borough Council for the HRAs for their Local Plans, which have all used the calculation procedure set out above at the appropriate assessment stage. They have also included ammonia from road traffic. The calculations for these three examples of recent assessments have been carried out by three different consultants: Air Quality Consultants, AECOM and Ricardo Energy & Environment</p>	<p>and proportionate approach has therefore been adopted which enables the predicted change in air quality as a result of the predicted growth in traffic flows overall, with the junction improvements in place, to be subject to assessment.</p> <p>In this case the traffic model used for the Scheme has been developed in accordance with the Department for Transport’s webTAG guidance, which takes account of traffic growth using National Trip End Model (NTEM) factors.</p> <p>The traffic data for the Do Something scenario includes traffic from other plans and projects as well as the traffic with the Scheme. It therefore represents an in-combination assessment.</p> <p>It should be noted that the examples of in-combination assessments that have been provided by RHS Wisley are for local plans, rather than road schemes.</p> <p>When considering the in-combination assessment for a local plan, rather than a road scheme, it is clearly important to take into account the traffic from neighbouring authorities, as this will not be taken account in a local authority’s own traffic data. However, the same principle does not need to apply in this case, as traffic from other plans or projects is already taken into account within the strategic traffic model.</p> <p>Natural England did not consider a further in-combination assessment to be required, given that the nitrogen deposition rates for the Do Something situation already include other plans and projects</p>	<p>RHS’s view remains that just setting out the scheme impacts, as Highways England has done, is not defining the in-combination impacts, and therefore Highways England has not carried out an in-combination assessment. It is not sufficient to say that the Do-something includes traffic from other plans and projects and therefore this represents the in-combination impact of the Scheme.</p> <p>The European Commission guidance makes clear that an appropriate assessment must identify in-combination effects. This is clear in the section <i>“What is meant by ‘appropriate assessment ...’</i>, in the quote from the Waddenzee rulling which says <i>“Such an assessment therefore implies that all the aspects of the plan or project which can, either individually or in combination with other plans or projects, affect those (conservation) objectives must be identified ...”</i> (emphasis in the original) (REP3-047, section 3.6.1, page 44).</p>
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<p>10HE Response at Deadline 2 (REP2-022)RHS Response3. Climate Change</p> <p>3.1.1 The changes in distances travelled to and from RHS Wisley with the Scheme are documented in the Transport Assessment Supplementary Information Report Appendix C</p>	<p>HE has now calculated the increased emissions that could arise from traffic accessing RHS Wisley to and from the south(their Table 3.1). The results show that the DSCO2emissions would be 4,064 t/yr higher than the DM if this traffic follows the signposted route along the A3. If the traffic were all to go through</p>	<p>The difference in CO2 emissions between the two routes is 639 tonnes per year. With the RHS Alternative Scheme emissions would be similar to those calculated through Ripley. As noted previously at 3.1.1 of REP2-022 this is considered to be a negligible amount.</p>	<p>The RHS response remains as set out in column 2 of the is document.</p>
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<p>(Volume 9.16 submitted to the Examining Authority at Deadline 2). The additional CO2 emissions from traffic arriving from the A3 to the south using the signposted route to travel to and from RHS Wisley in the opening year (2022) have been calculated and are provided in Table 3.1 below. The emissions for the Do-Minimum (DM) and Do-Something (DS) scenarios are taken from Table 5.13 in the Environmental Statement [APP-050]. The difference in emissions between the two routes in the opening year is expected to be 546 tonnes per year. This represents 0.04% of the total emissions with the Scheme in the opening year, which can be considered a negligible amount. The key driver to reducing CO2 emissions will be through national policy measures, such as the move to zero emission vehicles.</p>	<p>Ripley, this would be 639 t/yr lower (or 15.7% lower). The emissions would be expected to be lower still with the RHS Alternative Scheme (as the distances will be less than for the route through Ripley), thus the RHS Alternative Scheme would reduce the excess CO2emissions that the DCO Scheme would give rise to by more than 16%, which would be a significant reduction in the additional harmful emissions that arise with the DCO Scheme. This further illustrates the benefits of the RHS Alternative Scheme.</p>		
<p>4. Impacts on Air Quality in Ripley 4.1 RHS Traffic Through Ripley Not Assessed 4.1.1 The air quality assessment as presented in the ES (APP-050) is based on the data provided by the traffic model. The model assumes that with the Scheme, all traffic travelling to and from RHS Wisley from the south travels through Ripley rather than the longer signposted route via the A3 and</p>	<p>Accepted</p>	<p>No further comment is provided by Highways England.</p>	

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M25 junction 10. The results at the receptors in Ripley therefore already take this additional traffic into account.

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4.2 Other Concerns About Air Quality Assessment in Ripley Receptors in Ripley

4.2.1 It is usual practice to include worst-case receptors in an air quality assessment. As documented in paragraph 3.13 of the DMRB (HA207/07), areas likely to experience higher- than-average concentrations, such as junctions, should be identified. The closest residential receptor to the High Street/ Newark Lane junction was therefore included in the assessment.

HE has accepted that it had not addressed worst- case receptors in Ripley. Receptor R59 used in the ES to represent Ripley had a 2015 NO₂ concentration of 16.7 g/m³ (receptor R59 in Table 5.7.1 in APP- 080, page 34). Of the 6 receptors now used by HE to represent worst-case exposure in Ripley, 5 have concentrations above this value (see Table in 4.2.2 below).

Estimated concentrations at these other receptors are still below the annual mean nitrogen dioxide objective as would be expected.

Highways England has now provided properly verified and adjusted annual mean nitrogen dioxide concentrations for the worst-case receptors in Ripley. These are discussed in relation to the IAQM significance descriptors in the RHS response to question 2.3.7 in PD-010. The results show slight adverse impacts, with increases in concentration of up to 4.25%.

It is now accepted by the Government that there is no recognised safe level for exposure to nitrogen dioxide and effects will arise at concentrations below the objective, as is clear from the extract of guidance from Public Health England (see below). Thus, while the new results for Ripley do not exceed the objective, there will still be health effects attributable to nitrogen dioxide, which will be worsened by the increases in Ripley with the Highways England Scheme. The RHS Alternative Scheme will reduce these adverse effects on the health of residents of Ripley.

Extract from the website:

(<https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution>)

“The key air pollutants

Air pollution is a complex mix of particles and gases of both natural and human origin. Particulate matter (PM) and nitrogen dioxide (NO₂) are both major components of urban air pollution. Currently, there is no clear evidence of a safe level of exposure below which there is no risk of adverse health effects. Therefore, further reduction of PM or NO₂ concentrations below air quality standards is likely to bring additional health benefits.”

4.2.2 However, it is acknowledged that there are other receptors in Ripley which are closer to the kerb, although not in closer proximity to the junction. Nitrogen dioxide concentrations at residential receptors in the areas identified in REP1-041 along Newark Lane and High Street, have been modelled to determine the expected changes in annual mean nitrogen dioxide concentrations with the Scheme. These additional receptors are provided in Figure 4.1, and the results provided in Table 4.1. The largest change is expected to be a change of 0.9µg/m³, classified as a small increase, at a receptor on the High Street (R6).

Something is seriously wrong with the HE's modelling in Ripley. The modelled 2015 NO₂ concentrations, which are now all close to the edge of the road, are all less than 20 g/m³. The measured concentrations at two locations in Ripley in 2016 were 29 and 34 g/m³. The modelling is clearly grossly underestimating the concentrations. The model should be verified and adjusted against the monitoring data, which has not been done. If the model is underestimating, then this will also apply to the changes in concentrations with the DCO Scheme. This underestimation is probably by a factor of around 2. Thus, a change of 0.9 g/m³ with the Scheme (at R6) would become a change of 1.8 g/m³, which is a 4.5% increase (in relation to the objective of 40 g/m³). Very different from the 0.4 g/m³ or 1% increase shown for

Verification was undertaken at 58 monitoring sites within the study area, all of these sites had ratified data for 2015. Following adjustment, 57 out of 58 monitoring sites were within 25% of the modelled concentrations indicating acceptable model performance (para 5.5.21 of APP-050 and table 5.4.4 of APP-080). The verification did not take into consideration of the 2016 monitoring data in Ripley.

A local verification factor of 2.75 has now been derived for Ripley using the 2016 monitoring data, and the results for the receptors updated to assist the ExA. The estimated annual mean nitrogen dioxide concentrations, using the more conservative DF2 traffic data are provided below and show that concentrations at all receptors are below the national annual mean air quality objective, and that the largest change at a receptor is 1.7 µg/m³, classed as a small change. The change with DF3 traffic data would be smaller, as explained previously at 4.2.4 in REP2-022.

Estimated Nitrogen Dioxide Concentrations in Ripley, adjusted

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receptor R59 in the ES (Table 5.7.9 in APP-080, page 63). The new assessment of impacts in Ripley should not be relied upon by the ExA.

using local verification factor, $\mu\text{g}/\text{m}^3$

		Receptor ID	2015 Base	2022 DM	2022 DS	2022 Change	
		R59	33.4	27.1	27.9	+0.8	
		Additional Receptors in Ripley as documented in REP2-022					
		R1	30.6	24.5	25.3	+0.8	
		R2	36.3	29.6	30.3	+0.7	
		R3	34.3	27.7	28.8	+1.1	
		R4	36.3	29.5	30.7	+1.2	
		R5	37.6	31.3	33.0	+1.7	
		R6	37.7	31.5	33.1	+1.6	
<p>4.2.3 These changes are based on traffic data from design fix 2 (DF2) which as documented in paragraph 5.5.12 of APP-050 were used as the basis for the air quality assessment, given that DF2 traffic data would provide more conservative results than the revised DF3 data, as a result of the changes in traffic being generally larger with DF2 than with DF3.</p>	<p>Noted.</p>	N/A					
<p>4.2.4 The change in traffic through Ripley with DF3 is markedly lower, with an expected increase</p>	<p>Noted.</p>	N/A					

<p>in annual average daily traffic (AADT) through Ripley of 1073, compared to an increase in AADT of 2535 with DF2.</p> <p>4.2.5 With the revised DF3 traffic data, changes in pollutant concentrations at all receptors would therefore also be lower.</p>	<p>Noted.</p>	<p>N/A</p>	
<p>4.3 Presentation of Baseline Concentrations in Ripley</p> <p>4.3.1 As Guildford Borough Council only started monitoring nitrogen dioxide concentrations in Ripley in July 2016 at two kerbside locations, monitoring data in Ripley were not available to verify the modelled base year of 2015. Measured concentrations at these sites, RP1 and RP2, are provided in Table 5.6.1 of APP-080, and show that in 2016, concentrations were 34 µg/m³ and 29 µg/m³ respectively, below the annual mean nitrogen dioxide objective of 40 µg/m³.</p>	<p>See 4.2.2 above</p>	<p>See response to 4.2.2 above</p>	
<p>4.3.2 Even if the maximum change in nitrogen dioxide concentrations at a receptor in Ripley in the future opening year of 2022 (0.9 µg/m³ with DF2) was applied to the location of the monitored site with the highest concentrations (RP 1), a highly unrealistic situation, since concentrations would be lower both away from the road source, and in the future opening year as a result of policies to reduce emissions, the</p>	<p>See 4.2.2 above –the 0.9 µg/m³ is likely to be too low. It is possible that the objective will not be exceeded in Ripley (once the modelling is corrected), but there are still effects on health arising from exposure to NO₂ below the objective and these would be increased with the HE Scheme. The RHS Alternative Scheme, on the other hand, will reduce these adverse effects.</p>	<p>See response to 4.2.2 above</p>	

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total concentration would be 34.9 $\mu\text{g}/\text{m}^3$ which would still be below the objective of 40 $\mu\text{g}/\text{m}^3$. It is therefore considered highly unlikely that there is			
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<p>the risk of a significant adverse effect as a result of the Scheme at receptors in Ripley.</p>			
<p>4.4 Descriptors of Impacts 4.4.1 The air quality assessment was undertaken in accordance with the Highways England DMRB guidance (HA207/07) and relevant Interim Advice Notes (IANs), including IAN 174/13 which provides criteria for the magnitude of changes in pollutant concentrations, as documented in Table 5.3 of APP-050. There is no requirement whatsoever to use the IAQM descriptors of impacts provided in the IAQM planning guidance (available at https://iaqm.co.uk/text/guidance/airquality-planning-guidance.pdf), which clearly states at paragraph 1.4: "This guidance, of itself, can have no formal or legal status and is not intended to replace other guidance that does have this status. For example, for major new road schemes, Highways England has prepared a series of advice notes on assessing impacts and risk of non-compliance with limit values."</p>	<p>The views expressed by the Inspectors for the M4 Smart Motorway DCO are set out in Appendix A11 of REP1-041. This does not support the unequivocal use of the DMRB guidance for descriptors. If the Council was assessing the impacts of a local development on air quality in Ripley, it would expect the developer to use the IAQM descriptors of impacts, as these are recommended in the IAQM guidance for assessing planning applications. It is not clear why the same should not apply to a Highways England project, at least in addition results presented according to the DMRB guidance. (Note: DMRB guidance is now in LA 105 Air Quality, recently published by HE, but remains the same.). It is expected that there will be more impacts described as slight or moderate with the IAQM guidance, than is the case with the HE guidance. This would help the ExA have a more balanced view of the impacts of the DCO Scheme.</p>	<p>There is no reason to use the IAQM descriptors of impacts for reasons given in the earlier response (4.4.1 of REP2-022). The IAQM guidance is an advice document only, and does not have any legal status. To reiterate, as stated at paragraph 1.4 "This guidance, of itself, can have no formal or legal status and is not intended to replace other guidance that does have this status. For example, for major new road schemes, Highways England has prepared a series of advice notes on assessing impacts and risk of non-compliance with limit values". Paragraph 1.5 additionally states "This guidance document is particularly applicable to assessing the effect of changes in exposure of members of the public resulting from residential and mixed-use developments, especially those within urban areas where air quality is poorer."</p> <p>As this is a 'major new road scheme', it is wholly appropriate to use the descriptors provided in the Highways England guidance.</p> <p>It is for the ExA to make its own judgement regarding the use of descriptors for the assessment of air quality.</p> <p>Even with the use of the IAQM descriptors of impacts it is still necessary to form a judgement on the overall significance of the effect. The descriptors simply aid the process of determining the overall significance.</p>	<p>This is discussed further in the RHS response to question 2.3.7 in PD-010, where the IAQM descriptors are applied to the new concentrations in Ripley.</p>