

Lower Thames Crossing

9.198 Applicant's detailed response to comments made by Natural England on HRA matters

Infrastructure Planning (Examination
Procedure) Rules 2010

Volume 9

**DATE: December 2023
DEADLINE: 8**

Planning Inspectorate Scheme Ref: TR010032
Examination Document Ref: TR010032/EXAM/9.198

VERSION: 1.0

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1 Introduction

1.1 Purpose of this document

1.1.1 This document provides the response to the technical points raised by Natural England (NE) in their Deadline 5 submission [REP5-109] and supplements the points made within the National Highways' (the Applicant's) Deadline 6 submission [REP6-118] which provided a summary of the Applicant's position with regard to the issues raised by Natural England, to aid the Examining Authority (ExA) in drafting the Report on the Implications for European Sites (RIES) [PD-048].

Table 1.1 Applicant's response to comments made by Natural England at Deadline 5 [REP5-109] – Annex A

Natural England's comments / Section no.	Applicant's response
<p>Annex A: Response to the Applicant's Air Quality Technical Note and Without Prejudice Assessment In-combination methodology In-combination impacts within the traffic model Paragraphs 5 – 12</p>	<p>Following further discussion with Natural England on these comments, the Applicant has shared a technical note with Natural England regarding the precautionary nature of the in-combination assessment which was appended as Annex C.18 to the Statement of Common Ground (SoCG) at Deadline 7 [REP7-106].</p> <p>Subject to final review of the Assessment of air quality effects on European sites submitted at Deadline 8 (Document Reference 9.199). Natural England have indicated that the matter of the in-combination methodology within the SoCG would be moved to "Not Agreed". However, Natural England has also stated in the SoCG submitted at Deadline 8 [Document Reference 5.4.1.6 (5)] that disagreement on the in-combination methodology does not remove the potential to conclude no adverse effect on integrity at European sites. Natural England has indicated that conclusions of no adverse effect on the integrity of North Downs Woodlands Special Area of Conservation (SAC) and the Thames Estuary and Marshes Special Protection Area (SPA)/Ramsar site could be reached, subject to their final review of the Assessment of air quality effects on European sites submitted at Deadline 8 (Document Reference 9.199).. There remains a disagreement with Natural England on the conclusion of no adverse effects on Epping Forest SAC, but not on the basis of the traffic and in-combination methodology.</p> <p>The information within the technical note (Annex C.18) has also been incorporated into the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8.</p>

Natural England's comments / Section no.	Applicant's response
<p>Annex A: Inclusion of “non traffic” developments in the in-combination assessment Paragraphs 13 – 15</p>	<p>Having due regard to this advice from NE, the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 includes, at Appendix A, a table that lists all of the planning portals searched, search terms used and other “non traffic” plans/projects identified, as well as the rationale for scoping these in or out of the in-combination assessment.</p>
<p>Paragraph 16: It is recommended that NE's Impact Risk Zones are used to identify project types of differing sizes at different distances from protected sites. These could require a greater zone of search for some agricultural activities (such as livestock housing and slurry storage, or agricultural biomass combustion, depending on their size), than the distances identified in 3.5.10 of the WPA.</p>	<p>When completing the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 the Impact Risk Zones (IRZs) were reviewed for each of the European sites and this did not result in any different spatial zones being required other than those identified by the Environment Agency and used within the in-combination methodology.</p>
<p>Paragraph 17: Clarification would also be welcomed on how it was established which projects identified during the in-combination search were in the environmental baseline, and which were not. For example, assuming all identified projects constructed after mid-year 2020 (the midpoint of the current APIS baseline) were not already in the baseline.</p>	<p>This has been clarified in paragraph 3.4.24 of the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8.</p>

Natural England's comments / Section no.	Applicant's response
<p>Annex A: Assessment of NOx, NH3 and nitrogen deposition for each protected site Paragraphs 18 – 19</p>	<p>Having due regard to this advice from NE, the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 is no longer a “without prejudice” assessment.</p> <p>The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 considers the effects on the European sites of all pollutants and concludes that there are no adverse effects on the integrity of those sites which is evidenced accordingly. As set out in paragraph 2.1.5 (of the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8) the assessment replaces all of the sections in the Habitats Regulations Assessment – Screening Report and Statement to Inform an Appropriate Assessment [APP-487] relating to the methodology and assessment of effects of changes in air quality as a result of vehicle emissions and is available to the Secretary of State, as the competent authority, to complete the appropriate assessment in accordance with Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended).</p>
<p>Annex A: Methodology – Likely Significant Effects Paragraphs 20 – 21</p>	<p>The Applicant welcomes the comment that the methodology is broadly acceptable.</p> <p>The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE.</p>
<p>Annex A: Methodology – Critical levels for ammonia Paragraphs 22 – 23</p>	<p>The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE and uses the critical levels as advised.</p>
<p>Annex A: Methodology – Critical loads for nitrogen deposition Paragraphs 24 – 28</p>	<p>The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE and uses the 2022 versions of the critical loads.</p>
<p>Annex A: Methodology – Assessment of Effect on Integrity/ Appropriate Assessment methodology Paragraphs 29 – 32</p>	<p>The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE.</p>

Natural England's comments / Section no.	Applicant's response
Annex A: Relevant habitat types Paragraphs 33 – 37	The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE.
Annex A: Assessment of Thames Estuary and Marshes Ramsar site and SPA Screening/ LSE Paragraphs 38 – 42	The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE. The Applicant has concluded that a likely significant effect (LSE) cannot be excluded in relation to the Thames Estuary and Marshes Ramsar site as a result of the Project alone or in-combination with other plans or projects.
Annex A: Assessment of Thames Estuary and Marshes Ramsar site and SPA Appropriate assessment Paragraphs 43 – 50	The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE. The Applicant has concluded that there would be no adverse effects on the Thames Estuary and Marshes Ramsar site as a result of the Project alone or in-combination with other plans or projects.
Annex A: Assessment of Epping Forest SAC Screening/ LSE Paragraphs 51 – 52	The Applicant welcomes Natural England's agreement with the conclusion of "LSE cannot be excluded" in relation to Epping Forest SAC.
Annex A: Assessment of Epping Forest SAC Screening/ LSE Appropriate Assessment Paragraphs 53 – 58	The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE. The Applicant has concluded that there would be no adverse effects on Epping Forest SAC as a result of the Project alone or in-combination with other plans or projects.
Annex A: Assessment of North Downs Woodlands SAC Screening/ LSE Paragraphs 59 – 62	The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE. The Applicant has concluded that LSE cannot be excluded in relation to North Downs Woodlands SAC as a result of the Project alone or in-combination with other plans or projects.

Natural England's comments / Section no.	Applicant's response
<p>Annex A: Assessment of North Downs Woodlands SAC Appropriate assessment Paragraphs 63 – 69</p>	<p>The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE. The Applicant has concluded that there would be no adverse effects on North Downs Woodlands SAC as a result of the Project alone or in-combination with other plans or projects.</p>
<p>Annex A: Mitigation Paragraph 70: Without prejudice mitigation (a 4-year speed limit in place on the M25) has been identified for Epping Forest SAC by the Applicant. This would reduce impacts “at source” caused by the proposed development, so pollution would be reduced despite uncertainty over the spatial extent of impacts. However, the AA has been undertaken without this mitigation in place. Please see our further comments on mitigation at ExAQ11.11.1 below. Paragraph 71: Natural England considers that AEOI cannot be excluded for NOx, NH3 or Ndep at Epping Forest SAC without mitigation being in place.</p>	<p>The Applicant maintains its position, as set out in the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8, that there would be no adverse effects on Epping Forest SAC as a result of the Project alone or in-combination with other plans or projects. Therefore, no mitigation is required.</p>
<p>Paragraph 72: No mitigation has been developed for impacts at North Downs Woodlands SAC or Thames Estuary & Marshes SPA / Ramsar. It is not possible to indicate at present which pollutants could cause an AEOI at these sites (and therefore any mitigation that would be appropriate) as AA has not been undertaken for all pollutants, the in-combination assessment does not fully represent potential in-combination impacts (from traffic and non-road developments) and the full spatial extent of impact at the sites is not determined. As indicated in the relevant sections above, however, it is possible that the modelled pollution at both sites would not result in AEOI, and therefore not require mitigation.</p>	<p>The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE. Given that the Applicant has modelled all of the pollutants in accordance with advice from NE, the disagreement appears to relate to the interpretation of the results rather than the conclusions, given the last sentence in paragraph 72. Therefore, the Applicant contends that the competent authority has the necessary information required to complete their appropriate assessment and that the disagreement is not material to the consenting of the Project.</p>

Table 1.2 Applicant's response to comments made by Natural England at Deadline 5 [REP5-109] – Annex C

<p>NE comments</p> <p>Annex C: Q4.1.15 Modelled Traffic Effects: Lower Thames Area Model and Future Development Proposals</p> <p>The applicant's response to this question, and Q4.1.11 does not address Natural England's concerns that traffic assumed in the model informing the Habitats Regulations Assessment meets the "no reasonable scientific doubt" requirements of the Habitats Regulations to exclude adverse effects on integrity. It is not clear that the core scenario included in the applicant's model represents the worst-case scenario - due to the level of "uncertainty" that limits what can be included in the core scenario. A precautionary approach (appropriate for HRA) would include development that is foreseeable but not necessarily with that same level of certainty. Inclusion of a national high traffic growth assumption to compensate for exclusion of e.g. local plan allocations is not sufficiently locally relevant.</p>
<p>Applicant's response</p> <p>Following further discussion with Natural England on these comments, the Applicant has shared a technical note with Natural England regarding the precautionary nature of the in-combination assessment which was appended as Annex C.18 to the SoCG at Deadline 7 [REP7-106].</p> <p>This has resulted in Natural England moving the matter of the in-combination methodology within the SoCG to "Not Agreed". However, Natural England has also stated in the SoCG submitted at Deadline 8 [Document Reference 5.4.1.6 (5)] that disagreement on the in-combination methodology does not remove the potential to conclude no adverse effect on integrity at European sites. Conclusions of no adverse effect on the integrity of North Downs Woodlands SAC and the Thames Estuary and Marshes SPA/Ramsar site have been moved to agreed matters as set out within the SoCG at Deadline 8. There remains a disagreement with Natural England on the conclusion of no adverse effects on Epping Forest SAC, but not on the basis of the traffic and in-combination methodology.</p> <p>The information within the technical note has also been incorporated into the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8.</p>
<p>NE comments</p> <p>Annex C: Q5.2.1 Air quality – effects on designated sites</p> <p>As outlined in Natural England's response to this question, we have no concerns with the use of the APIS background, though would expect the most recent background to be used (2019-2021 rather than 2017-2019).</p>

Applicant's response

The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE and uses the most recent backgrounds where it has been necessary to do so and also provides explanation for the use of base year and the 2017-2019 backgrounds where required. .

NE comments

Annex C: Q5.2.4 Nitrogen Deposition

Natural England is aware of the applicant's NH₃ model, and that it has been peer reviewed by IAQM. We accept its use in the assessment; however, we have concerns with the assumptions used around NH₃ emissions from vehicles travelling at reduced speed which is not listed in the factors used to calculate emissions/ ratios of NO_x to NH₃ (listed as the year being assessed, dominant road type, various vehicle types (e.g., diesel cars, petrol cars, Heavy Goods Vehicles) – but not including speed). This is outlined in our response on the speed limit mitigation (Q11.11.1, below). In response to 5.2.4b (on the nitrogen deposition sites) – we acknowledge that the Applicant accepts that the proposed development would adversely affect SSSIs and local nature sites (including ancient woodland and veteran trees) as a result of air quality impacts. This considered the impact of Ndep only – not NH₃ or NO_x. Natural England does not endorse the impact on SSSIs/ local nature sites as a result of Ndep and considers the matter agreed that the proposed development will adversely affect these sites. Our position is outlined in our SOCG issue 2.1.62, 2.1.64 and 2.1.98 (Examination Document REP2-008).

Applicant's response

The Applicant has no further comments to make.

NE comments

Annex C: Q5.2.5 Modelling NO₂

Natural England notes that the impact on Shorne and Ashenbank Woods SSSI as a result of applying the revised verification factor would remain as major adverse, and a significant effect. It is likely that a greater area of the SSSI would be affected by Ndep as a result of the increased road emissions, though the applicant's methodology has not assessed any area further than 200m from the road. Compensation for nitrogen deposition based on the earlier assessment has been provided by the applicant.

Applicant's response

The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE and in paragraphs 3.2.2 to 3.2.3 sets out why the 200m distance is appropriate for assessing the effects of Ndep.

NE comments

Annex C: Q5.2.6 Assessment

Construction impacts to the Thames Estuary and Marshes SPA / Ramsar site are considered in the Applicant's "Without Prejudice assessment". This identifies exceedances of the critical level of NOx (30µg/m3) during the construction period (alone and in combination). In addition, the (2022) lower critical load for Ndep for the identified relevant habitat type would be exceeded (although the assessment applies the 2011 critical load which is not exceeded). This does not necessarily imply there will be an adverse effect on site integrity – or that the conservation objectives would be undermined. Natural England's comments on the "Without Prejudice" assessment are outlined at Annex A of this response at Deadline 5.

Applicant's response

The Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 has due regard to this advice from NE and uses the 2022 versions of the critical loads.

NE comments

Annex C: Q5.2.8 Additional Monitoring Sites

As outlined under our response to Q11.11.1, it is required that ammonia and NOx monitoring (and calculation of Ndep) at Epping Forest SAC is undertaken, with results to be shared with Natural England. This would be in accordance with a monitoring plan, to be agreed with Natural England, for an initial period of four years of LTC operation, with pre-operation monitoring also undertaken for at least 1 year prior to commencement of construction. This monitoring plan would ensure that the speed limit mitigation reduces nitrogen deposition and NOx and ammonia concentrations, and that levels of the three pollutants at year 4 are no higher than the pre-operational values. If this is not demonstrated for any of the pollutants, the speed limit mitigation would require to remain in place until the emissions reduce to levels at opening year ("Do-minimum" scenario). Monitoring with a corrective feedback mechanism to ensure the mitigation identified is certain will need to be secured through an appropriately worded REAC commitment. Natural England is happy to work with the Applicant on appropriate wording.

Applicant's response

The Applicant maintains its position, set out in the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8, that there would be no adverse effects on Epping Forest SAC as a result of the Project alone or in-combination with other plans or projects. Therefore, no mitigation is required.

The Applicant considers that monitoring of the speed limit (if the without prejudice mitigation measure were to be implemented) would not be necessary as it is beyond *reasonable* scientific doubt that the measure would be effective and that monitoring changes in NH₃ or other pollutants would not add any more certainty in the efficacy of the measure due to the inevitable uncertainty of determining the contribution of the speed limit to any change in pollutants identified within the context of the large variability in pollutant levels caused, for example, by traffic volumes and weather conditions.

NE comments

Annex C: Q11.9.8 In-combination Assessment Methodology

The HRA Report [APP-487] states that it considered the list of plans and projects within ES Chapter 16: Cumulative Effects for the purposes of the in-combination assessment but notes that this was “amended for the HRA to ensure compliance” with that process. Several IPs have raised concerns in relation to the methodology for the selection of projects for the in-combination assessment and the ExA notes that there is ongoing discussion with NE in relation to the data used for traffic modelling. • please can the Applicant provide a list of the other plans and projects that were considered in the HRA in-combination assessment; • please can NE and relevant IPs confirm if they are satisfied that the in-combination assessment correctly identifies other plans and projects that could potentially contribute to in-combination effects; and • please can NE and the Applicant provide an update on resolving the queries around the traffic modelling data used for the in-combination assessment?

In our Deadline 4 response, Natural England advised that we would provide a more detailed response to this question. Below is our response to this question, followed by a response to the Applicant's response to the question. Natural England's Answer to Q11.9.8 Natural England has previously raised concerns with the in-combination methodology. We do not consider that the assessment identifies all relevant “traffic generating plans/projects” (for example, local plan allocations) or “non-road plans/ projects” (for example, agricultural developments in the vicinity of the identified Habitats Sites). The applicant has outlined further details around their traffic modelling data in their 30 June Technical Note (TN). Natural England accepts that: 1) the assessment takes account of a degree of in-combination (traffic) growth in the LTAM and future forecast growth, and that 2) use of an opening year of 2030 and a “design year” of 2045 allows establishment of the duration of impacts across the designated sites. Therefore, some additional projects that are predicted to come “online” between 2030 and 2045 are partly included in the assessment, and that 3) some non-road in-combination projects are considered in the HRA: 4 for Thames Estuary and Marshes Ramsar site (Tilbury 2 Port, and 3 gas fired power plants) and one at Epping Forest SAC (an NSIP Heat & Power Project). None were identified for North Downs Woodland SAC. It is agreed that these projects would be likely to have substantial air quality impacts (especially NOx impacts) due to their size, nature and proximity to the relevant protected sites. However, Natural England still has concerns that: 4) the in-combination numbers do not include traffic from developments that would go forward without the requirement for LTC to be constructed - but are not in the current (APIS 2019-2021 or base year 2016) baseline. These projects are included in the “future baseline” (i.e. what would happen in 2030 without LTC) but have not been assessed in terms of their in-combination impacts on the protected sites, and that 5) the applicant has not undertaken modelling of alternative scenarios including local plan allocations, even though it is suggested as an option in the DfT TAG guidance (TAG criteria as set out in Table A2 of Appendix A in Unit M4 Forecasting and Uncertainty which sets out when certain types of local developments should be included in the transport modelling). Inclusion of local plan allocations, regardless whether they have planning consent or are in the planning system, is important to establish a precautionary level of potential future in-combination traffic. This allows appropriate assessment to be undertaken with “... no reasonable scientific doubt” (as required by Waddenzee (C-127/02) 2002), and that 6) including developments without current or foreseen consent within “local growth factors” does not appear to recognise the local importance of defined local plan allocations - especially if the growth factors are based on national data for traffic growth. It is not clear if, for example, the local growth factors reflect potentially greater-than national-average predicted growth in the south-east where it is probable that extensive economic growth will occur, and that 7) it is not clear whether the assessment is made against the “worst case” impact (whether this is the opening year 2030 or the design year of 2045 or some intermediate year), which is a requirement under the HRA. Clarification on this would be welcome, and finally that 8) it is not clear how the non-road developments were identified or others screened out. For example, no list

of which LPA planning portals were searched, which key words were used to search planning portals/ permit registers, or what criteria were used to exclude planning applications from further consideration is provided. In particular, it is not clear if any agricultural developments were identified, and if so, why they were excluded from further assessment.

Natural England's Response to the Applicant's Response • Natural England has concerns with the list of non-road in combination projects identified, in that it does not include agricultural developments which could have a locally important impact on Ndep and ammonia concentrations at the relevant sites. We also have concerns with the data used in the road traffic in-combination assessment, which is outlined in our comments on the Applicant's 'Without Prejudice' assessment in Annex A above in this Deadline 5 response

Applicant's response

Following further discussion with Natural England on these comments, the Applicant has shared a technical note with Natural England regarding the precautionary nature of the in-combination assessment which was appended as Annex C.18 to the SoCG at Deadline 7 [\[REP7-106\]](#).

This has resulted in Natural England moving the matter of the in-combination methodology within the SoCG to "Not Agreed". However, Natural England have also stated in the SoCG submitted at Deadline 8 **[Document Reference 5.4.1.6 (5)]** that disagreement on the in-combination methodology does not remove the potential to conclude no adverse effect on integrity at European sites. Conclusions of no adverse effect on the integrity of North Downs Woodlands SAC and the Thames Estuary and Marshes SPA/Ramsar site have been moved to agreed matters within the SoCG at Deadline 8. There remains a disagreement with Natural England on the conclusion of no adverse effects on Epping Forest SAC, but not on the basis of the traffic and in-combination methodology.

The information within the technical note has also been incorporated into the Assessment of air quality effects on European sites following Natural England advice **[Document Reference 9.199]** submitted at Deadline 8.

NE comments

Annex C: Q11.11.1 Air Quality and M25 Junctions 26-27 Speed Limit

It is noted that the reduction in speed limit between M25 Junctions 26 and 27 is only suggested to take effect for a duration of four years from the year of opening of the Proposed Development. What confidence does the Applicant have that the speed limit would only be required for four years and has this measure been agreed with Natural England? In our Deadline 4 response, Natural England advised that we would provide a more detailed response to this question. Below is our response to this question, followed by a response to the Applicant's response to the question.

Natural England's Answer to Q11.11.1 The modelling provided by the applicant indicated that at the opening year, the proposed development would result in an additional pollution loading (NOx and resulting Ndep) to the Epping Forest SAC that would not occur were the development not to go ahead (the "do minimum" scenario). The predicted NOx emissions from the proposed development would decline from 2030-2045, corresponding to predicted changes in the vehicle fleet and improved emission factors. By 2034, the NOx emissions associated with LTC would have declined to the emissions associated with the "do minimum" scenario at opening year. Therefore, the proposed development can be considered to "delay" the predicted decline in NOx emissions (and associated Ndep) by 4 years, and so potentially delay any associated ecological recovery in order to meet the conservation objectives. Natural England therefore agreed the 4-year mitigation would be acceptable. It should be noted that evidence for a similar delay in NH3 emission reduction has not yet been provided, following from evidence provided within the "without prejudice assessment" that this pollutant would exceed 1% of its relevant critical level over the vast majority of the SAC within 200m of the road, at the opening year. Natural England accepts that an increase in electric vehicles will reduce NH3 - but not that such a change will necessarily occur to the necessary extent in the operational timescale of LTC, or that it would decline to the "do minimum" emission level within 4 years, without further evidence.

Natural England's Response to the Applicant's Response

Natural England has reviewed the Applicant's response to ExAQ 11.11.1 and we advise that this doesn't change our response to the question. We are content that from the point of view that Ndep arising from NOx would decline alongside NOx – so 4 years is acceptable as far as NOx is concerned. However, it should be noted that:

- Ammonia concentrations associated with the road were only calculated by the applicant at Deadline 2 in the Applicant's 'Without Prejudice' assessment. They exceed 1% of the ammonia critical level at all points in the Epping Forest SAC within 200m from the road. This information was not available to Natural England at the time we agreed with the Applicant that: a) that a speed limit that would reduce NOx emissions from the scheme to the same as the do minimum scenario (without the mitigation) was acceptable mitigation or b) that 4 years of this mitigation would be acceptable.
- It is accepted that ammonia emissions will decline as NOx emissions decline. However, it is unclear that they will decline at the same rate. Therefore, it is unclear if ammonia from the scheme will decline to ammonia emissions at opening year in the "do minimum" scenario (i.e. were LTC not to go ahead) within 4 years – and also if the ammonia contribution to Ndep will do the same within 4 years.
- It is accepted that the Applicant's model calculates ammonia as a ratio of NOx, and so therefore if NOx emissions from the mitigated scheme are zero (the same as the "do minimum" scenario) ammonia emissions will also be zero. However, it is unclear if this is the case in real life – that vehicles travelling at 60mph emit less ammonia and less NOx in the same proportions than vehicles travelling at 70mph. Therefore, it is not clear if the ammonia emissions from the mitigated scheme will be reduced to the same as the "do minimum" scenario.

- The calculation of predicted decline of NOx over time was based on the fleet composition assuming petrol/diesel cars would be phased out from 2030 in favour of electric vehicles. The Prime Minister's recent statement (21st September 2023) indicating that these vehicles will be permitted to be sold until 2035 is considered likely to change that fleet composition. A greater proportion of the fleet is expected to emit ammonia and NOx in 2030 onwards than if only electric cars could be sold after 2030. Uncertainty is therefore introduced that the NOx levels of both the scheme and the do minimum scenario will decline at the rate predicted. It is thus unclear if NOx emissions from the unmitigated scheme would decline to those from the "do minimum" opening year within 4 years, or whether having more NOx emitting vehicles in both fleets would mean it could take longer, so mitigation could be required for longer. It is also unclear if ammonia emissions would drop similarly.
- To address some of these areas of uncertainty over the identified (without prejudice) mitigation, it is suggested that ammonia and NOx monitoring (and calculation of Ndep) at Epping Forest SAC is undertaken, with results to be shared with Natural England. This would be in accordance with a monitoring plan, to be agreed with Natural England, for an initial period of four years of operation, with pre-operation monitoring also undertaken for at least 1 year prior to commencement of construction. This monitoring plan would ensure that the speed limit mitigation reduces nitrogen deposition and NOx and ammonia concentrations, and that levels of the three pollutants at year 4 are no higher than the pre-operational values. If this is not demonstrated for any of the pollutants, the speed limit mitigation would be required to remain in place. We note the applicant's insistence in its answer to ExAQ11.11.1 that the speed limit mitigation is not required – for 4 years or any period of time. This is because they have excluded the potential for adverse effects on integrity on Epping Forest SAC from the unmitigated scheme as a result of NOx and Ndep (and also, in their without prejudice assessment, as a result of ammonia concentrations). This is due to the small area of the site affected and the lack of N-sensitive species in the affected area. Natural England does not agree with this conclusion, because the project undermines the conservation objective to restore the site below critical levels of NOx, NH3 and critical load of Ndep, and would delay any benefit to the site of improvements in the vehicle fleet. With respect to the monitoring of ammonia, Natural England understands that this has taken place for other roads projects. We are aware of two projects: New Forest Local Plan and Shrewsbury Northwest Relief Road. The Shrewsbury scheme is not yet consented, and so the monitoring was undertaken by the applicant's consultants to gain a better understanding of potential ammonia emissions from their (new) road and therefore the extent of ammonia that would need to be mitigated for in their proposed mitigation. For that project, Natural England has advised the Local Planning Authority that a "mitigation and monitoring scheme" be enforced as a condition of consent or a s106 is required (as appropriate), which will include air quality monitoring (and vegetation monitoring) to investigate the amount of air pollution emitted by the new road and the amount that is being reduced by the mitigation scheme. Thus, this is consistent with our advice above for the Lower Thames Crossing NSIP project. The New Forest Local Plan monitoring was to assess whether nitrogen deposition, acid deposition and levels of nitrogen oxides (NOx) and ammonia from traffic emissions associated with two local plans (New Forest District Council Development Plan and New Forest National Park Authority Local Plan) are having an adverse effect on the integrity of the New Forest SAC, SPA and Ramsar site. There was uncertainty over the potential for in-combination traffic growth, and so commitments were placed in both local plans to monitor and, if necessary, mitigate adverse air quality effects on the New Forest during the Local Plan period. Monitoring would be undertaken every three years over a seven-year period starting in 2021, with further surveys planned in 2024 and 2027, and possible extension for a further two survey events in 2030 and 2033. On this basis, the Habitats Regulations Assessments (HRAs) undertaken for each of the Local Plans were able to conclude that there would be no adverse effects on the integrity of any European sites. Thus this case is also consistent with our advice above for the Lower Thames Crossing NSIP project. Monitoring with a corrective feedback mechanism to ensure the mitigation identified is certain will need to be secured through an appropriately worded REAC commitment. Natural England is happy to work with the Applicant on appropriate wording.

Applicant's response

The Applicant maintains its position in the Assessment of air quality effects on European sites following Natural England advice [**Document Reference 9.199**] submitted at Deadline 8 that there would be no adverse effects on Epping Forest SAC as a result of the Project alone or in combination with other plans or projects. Therefore, no mitigation is required.

Response to NE responses on Applicants answer to 11.11.1

Response to point 2 and point 3

The NO_x to NH₃ ratios developed by National Highways as part of its tool to support scheme assessments is based on the latest emissions evidence that could be obtained following literature reviews of NH₃ vehicle emissions and also vehicle emission monitoring undertaken by National Highways. This included NH₃ emissions across different speeds. The relationship, therefore, between NO_x and NH₃ is based on the best available evidence at this time.

Response to Point 4

The Applicant has provided a response as part of the Responses to the Examining Authority's ExQ2 Appendix C: 5. Air Quality [**REP6-109**] (see ExQ2_Q5.1.1) to reiterate the fleet mix assumptions within EFTv11 are based on the Department for Transport's TAG Data Book sheet A1.3.9 version 1.17. The TAG Data Book sheet A1.3.9 and EFTv11 does not take account of the government's previous policy of ending the sale of petrol and diesel cars by 2030 and therefore the Applicant's air quality assessment presented in Environmental Statement Chapter 5 [**APP-143**] is not impacted by the recent policy change, delaying the phase out date to 2035. This includes the assessment of the four-year delay.

Response to point 5

The Applicant considers that monitoring of the effects of the speed limit (if the without prejudice mitigation measure were to be implemented) through the monitoring of NO_x and NH₃ would not be feasible, particularly for NH₃ where the maximum change in NH₃ as a result of the Project is 0.09µg/m³. This level of change in NH₃ could not be measured with any certainty even with an automatic NH₃ analyser, particularly when the background NH₃ concentrations also fluctuate to a greater extent than the change predicted as a result of the Project. This is illustrated in the APIS NH₃ trend data for Epping Forest, which is shown to fluctuate at levels similar to what the Project is predicting at the maximum point of impact. The maximum change in NO_x as a result of the Project is 1.7µg/m³ and as with NH₃ the trends in NO_x on APIS in terms of inter-year variation concentrations can be greater than the change predicted as a result of the Project.

This is the reason why the Applicant considers that monitoring changes in NH₃ or other pollutants would not add any more certainty in the efficacy of the measure due to the inevitable uncertainty of determining the contribution of the speed limit to any change in pollutants identified within the context of the large variability in pollutant levels caused, for example, by traffic volumes and meteorological effects, as recorded in the APIS background trends.

NE comments

Q11.11.3 Air Quality and M25 Junctions 26-27 Speed Limit (asked to the Applicant)

Natural England still requires that mitigation be in place to ensure the integrity of Epping Forest SAC – as outlined in our response to Q11.11.1. Further information is provided in our response to the Applicant's 'Without Prejudice' assessment, at Annex A to this Deadline 5 response.

Applicant's response

The Applicant maintains its position in the Assessment of air quality effects on European sites following Natural England advice [Document Reference 9.199] submitted at Deadline 8 that there would be no adverse effects on Epping Forest SAC as a result of the Project alone or in combination with other plans or projects. Therefore, no mitigation is required.

Glossary

Term	Abbreviation	Explanation
A122		The new A122 trunk road to be constructed as part of the Lower Thames Crossing project, including links, as defined in Part 2, Schedule 5 (Classification of Roads) in the draft DCO (Application Document 3.1)
A122 Lower Thames Crossing	Project	A proposed new crossing of the Thames Estuary linking the county of Kent with the county of Essex, at or east of the existing Dartford Crossing.
A122 Lower Thames Crossing/M25 junction		New junction with north-facing slip roads on the M25 between M25 junctions 29 and 30, near North Ockendon.
A13/A1089/A122 Lower Thames Crossing junction		Alteration of the existing junction between the A13 and the A1089, and construction of a new junction between the A122 Lower Thames Crossing and the A13 and A1089, comprising the following link roads: <ul style="list-style-type: none"> • Improved A13 westbound to A122 Lower Thames Crossing southbound • Improved A13 westbound to A122 Lower Thames Crossing northbound • Improved A13 westbound to A1089 southbound • A122 Lower Thames Crossing southbound to improved A13 eastbound and Orsett Cock roundabout • A122 Lower Thames Crossing northbound to improved A13 eastbound and Orsett Cock roundabout • Orsett Cock roundabout to the improved A13 westbound • Improved A13 eastbound to Orsett Cock roundabout • Improved A1089 northbound to A122 Lower Thames Crossing northbound • Improved A1089 northbound to A122 Lower Thames Crossing southbound
A2		A major road in south-east England, connecting London with the English Channel port of Dover in Kent.
Application Document		In the context of the Project, a document submitted to the Planning Inspectorate as part of the application for development consent.
Construction		Activity on and/or offsite required to implement the Project. The construction phase is considered to commence with the first activity on site (e.g. creation of site access), and ends with demobilisation.
Design Manual for Roads and Bridges	DMRB	A comprehensive manual containing requirements, advice and other published documents relating to works on motorway and all-purpose trunk roads for which one of the Overseeing Organisations (National Highways, Transport Scotland, the Welsh Government or the Department for Regional Development (Northern Ireland)) is highway authority. For the A122 Lower Thames Crossing the Overseeing Organisation is National Highways.
Development Consent Order	DCO	Means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects (NSIP) under the Planning Act 2008.

Term	Abbreviation	Explanation
Development Consent Order application	DCO application	The Project Application Documents, collectively known as the ‘DCO application’.
Environmental Statement	ES	A document produced to support an application for development consent that is subject to Environmental Impact Assessment (EIA), which sets out the likely impacts on the environment arising from the proposed development.
Highways England		Former name of National Highways.
M2 junction 1		The M2 will be widened from three lanes to four in both directions through M2 junction 1.
M2/A2/Lower Thames Crossing junction		New junction proposed as part of the Project to the east of Gravesend between the A2 and the new A122 Lower Thames Crossing with connections to the M2.
M25 junction 29		Improvement works to M25 junction 29 and to the M25 north of junction 29. The M25 through junction 29 will be widened from three lanes to four in both directions with hard shoulders.
National Highways		A UK government-owned company with responsibility for managing the motorways and major roads in England. Formerly known as Highways England.
National Planning Policy Framework	NPPF	A framework published in March 2012 by the UK’s Department of Communities and Local Government, consolidating previously issued documents called Planning Policy Statements (PPS) and Planning Practice Guidance Notes (PPG) for use in England. The NPPF was updated in February 2019 and again in July 2021 by the Ministry of Housing, Communities and Local Government.
National Policy Statement	NPS	Set out UK government policy on different types of national infrastructure development, including energy, transport, water and waste. There are 12 NPS, providing the framework within which Examining Authorities make their recommendations to the Secretary of State.
National Policy Statement for National Networks	NPSNN	Sets out the need for, and Government’s policies to deliver, development of Nationally Significant Infrastructure Projects (NSIPs) on the national road and rail networks in England. It provides planning guidance for promoters of NSIPs on the road and rail networks, and the basis for the examination by the Examining Authority and decisions by the Secretary of State.
Nationally Significant Infrastructure Project	NSIP	Major infrastructure developments in England and Wales, such as proposals for power plants, large renewable energy projects, new airports and airport extensions, major road projects etc that require a development consent under the Planning Act 2008.
North Portal		The North Portal (northern tunnel entrance) would be located to the west of East Tilbury. Emergency access and vehicle turn-around facilities would be provided at the tunnel portal. The tunnel portal structures would accommodate service buildings for control operations, mechanical and electrical equipment, drainage and maintenance operations.
Operation		Describes the operational phase of a completed development and is considered to commence at the end of the construction phase, after demobilisation.

Term	Abbreviation	Explanation
Order Limits		The outermost extent of the Project, indicated on the Plans by a red line. This is the Limit of Land to be Acquired or Used (LLAU) by the Project. This is the area in which the DCO would apply.
Planning Act 2008		The primary legislation that establishes the legal framework for applying for, examining and determining Development Consent Order applications for Nationally Significant Infrastructure Projects.
Project road		The new A122 trunk road, the improved A2 trunk road, and the improved M25 and M2 special roads, as defined in Parts 1 and 2, Schedule 5 (Classification of Roads) in the draft DCO (Application Document 3.1).
Project route		The horizontal and vertical alignment taken by the Project road.
South Portal		The South Portal of the Project (southern tunnel entrance) would be located to the south-east of the village of Chalk. Emergency access and vehicle turn-around facilities would be provided at the tunnel portal. The tunnel portal structures would accommodate service buildings for control operations, mechanical and electrical equipment, drainage and maintenance operations.
The tunnel		Proposed 4.25km (2.5 miles) road tunnel beneath the River Thames, comprising two bores, one for northbound traffic and one for southbound traffic. Cross-passages connecting each bore would be provided for emergency incident response and tunnel user evacuation. Tunnel portal structures would accommodate service buildings for control operations, mechanical and electrical equipment, drainage and maintenance operations. Emergency access and vehicle turn-around facilities would also be provided at the tunnel portals.

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Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ

National Highways Limited registered in England and Wales number 09346363