Lower Thames Crossing

9.89 Responses to the Examining Authority's ExQ1 Appendix C – 5. Air Quality

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1.1 Introduction

1.1.1 This document has been prepared by the Applicant to set out its responses to the Examining Authority's (ExA's) first round of written questions [PD-029]

1.1.2 These can be found in Tables set out under the following headings:

a. Climate Change and carbon emissions (found in Appendix A)

b. Consideration of alternatives (Found in Appendix A)

c. Traffic and transportation (Found in Appendix B)

d. Air quality (Found in Appendix C)

e. Geology and soils (Found in Appendix D)

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h. Road Drainage, water environment and flooding (Found in Appendix F)

i. Biodiversity (Found in Appendix G)

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k. Social, economic and land-use considerations (Found in Appendix I)

l. Draft Development Consent Order, planning obligations, agreements and adequacy of security (Found in Appendix J)

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n. General overarching questions (Found in Appendix J)

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ExQ1_Q5.1.1	N/A	**Baseline** Can the Applicant explain why they consider 2016 as a base year remains representative for the air quality assessment? Has this base year been agreed with stakeholders?
		Response: The base year of the air quality assessment is determined by the base year of the Project's transport model, which is 2016. The development of the Project's base model is set out in Combined Modelling and Appraisal Report Appendix B: Transport Model Package [**APP-520**], with Section 3.3 providing detail of how the model year (and month) were selected. The guidance[1] on developing a traffic baseline requires that the data used should be appropriate. The Applicant has reviewed the information and confirmed that the traffic flows in 2016 are appropriate for use as a baseline for the transport model, on the basis that there have been no fundamental changes to the road network, or other local or national conditions that would have led to the data becoming unrepresentative. It should be recognised that this is simply a baseline for the purpose of ensuring that the model is representative; all of the assessments are based on a future forecast of the opening year, created following the guidance on creating such a forecast. Notwithstanding this, the most recent year of complete data before the COVID-19 pandemic would be 2019. It would not be standard practice to update a base model within three years unless there was consideration that something significant had changed that would change the level/pattern of demand, and the Applicant considers that nothing took place in that interval that would be relevant. To validate an air quality model, the base year from the traffic model is required. It is not unusual particularly on large projects that the base year is a number of years behind the current year. To ensure that the air quality modelling is robust the Applicant has gathered monitoring data from a number of sources including Project-specific monitoring data and data collected by the local authorities. Data collected by the Project and local authorities often span different

[1] Department for Transport (2020). Transport Analysis Guidance, Unit M2.2 Base Year Demand Matrix Development, Paragraph 4.4.4. Accessed August 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938859/tag-m2-2-base-year-matrix.pdf

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		years to the base year and therefore the monitoring is adjusted so that it is representative of 2016. This is called annualisation of monitoring data and is described in ES Appendix 5.1: Air Quality Methodology [**APP-345**]. As described in paragraphs 5.3.156 and 5.3.157 of ES Chapter 5: Air Quality [**APP-143**], the base year air quality model has been verified against 241 roadside air quality monitoring sites in line with best practice as set out in LAQM.TG22[2], which involves comparing modelled and monitored pollutant concentrations and, when required, adjusting the model output to account for systematic bias. Following the verification process, an overall Root Mean Square Error value of 5.8µg/m^3 was derived for the Project air quality model, which is well within the LAQM.TG22[–] recommended Root Mean Square Error value of 10µg/m^3, therefore the base year air quality model is considered robust. In addition, the Applicant has utilised the long-term trend gap analysis factors approach to deal with uncertainty in vehicle emission factors. Consequently, the rate at which nitrogen dioxide (NO_2) concentrations would decrease between the 2016 base year and the 2030 opening year scenarios (as described in paragraphs 5.3.93 to 5.3.97 of Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**]) has been uplifted in some cases substantially compared to using the outputs of the model based on the Defra Emissions Factors Toolkit[3] only. It is worth noting that the latest monitoring data has been compared to the modelled predictions along the A228 where the Project results in the largest changes and where there are exceedances of AQS objectives. The Applicant concluded that using a more recent base year (e.g. 2021 or 2022) is likely to result in much lower concentrations in the future as the modelled predictions were found to be pessimistic. The Applicant therefore considers both the traffic data to be representative of traffic conditions and the resultant modelled concentrations that have been used in the air quality assessment to be sufficiently robust to determine compliance with the National Policy Statement for National Networks[4].

[2] Department for Environment, Food and Rural Affairs (2022). Local Air Quality Management Technical Guidance (TG.22). https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf
[3] Department for Environment, Food and Rural Affairs (2021). Emissions Factors Toolkit v11.0. https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/
[4] Department for Transport (2014). National Policy Statement for National Networks. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/npsnn-web.pdf

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		Stakeholders have previously been consulted on the base year, however agreement has not been obtained with all stakeholders. The Applicant's Environmental Impact Assessment – Scoping Report[5] submitted in October 2017 set out the 2016 base model validation year in paragraph 2.19.4. ES Appendix 4.1: The Inspectorate's Scoping Opinion and National Highways Response [**APP-340**]) summarises comments on the scope of the air quality assessment from the Planning Inspectorate and various stakeholders. No objections were received from stakeholders on the proposed 2016 base year. Engagement with stakeholders on the air quality assessment methodology is also summarised in Table 5.1 of ES Chapter 5: Air Quality [**APP-143**]. The Applicant is however aware that concerns have been raised by some stakeholders regarding the age of the base air quality model in the Local Impact Reports, however the Applicant considers the base model to be robust as outlined above.
ExQ1_Q5.1.2	N/A	**Baseline and Legislative Requirements** The Air Quality Standards (AQS) Regulations 2010 states that the pollutant limit values for $PM_{2.5}$ (by 2020) is 20 µg/m3, however, Table 2.4 of ES Appendix 5.2 – Air Quality Baseline Conditions [**APP-346**] states it is 25 µg/m3. Can the Applicant explain and rectify this anomaly?
		Response: As shown in Table 5.4 of Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**], there is an annual mean $PM_{2.5}$ Air Quality Strategy objective of 25µg/m^3 and an annual mean $PM_{2.5}$ Limit Value of 20µg/m^3, and so there is not an anomaly in the assessment reporting. There are differences in how the $PM_{2.5}$ objective and $PM_{2.5}$ Limit Value should be interpreted and assessed as outlined in paragraph 5.3.63 to 5.3.67 of ES Chapter 5: Air Quality [**APP-143**]. The Air Quality Standards Regulations 2010 relate specifically to Limit Values rather than Air Quality Strategy objectives. Table 2.4 of Environmental Statement (ES) Appendix 5.2: Air Quality Baseline Conditions [**APP-346**] cites the $PM_{2.5}$ Air Quality Strategy objective of 25µg/m^3 rather than the Limit Value.
ExQ1_Q5.1.3	N/A	**Methodology: Open Spaces for Human Users** Paragraph 5.3.111 of ES Chapter 5 – Air Quality [**APP-143**] sets out the various human receptors which have been included in the assessment, but this does not include areas such as parks, open spaces and recreational facilities. Can the Applicant explain how the air quality impacts on human users (by people and communities) of such public amenity areas have been assessed?

[5] Highways England (2017). Lower Thames Crossing Environmental Impact Assessment – Scoping Report. https://highwaysengland.citizenspace.com/ltc/consultation/supporting_documents/Environmental%20Impact%20Assessment%20%20Scoping%20Report.pdf

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		Response: Human receptors have been identified and assessed according to locations where the Air Quality Strategy (AQS) objectives and Limit Values shown in Table 5.4 of Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**] apply. Table 5.5 of ES Chapter 5: Air Quality describes the locations where the AQS objectives and Limit Values apply. For AQS objectives these only apply to locations where there would be relevant public exposure across the averaging period of the objective, whereas for Limit Values these apply to any location where there is public access regardless of the averaging period. Box 1-1 of Local Air Quality Management (LAQM) Technical Guidance[6] also shows examples of where the AQS objectives should apply according to the averaging period of the objective:

[6] Department for Environment, Food and Rural Affairs (2022). Local Air Quality Management (LAQM) Technical Guidance (TG.22). https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf

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Box 1-1 – Examples of Where the Air Quality Objectives Should Apply

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless used as a permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean and 8-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties[11].	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be shorter than either the 24- or 8-hour relevant mean.
1-hour mean	All locations where the annual mean and 24- and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably expect to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

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		With respect to parks, open spaces and recreational spaces the 1-hour mean AQS objective for nitrogen dioxide (NO_2) and the 24-mean AQS objective for particulate matter where particles are less than 10 micrometres in diameter (PM_{10}) would apply in some cases (if there was likely to be exposure over the averaging period of the objective, e.g. at seating or play areas), but annual mean AQS objectives would not apply. Paragraphs 5.3.98 and 5.3.99 of ES Chapter 5: Air Quality [**APP-143**] describe how the 1-hour mean NO_2 AQS objective and the 24-hour mean PM_{10} AQS objective have been considered in the assessment. For NO_2, exceedances of 60µg/m^3 as an annual mean are used as an indicator of potential exceedances of the 1-hour mean AQS objective[7], and for $PM_{10,}$ exceedances of 32µg/m^3 as an annual mean are used as an indicator of potential exceedances of the 24-hour mean AQS objective[8]. Based on a review of the location of receptors, baseline monitoring data and the annual mean NO_2 concentrations predicted across the study area, the only locations of relevant exposure identified to be at risk of exceeding the 1-hour mean NO_2 AQS objective in the Project opening year were the gardens of properties on Arlington Crescent close to Holmesdale Tunnel, and so garden receptors were added to the model at these locations. These locations were identified as being at risk of exceeding the 1-hour mean AQS objective due to the high annual mean NO_2 concentrations predicted at nearby receptors (maximum annual mean concentration of 59.0µg/m^3 predicted at residential receptor LTC196 in the Do-Minimum scenario) and the proximity of the gardens to the Holmesdale tunnel portal and M25. As described in Paragraph 5.6.44 of ES Chapter 5: Air Quality [**APP-143**], there were five gardens (LTC429_G to LTC433_G) where the annual mean NO_2 concentration was predicted to exceed 60µg/m^3 in the Do-Minimum scenario, and these experience a decrease in annual mean NO_2 ranging from 0.9 to 1.6µg/m^3 (small improvement) as a result of the Project. The maximum annual mean PM_{10} concentration predicted at any human receptor in the Project opening year was 26.7µg/m^3 (LTC026 on Pilgrims Way, A228) and no exceedances of the 24-hour mean AQS objective for PM_{10} have been monitored across the study area over the period 2015 to 2019. There were no locations identified to be at risk of exceeding the 24-hour mean AQS objective for PM_{10} based on the annual mean concentrations predicted at human receptors, the monitored concentrations, and the locations of relevant exposure.

[7] Refer to paragraphs 7.96 to 7.99 of Defra's Local Air Quality Management (LAQM) Technical Guidance (TG.22). https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf
[8] Refer to paragraphs 7.100 to 7.103 of Defra's Local Air Quality Management (LAQM) Technical Guidance (TG.22)

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		In terms of assessment against the Limit Values, the UK is already fully compliant with 1-hour mean NO_2 and 24-hour mean PM_{10} Limit Values as described in Defra's Air Pollution UK 2021 Compliance Assessment Summary[9]. Furthermore, the compliance risk assessment undertaken for the assessment has shown that the maximum annual mean NO_2 concentration predicted at locations where the limit value applies (including footpaths immediately adjacent to roads, which would be worst-case locations for exposure than further away from the road) are well below 60µg/m^3. The maximum annual mean NO_2 concentration predicted in the Project opening year was 41.2µg/m^3, which was predicted at receptor PCM_2 (footpath) adjacent to the A102 in Greenwich.
ExQ1_Q5.1.4	N/A	**Methodology: Air Quality and Junctions** DMRB LA 105 states that "*areas around junctions ident*ified as sensitive to changes in air quality that can result in exceedances of air quality thresholds shall be assessed in greater detail". Can the Applicant clarify whether any junctions were highlighted as those sensitive to change and that speed banding has been applied sensibly across the model domain?
		Response: Paragraphs 2.35.1 and 2.36 of Design Manual for Roads and Bridges (DMRB) LA 105[10] state: *'Within a 100m radius of the centre of the junction on an urban / rural road in all directions should be assigned the light congestion speed band, but there can be instances when the heavy congestion speed band is a better representation of the traffic conditions.'* *'Only areas around junctions identified as sensitive to changes in air quality that can result in exceedances of air quality thresholds shall be assessed in greater detail.'* In accordance with DMRB, a review was undertaken of the predicted annual mean nitrogen dioxide (NO_2) concentrations at human health and compliance risk receptors in the opening year Do-Minimum and Do-Something scenarios to determine if there were any locations close to junctions that were above 36µg/m^3 and therefore close to exceeding the annual mean Air Quality Strategy (AQS) objective/Limit Value (40µg/m^3). The review indicated that

[9] Department for Environment, Food and Rural Affairs (2022). Air Pollution UK 2021 Compliance Assessment Summary. https://uk-air.defra.gov.uk/library/annualreport/assets/documents/annualreport/air_pollution_uk_2021_Compliance_Assessment_Summary_Issue1.pdf
[10] Highways England (2019). Design Manual for Roads and Bridges (DMRB), LA 105 Air Quality. Accessed August 2023. https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90

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		there were receptors close to junctions that met these criteria and in these instances the speed bands were reviewed to ensure that they were consistent with the advice in DMRB. It should be noted that the receptors were selected at worst-case locations where total pollutant concentrations were expected to be greatest, which included the closest locations to junctions where the annual mean AQS objective and Limit Values would apply. The speed banding process has been undertaken in line with the advice of DMRB LA 105. This has included, for example, the pivoting of traffic model speeds and a review of the traffic model speed bands by the Project traffic and air quality teams where there are changes in band between the Do-Minimum and Do-Something scenarios, to ensure the speed banding methodology has been applied in a diligent and considered manner across the model domain.
ExQ1_Q5.1.5	N/A	**Methodology** Paragraph 5.6.11 of ES Chapter 5 – Air Quality [**APP-143**] states that $PM_{2.5}$ has been considered through the results of the PM10 modelling. The ExA notes that Paragraph 2.21.4 of DMRB LA 105 states that "there should be no need to model PM2.5 as the UK currently meets its legal requirements for the achievement of the PM2.5 air quality thresholds and the modelling of PM10 can be used to demonstrate that the project does not impact on the PM2.5 air quality threshold." However, given the recent governmental focus on reducing long-term average concentrations of PM2.5 (noting the adoption of The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (Jan 2023) and the Environmental Improvement Plan (2023)) can the Applicant provide further justification as to why the approach of considering the results of PM2.5 through the results of PM10 is considered acceptable, especially as DMRB LA 105 does not categorically state that there is no need to model PM2.5?
		Response: $PM_{2.5}$ concentrations have not been explicitly modelled for the assessment, in other words vehicle emission factors for $PM_{2.5}$ have not been used to predict concentrations as in the case of PM_{10} and nitrogen dioxide. Instead, given the low risk of exceedances of legal thresholds as outlined in Design Manual for Roads and Bridges (DMRB) LA 105[11], $PM_{2.5}$ has been assessed by combining the modelled road traffic PM_{10} concentration (predicted using vehicle PM_{10} emission factors) with background $PM_{2.5}$ concentrations. As described in paragraph 5.6.26 of Environmental Statement Chapter

[11] Highways England (2019). Design Manual for Roads and Bridges (DMRB), LA 105 Air Quality. Accessed August 2023. https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90

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		5: Air Quality [**APP-143**], this approach will overpredict $PM_{2.5}$ concentrations given that the road component PM_{10} includes $PM_{2.5}$ as well as larger particles (in other words, vehicle emission factors for PM_{10} will be higher than the emission factors for $PM_{2.5}$ under the same traffic conditions, leading to higher concentrations). No exceedances of the annual mean Air Quality Strategy objective or Limit Value have been predicted for $PM_{2.5}$ in the assessment with or without the Project in both the construction and operational scenarios. As described in the Applicant's response to ExQ1_Q5.1.6, the Project is not expected to impact on the $PM_{2.5}$ targets associated with the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (Jan 2023) and the Environmental Improvement Plan 2023[12] as the Project will not affect $PM_{2.5}$ concentrations at locations where the targets apply (i.e. at relevant monitoring stations).
ExQ1_Q5.1.6	N/A	**Legislative Requirements** Does the Applicant agree that The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (Jan 2023) and the Environmental Improvement Plan (2023) should now be included in Tables 1.1 and 1.3 of ES Appendix 5.5 – Air Quality Legislation and Policy [**APP-349**] respectively? Can the Applicant also explain what implications the Environmental Improvement Plan's interim target of the highest annual mean concentration of $PM_{2.5}$ not exceeding 12 µg/m3 by 31 January 2028 will have for the project and its human receptors noting that the interim target is within the construction period? Is it the Applicant's intention to update the Air Quality Assessment in light of the new Fine Particulate Matter Regulations and the Environmental Improvement Plan's interim target? If not, why not?
		Response: The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (Jan 2023) and the Environmental Improvement Plan 2023[13] were published following the submission of the Environmental Statement, otherwise these would have been referenced in Tables 1.1 and 1.3 of ES Appendix 5.5: Air Quality Legislation and Policy [**APP-349**].

[12] Department for Environment, Food and Rural Affairs (2023). Environmental Improvement Plan 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1168372/environmental-improvement-plan-2023.pdf
[13] Department for Environment, Food and Rural Affairs (2023). Environmental Improvement Plan 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1168372/environmental-improvement-plan-2023.pdf

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		The Environment Act 2021 provides a new framework of environmental protection for the UK and allows new laws to be established for air quality. Two new $PM_{2.5}$ targets have been proposed under the Act: • Annual Mean Concentration Target ('concentration target'): a maximum concentration of 10µg/m^3 to be met across England by 2040 • Population Exposure Reduction Target ('exposure target'): a 35% reduction in population exposure by 2040 (compared to a base year of 2018) These $PM_{2.5}$ targets have been adopted into legislation in the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. The Environment Improvement Plan (2023) also set an interim annual mean target of 12µg/m^3 to be achieved by 2028, however the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 do not set any interim targets. There is as yet no advice from Defra on how compliance with the 2028 interim target and 2040 $PM_{2.5}$ target would be determined or how the targets should be considered in the planning system. The wording of the 2023 Regulations is used to determine the implication of the targets for the Project. Under the title "Measurement", Regulation 5 of the 2023 Regulations states: '*(1) The annual mean concentration target is met by 31st December 2040 if, at every relevant monitoring station, the annual mean level of $PM_{2.5}$ in ambient air, calculated in accordance with regulation 15 and rounded to the nearest whole number of µg/m³, is equal to or less than the target level in the year 2040.* *(2) In paragraph (1), "relevant monitoring station" means a monitoring station from which fixed measurements of $PM_{2.5}$ are taken—* *(a) throughout the whole of the year 2040, disregarding any periods during that year in which the monitoring station is temporarily out of operation, for example for repair or maintenance; and* *(b) which meet the minimum annual data capture requirement in that year.*' Regulation 5(1) clarifies that the annual mean concentration target applies at specific locations, i.e. at a relevant monitoring station, and is not to be applied generally. It is not a target for which legal compliance is required at locations other than at a relevant monitoring station. Regulation 12(2) of the 2023 Regulations states that every Air Quality Standards Regulations 2010 monitoring station (a monitoring station which is used to measure PM2.5 levels for the purposes of the 2010 Regulations) which was in operation immediately before the coming into force of the 2023 Regulations is a "relevant monitoring station" for the purposes of those Regulations. The interim target level for $PM_{2.5}$ of 12µg/m^3 by 31 January 2028 has been introduced as a means of tracking the outcomes of the measures to improve air quality (and $PM_{2.5}$) listed in 'Goal 2: Clean Air' of the Environment

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		Improvement Plan. Defra's Air Quality $PM_{2.5}$ targets: Detailed evidence report[14] was the consultation document relating to the adoption of the fine particulate targets which were passed in legislation in the 2023 Regulations. Page 11 of the report stated: '*The Environment Act 2021 aims to drive further reductions by establishing a duty to set a target specifically on PM2.5 concentration, alongside a further long-term target for air quality. Long-term targets set through the Act will be supported by interim targets, which will set a five-year trajectory towards meeting the long-term targets. Whilst interim targets are not legally binding, they set a clear direction of travel and will enable an ongoing assessment of whether the government is on track to meet its longer-term target ambitions. The long-term targets need to be brought before parliament by 31 October 2022.*' The interim targets, therefore, provide the means to assess whether the Government is on track to meet the legally binding 2040 target. Should the Government not be on track, then this can prompt further policy intervention by the Government. The interim 2028 target is not legally binding; there is no legal duty that it is met. Further, since interim targets are to be used to measure the extent to which the Government is on track to meet the 2040 target, they are to be measured at the same locations as the 2040 target. The interim target is only to be measured at the relevant monitoring stations identified by the Secretary of State for that purpose. The Project will not affect $PM_{2.5}$ concentrations at a monitoring station to which the 2023 Regulations apply, and therefore the $PM_{2.5}$ concentration 2040 target and 2028 interim target do not have implications for the Project. There are no relevant monitoring stations within 200m of the Affected Road Network (ARN) of the construction phase. The only relevant monitoring station within 200m of the ARN for the operational phase is Thurrock (Station ID: UKA00272) which is located 197m to the south-west of the ARN. This station would not be affected by operational emissions from the Project as the annual average daily traffic flow on the A126 London Road (the nearest affected road link to the monitoring site), is expected to decrease by approximately 1,200 vehicles per day. This leads to an imperceptible decrease in annual mean $PM_{2.5}$ concentration at the nearest receptor (LTC007) to the monitoring site. The Thurrock monitoring station began monitoring $PM_{2.5}$ on 1 January 2023 and the average concentration recorded at this monitor between 01/01/2023 and 18/08/2023 was 8.5µg/m^3, although it should be noted that the annual data capture is too low to be directly compared against an annual mean concentration target. Defra has a dedicated webpage[15] which summarises ongoing progress towards the 2028 and 2040 targets. The page notes that across the

[14] Department for Environment, Food and Rural Affairs (2022). Air Quality $PM_{2.5}$ targets: Detailed evidence report. Accessed August 2023. https://consult.defra.gov.uk/natural-environment-policy/consultation-on-environmental-targets/supporting_documents/Air quality targets Detailed Evidence report.pdf
[15] Department for Environment, Food and Rural Affairs (2023). UK AIR. Accessed August 2023. https://uk-air.defra.gov.uk/pm25targets/progress

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		entirety of the Automatic Urban and Rural Network (AURN) in England, the highest measured annual mean concentration for 2022 was 12µg/m^3; and 82% of English AURN sites which met the required data capture threshold (45 individual AURN sites) were below the 10µg/m^3 annual mean concentration target, suggesting that the interim 2028 target is already being achieved across England, and large parts of the country are currently compliant with the 2040 target. Therefore, the Applicant would not seek to update and re-issue the air quality assessment as originally presented in the ES as the Project is not expected to impact on the achievement of the 2028 interim target or the 2040 target.
ExQ1_Q5.1.7	N/A	**Construction Phase Traffic Impacts** The methodology for assessing construction traffic air quality impacts is explained in Paragraphs 5.3.22 to 5.3.35 of ES Chapter 5 – Air Quality [**APP-143**]. Whilst it is recognised that the assessment has followed DMRB LA 105 guidance, can the Applicant clarify that there would be no exceedances of AQS limit values during the construction phase?
		Response: The Applicant has assumed that reference to AQS relates to the Air Quality Standards (AQS) Regulations (2010) which set the Limit Values. A construction phase compliance risk assessment assessed possible risk of non-compliance with the Limit Values in accordance with the methodology detailed within Highways England's Design Manual for Roads and Bridges (DMRB) LA 105 Air Quality[16]. In addition to the requirements in DMRB LA105, the Applicant also identified all areas where Limit Values apply for each year of the construction where the impacts of construction traffic triggered the criteria in Chapter 5: Air Quality [**APP-143**] paragraph 5.3.30 (other than e, as the criteria was applied where the Project triggered a change in each year of the construction). This was to determine whether there were any exceedances of Limit Values and whether there was a risk of delaying achievement of compliance with Limit Values. The construction phase compliance risk assessment reported in Environmental Statement Chapter 5: Air Quality [**APP-143**] concluded the following: Paragraph 5.6.23: '*During the 2025 – 2030 construction phase, there are no qualifying features where the total concentration exceeds the annual mean Limit Value for NO_2 and where the increase in concentration is greater*

[16] Highways England (2019). Design Manual for Roads and Bridges, LA 105 Air Quality. https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90

PINS ID	External Stakeholder (where applicable)	Question / Response
		0.4µg/m³ (i.e., a perceptible change). The conclusion of the compliance risk assessment is that there is no risk to the reported date of compliance with the Limit Value for NO_2.' Paragraph 5.6.24: '*The maximum modelled concentration at a qualifying feature adjacent to a PCM link is predicted at Con_PCM_007 (a footpath) which is located next to the A1089 (PCM link census ID: 802016644) in Tilbury. The annual mean NO_2 concentration modelled at this feature is 34.4µg/m³ in the 2025 Project construction scenario which is below the Limit Value of 40µg/m³. The change at this feature is 1.8µg/m which is the joint largest increase in concentration at a qualifying feature in any of the construction phase years.*' Paragraph 5.6.25: '*In relation to PM_{10} and $PM_{2.5}$, there are no qualifying features where the total concentration exceeded the annual mean Limit Value for PM_{10} or $PM_{2.5}$. The maximum particulate concentrations across all of the construction phase scenarios are predicted at PCM_78 which is predicted to experience the annual mean particulate concentrations of 25.0µg/m³ (PM_{10}) and 19.7µg/m³ ($PM_{2.5}$). These concentrations are below the Limit Values of 40µg/m³ and 20µg/m³ for PM_{10} and $PM_{2.5}$ respectively. The conclusion of the compliance risk assessment is that there is no risk to the reported date of compliance with the Limit Value for PM_{10} and $PM_{2.5}$.'* Therefore, the Applicant can confirm that there are no exceedances of Limit Values due to the construction phase.
ExQ1_Q5.1.8	N/A	**Operational Phase Impacts** The modelled Annual Mean NO_2, PM10 and PM2.5 in Base 2016, Do-Minimum (DM) 2030 and Do- Something (DS) 2030 Scenarios is presented in Tables 1.1 and 1.2 in ES Appendix 5.4 [**APP-348**]. The results are listed in Receptor ID number order. The Applicant is requested to update these Tables to advise of the corresponding map page for each Receptor in ES Figure 5.6 – Operations Phase Receptors and Results Maps **[APP-180, APP-181, APP-182, APP-183]** to provide easier cross referencing and to aid the ExA's understanding of the locations of receptors either already exceeding AQS limit values and/or those locations that will experience notable air quality change. The Applicant is also requested to provide two additional tables that extrapolate the NO2 data from Table 1.1 and reorders it from the receptor experiencing the highest increase in NO2 to the receptor experiencing the highest decrease. The same exercise shall be carried out for PM10. A third table should also be provided following the same reordering process for PM2.5 from Table 1.2. All three tables should also show the sum total of receptors with increased concentrations and the sum total of receptors with decreased concentrations.

PINS ID	External Stakeholder (where applicable)	Question / Response
		Whilst the Applicant concludes that the Air Quality effects of the Project on human health are not considered to be significant, the revised tables requested above will enable the ExA and interested parties to more easily interrogate the data and to contemplate if and where mitigation may be required.
		Response: '*Operational Phase Impacts: The modelled Annual Mean NO_2, PM_{10} and $PM_{2.5}$ in Base 2016, Do-Minimum (DM) 2030 and Do-Something (DS) 2030 Scenarios is presented in Tables 1.1 and 1.2 in ES Appendix 5.4 [**APP-348**]. The results are listed in Receptor ID number order. The Applicant is requested to update these Tables to advise of the corresponding map page for each Receptor in ES Figure 5.6 – Operations Phase Receptors and Results Maps [**APP-180**, **APP-181**, **APP-182**, **APP-183**] to provide easier cross referencing and to aid the ExA's understanding of the locations of receptors either already exceeding AQS limit values and/or those locations that will experience notable air quality change.*' In response to the above, Tables 1.1 and 1.2 as presented in Environmental Statement (ES) Appendix 5.4: Air Quality Operational Phase Results [**APP-348**] will be re-presented with accompanying information directing the reader to the corresponding map page for each Receptor in ES Figure 5.6: Operations Phase Receptors and Results Maps [**APP-180**, **APP-181**, **APP-182**, **APP-183**]. Due to the lead time to produce the material, this will be presented within an annex to ES Appendix 5.4 [**Document Reference 6.3**] to be submitted at Deadline 5. '*The Applicant is also requested to provide two additional tables that extrapolate the NO_2 data from Table 1.1 and reorders it from the receptor experiencing the highest increase in NO_2 to the receptor experiencing the highest decrease. The same exercise shall be carried out for PM_{10}. A third table should also be provided following the same reordering process for $PM_{2.5}$ from Table 1.2. All three tables should also show the sum total of receptors with increased concentrations and the sum total of receptors with decreased concentrations.*' In response to the above, Tables 1.1 and 1.2 will be reordered from the receptor experiencing the highest increase to the receptor experiencing the highest decrease for each of NO_2, PM_{10} and $PM_{2.5}$. This request will be combined into the revised tables which will be presented as an annex to ES Appendix 5.4 [**Document Reference 6.3**] to be submitted at Deadline 5. Summary tables for each pollutant which show the sum total of receptors with increased concentrations, those with decreased concentrations and those with no change/imperceptible change (i.e. 0.4µg/m^3 change or less), are shown in Table 1 to Table 3 below. Care should be taken in interpreting the data presented in this way as not every receptor within 200m of the affected road network is included in the air quality modelling. This is in accordance with Design

<table>
<tr><th>PINS ID</th><th>External Stakeholder (where applicable)</th><th>Question / Response</th></tr>
<tr><td></td><td></td><td>
Manual for Roads and Bridges (DMRB) LA 105[17] and is proportionate and sufficient to determine whether the scheme triggers a significant effect in relation to the human health assessment for the purposes of determining compliance with paragraph 5.12 of the NPSNN[18]. Receptors have been deliberately selected where the effect of the Project is expected to be greatest (in terms of both increases and decreases in pollutant concentrations) or where pollutant concentrations are expected to be highest (typically closest receptors to roads and junctions), in accordance with DMRB LA 105. This approach ensures that all receptors at risk of exceeding legal air quality thresholds are fully considered in the assessment to determine compliance against the NPSNN. Further detail regarding the siting and selection of sensitive human receptors is provided in paragraphs 5.3.110 to 5.3.113 of ES Chapter 5: Air Quality [APP-143].

Tables 1.1 and 1.2 of ES Appendix 5.4: Air Quality Operational Phase Results [APP-348] included the modelled receptors for the assessment of human health in accordance with the Design Manual for Roads and Bridges LA 105 Air Quality. It should be noted that 15 receptors contain the suffix '_D' which indicates this receptor would be demolished before the Project is operational. Additionally, a further 13 are garden receptors using the suffix '_G' which were assessed in the context of the 1-hour mean Air Quality Strategy (AQS) objective for nitrogen dioxide (NO_2); the annual mean AQS objective of 40µg/m^3 would not apply to gardens (all receptors showed a decrease in concentrations with the Project in the 2030 Do-Something scenario). The numbers in brackets in each of Table 1 to Table 3 below exclude the demolished receptors and garden receptors to give a more representative summary of the magnitude of change at receptors where the relevant annual mean AQS objectives apply in the opening year of 2030.

Table 1 Summary of magnitude of change in annual mean NO_2 concentrations at relevant human receptors
<table>
<tr><th>Magnitude of change</th><th>Worsening</th><th>Improvement</th></tr>
<tr><td>Large (>4µg/m^3)</td><td>9 (3)</td><td>0 (0)</td></tr>
<tr><td>Medium (>2 to 4µg/m^3)</td><td>27 (24)</td><td>28 (27)</td></tr>
<tr><td>Small (>0.4 to 2µg/m^3)</td><td>121 (117)</td><td>138 (124)</td></tr>
<tr><td>Total</td><td>157 (144)</td><td>166 (151)</td></tr>
<tr><td>No change or imperceptible change</td><td colspan="2">442 (442)</td></tr>
</table>
The numbers in brackets are the totals exclusive of receptors demolished prior to the opening year and garden receptors.
</td></tr>
</table>

[17] Highways England (2019). Design Manual for Roads and Bridges, LA 105 Air Quality. Accessed August 2023. https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90
[18] Department for Transport (2014). National Policy Statement for National Networks.

<table>
<tr><th>PINS ID</th><th>External Stakeholder (where applicable)</th><th>Question / Response</th></tr>
<tr><td></td><td></td><td>

Table 2 Summary of magnitude of change in annual mean PM_{10} concentrations at relevant human receptors

<table>
<tr><th>Magnitude of change</th><th>Worsening</th><th>Improvement</th></tr>
<tr><td>Large (>4µg/m^3)</td><td>0 (0)</td><td>0 (0)</td></tr>
<tr><td>Medium (>2 to 4µg/m^3)</td><td>1 (0)</td><td>0 (0)</td></tr>
<tr><td>Small (>0.4 to 2µg/m^3)</td><td>51 (42)</td><td>19 (19)</td></tr>
<tr><td>Total</td><td>52 (42)</td><td>19 (19)</td></tr>
<tr><td>No change or imperceptible change</td><td colspan="2">694 (676)</td></tr>
</table>

The numbers in brackets are the totals exclusive of receptors demolished prior to the opening year and garden receptors.

Table 3 Summary of magnitude of change in annual mean $PM_{2.5}$ concentrations at relevant human receptors

<table>
<tr><th>Magnitude of change</th><th>Worsening</th><th>Improvement</th></tr>
<tr><td>Large (>2.5µg/m^3)</td><td>1 (0)</td><td>0 (0)</td></tr>
<tr><td>Medium (>1.25 to 2.5µg/m^3)</td><td>8 (4)</td><td>0 (0)</td></tr>
<tr><td>Small (>0.25 to 1.25µg/m^3)</td><td>89 (82)</td><td>105 (103)</td></tr>
<tr><td>Total</td><td>98 (86)</td><td>105 (103)</td></tr>
<tr><td>No change or imperceptible change</td><td colspan="2">562 (548)</td></tr>
</table>

The numbers in brackets are the totals exclusive of receptors demolished prior to the opening year and garden receptors.

</td></tr>
<tr><td>ExQ1_Q5.1.9</td><td>N/A</td><td>

Operational Phase Impacts

While it is noted that the Applicant has followed DMRB LA 105 guidance to inform its judgement of significant air quality effects, the analysis demonstrates that increases in concentrations are substantially greater than decreases.

As Paragraph 5.12 of NPSNN requires the Secretary of State to give air quality considerations substantial weight where a project would lead to a significant air quality impact in relation to EIA, the Applicant is requested to provide clear presentation on the summary of impacts on human receptors where there is a more than 1% change in the air quality threshold but where the AQS limit values are not exceeded.

Response:

It should be noted that the Applicant has assumed that the reference to ‘AQS’ in the question being asked relates to the Air Quality Strategy (AQS) 2007 objectives rather than the Air Quality Standards (*also abbreviated as AQS*) Regulations (2010)’. This is because the Air Quality Strategy Objectives are relevant in relation to determining

</td></tr>
</table>

PINS ID	External Stakeholder (where applicable)	Question / Response
		whether the scheme leads to a significant effect in relation to EIA (i.e. the assessment of significant effects in relation to EIA are based on the modelled predictions at sensitive human health receptors, where the Air Quality Strategy Objectives apply). The Applicant requests further clarity from the ExA on the statement "…*the analysis demonstrates that increases in concentrations are substantially greater than decreases*" to be able to provide further commentary. Table 4 to Table 6 below categorise the magnitude of changes at human receptors where the total concentrations were below the respective annual mean Air Quality Strategy (AQS) objectives for nitrogen dioxide (NO_2), and particulate matter where particles are less than 10 micrometres in diameter (PM_{10}) and less than 2.5 micrometres in diameter ($PM_{2.5}$). It should be noted that not every receptor within 200m of the operational phase Affected Road Network (ARN) has been modelled and receptors have been deliberately selected where the effect of the Project is expected to be greatest or where pollutant concentrations are expected to be highest. The Applicant therefore considers a robust assessment of worst-case receptors has been provided. Further detail regarding the siting and selection of sensitive human receptors is provided in paragraphs 5.3.110 to 5.3.113 of Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**]. It should be noted that in Tables 1.1 and 1.2 of ES Appendix 5.4: Air Quality Operational Phase Results [**APP-348**] (which contain the magnitude of change at each assessed human receptor) a total of 15 receptors contain the suffix '_D' which indicates this receptor would be demolished before the Project is operational. Additionally, a further 13 receptors are garden receptors identified with the suffix '_G' which were assessed in the context of the 1-hour mean AQS objective for NO_2; the annual mean AQS objective of 40µg/m^3 would not apply to gardens. All garden receptors showed a decrease in concentrations with the Project in the 2030 Do-Something scenario as compared to the 2030 Do-Minimum scenario. The numbers in brackets in each of Table 4 to Table 6 exclude the demolished receptors and garden receptors to give a more representative summary of the magnitude of change at receptors where the relevant annual mean AQS objectives apply in the opening year of 2030. For ease of reference the annual mean AQS objectives for each pollutant are set out below: • Annual mean NO_2 – 40µg/m^3 • Annual mean PM_{10} – 40µg/m^3 • Annual mean $PM_{2.5}$ – 25µg/m^3 (target value) For NO_2, a total of 714 of the 765 modelled receptors were below the annual mean AQS objective of 40µg/m^3. The magnitude of change at these 714 receptors is summarised in Table 4 below. Table 5.33 (Local air quality receptors

PINS ID	External Stakeholder (where applicable)	Question / Response

informing Project significance) of ES Chapter 5: Air Quality [**APP-143**] shows that there were only 25 receptors where the annual mean AQS objective applies and where the change in NO_2 was perceptible (i.e. a change of >0.4µg/m^3 which represents >1% change in terms of the annual mean AQS objective of 40µg/m^3). As such these 25 receptors formed the basis of the evaluation of the significance of air quality effects on human health. The remaining 26 receptors where modelled concentrations were greater than 40.0µg/m^3 were locations where the annual mean AQS objective does not apply (i.e. gardens, demolished receptors), and/or where the change in NO_2 was categorised as imperceptible (i.e. a change of 1% or less).

Table 4 Summary of magnitude of change in Annual Mean NO_2 concentrations at relevant human receptors below the annual mean AQS objective for NO_2 of 40µg/m^3

Magnitude of change	Worsening	Improvement
Large (>4µg/m^3)	8 (2)	0 (0)
Medium (>2 to 4µg/m^3)	23 (20)	27 (26)
Small (>0.4 to 2µg/m^3)	117 (113)	108 (108)
Total	148 (135)	135 (134)
No change or imperceptible change (≤1% change)	431 (431)	

The numbers in brackets are the totals exclusive of receptors demolished prior to the opening year and garden receptors.

For PM_{10}, all of the 765 modelled receptors were below the annual mean AQS objective of 40µg/m^3, the magnitude of change at these receptors is summarised in Table 5.

Table 5 Summary of magnitude of change in Annual Mean PM_{10} concentrations at relevant human receptors below the annual mean AQS objective for PM_{10} of 40µg/m^3

Magnitude of change	Worsening	Improvement
Large (>4µg/m^3)	0 (0)	0 (0)
Medium (>2 to 4µg/m^3)	1 (0)	0 (0)
Small (>0.4 to 2µg/m^3)	51 (42)	19 (19)
Total	52 (42)	19 (19)
No change or imperceptible change (≤1% change)	694 (676)	

The numbers in brackets are the totals exclusive of receptors demolished prior to the opening year and garden receptors.

<table>
<tr><th>PINS ID</th><th>External Stakeholder (where applicable)</th><th>Question / Response</th></tr>
<tr><td></td><td></td><td>For PM2.5, all of the 765 modelled receptors were below the annual mean AQS target objective of 25µg/m^3, the magnitude of change at these receptors is summarised in Table 6.

Table 6 Summary of magnitude of change in Annual Mean $PM_{2.5}$ concentrations at relevant human receptors below the annual mean AQS target objective for PM2.5 of 25µg/m^3
<table>
<tr><th>Magnitude of change</th><th>Worsening</th><th>Improvement</th></tr>
<tr><td>Large (>2.5µg/m^3)</td><td>1 (0)</td><td>0 (0)</td></tr>
<tr><td>Medium (>1.25 to 2.5µg/m^3)</td><td>8 (4)</td><td>0 (0)</td></tr>
<tr><td>Small (>0.25 to 1.25µg/m^3)</td><td>89 (82)</td><td>105 (103)</td></tr>
<tr><td>Total</td><td>98 (86)</td><td>105 (103)</td></tr>
<tr><td>No change or imperceptible change (≤1% change)</td><td colspan="2">562 (548)</td></tr>
</table>
The numbers in brackets are the totals exclusive of receptors demolished prior to the opening year and garden receptors</td></tr>
<tr><td rowspan="2">ExQ1_Q5.1.10</td><td rowspan="2">N/A</td><td>Monitoring – Construction Phase
Details regarding actions to be taken in case of air quality monitoring exceedance from dust is set out in Paragraph 5.5.10 of ES Chapter 5 – Air Quality [APP-143]. Measure i. in the list for “Actions in case of air quality monitoring exceedance (REAC Ref. AQ008)” states “the Contractor, or a delegated representative, shall at the earliest reasonable opportunity, investigate activities on the site to ascertain whether any visible dust is emanating from the site or activities are occurring that are not in line with dust control procedures.” Register of Environmental Actions and Commitments No. AQ008 (contained in ES Appendix 2.2 – Code of Construction Practice, First Iteration of Environmental Management Plan) [REP1-157] also repeats the measure.
Can the Applicant clarify ‘earliest reasonable opportunity’?
Can the Applicant also clarify if a detailed monitoring strategy has been developed, when monitoring will be undertaken, how the results will be interpreted (and by whom) and/or how mitigation measures will be secured for any exceedances?</td></tr>
<tr><td>Response:
In response to ‘Can the Applicant clarify “earliest reasonable opportunity”?’, while the Applicant does not consider that this would generate an issue in practice, the Applicant will clarify the statement and secure a variation to Register of Environmental Actions and Commitment (REAC) commitment AQ008 within Environmental Statement (ES) Appendix</td></tr>
</table>

PINS ID	External Stakeholder (where applicable)	Question / Response
		2.2: Code of Construction Practice (CoCP) [**REP3-104**] to provide greater clarity. The updates to the commitment will be added to the updated REAC to be submitted at Deadline 5 and will be amended to: "*a. The Contractor, or a delegated representative, shall promptly investigate activities on the site to ascertain whether any visible dust is emanating from the site or activities are occurring that are not in line with dust control procedures. The specific time period shall be a matter which forms part of the air quality monitoring plan which is subject to consultation with the relevant local authorities under REAC item AQ006*". As set out in the REAC commitment AQ006 within ES Appendix 2.2: CoCP [**REP3-104**], the Contractor will use a risk-based approach to determine the level of air quality monitoring required, having regard for the specific packages of work to be undertaken and their proximity to receptors around the site. It is not practical to develop this detailed monitoring strategy at present, ahead of the detail of the work to be undertaken on each specific site having being developed. Hence the commitment for the air quality monitoring programme to be subject to approval by the Secretary of State (SoS) in consultation with the relevant local authorities to ensure appropriate scrutiny when the requisite information is available. The REAC is secured as part of the CoCP by Requirement 4 of the draft DCO [**REP3-077**]. Paragraph 2.1.1 of the CoCP states '*Requirement 4 in Schedule 2 (Part 1) of the DCO states that no part of the authorised development (the Project) is to commence until an EMP2 in accordance with this CoCP has been submitted to, and approved in writing by, the SoS, following consultation with the relevant stakeholders, to the extent that it relates to the matters relevant to its function*'. With regard to interpretation of the results and follow-up mitigation measures in the event of an exceedance, as set out in REAC commitment AQ008, an alert system shall be developed when a predetermined site action level approved by the SoS in consultation with the relevant local authorities is reached. Actions to interpret the results, investigate and resolve the situation shall be the responsibility of National Highways, through its Contractor, in compliance with the approved air quality monitoring programme.
ExQ1_Q5.1.11	N/A	**Monitoring – Operational Phase** It is noted that the Applicant does not consider there to be any need for operational air quality monitoring for human health or compliance with AQS limit values but the ExA would like the Applicant to explain why it does not consider it necessary to monitor those receptors identified by the air quality assessment that have the greatest negative change in concentrations because of the Project. Can the Applicant also explain why monitoring wouldn't be undertaken to test the long term trends and ensure that predictions in the ES are correct?

PINS ID	External Stakeholder (where applicable)	Question / Response
		Response: Design Manual for Roads and Bridges LA 105 Air Quality[19] states that air quality monitoring of road traffic pollution (for example nitrogen dioxide, NO_2) shall not be required for projects that do not require mitigation. This is because monitoring would only be necessary where time-limited mitigation is implemented, in order to demonstrate when and if the mitigation measure(s) could be removed. The operation of the Project does not result in significant effects on human health and compliance with limit values, therefore it does not require mitigation and air quality monitoring is not required. It should also be noted that it would not be possible to use air quality monitoring data to determine the impact of the Project on air quality (e.g., by undertaking monitoring at receptors and comparing pre-operational baseline monitored concentrations with monitored concentrations once the Project is operational). Air quality monitoring is impacted by a number of factors including the weather conditions at the time the monitoring takes place. There could also be changes in air pollutant concentrations associated with the impact of other developments, which could not be separated out from those caused by the Project using monitoring data. In relation to long-term trends in roadside monitoring, both National Highways and Defra have networks of automatic monitoring sites (National Air Quality Monitoring Network operated by National Highways, and Automatic Urban and Rural Network (AURN) operated by Defra). These networks can be utilised to show the long-term trend in roadside pollutant concentrations. It should also be noted that the Environment Act 2021 has placed additional requirements on National Highways whereby local authorities can designate them an air quality partner. Air Quality Partners are required to collaborate with local authorities and to commit to actions for inclusion in Air Quality Action Plans where such actions are needed to meet local air quality objectives. This would mean National Highways would have to work with local authorities if issues were identified on the strategic road network that were causing exceedances of future air quality objectives.
ExQ1_Q5.1.12	N/A	**River Traffic** It is stated that emissions from river vessels have been considered within the Air Quality ES chapter [APP-143] and have been screened out. This is said to be considered appropriate based on the number of river vessels likely to be used.

[19] Highways England (2019). Design Manual for Roads and Bridges, LA 105 Air Quality. https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d9, 0

PINS ID	External Stakeholder (where applicable)	Question / Response
		• Is this not a contractor issue based on the methodology of construction alongside such choices as the number of tunnelling machines? • Some assumptions have been made in relation to river traffic. What level of sensitivity testing has been completed on the number of vessels and their usage? • Should the contractor decide to make more use of river vessels than anticipated, what areas of the submission would be required to be amended and, what could be the resultant changes to the level of mitigation required?
		Response: While there may be some river trips resulting directly from the delivery of the Project, they would be travelling to and from facilities that are already operational, have all relevant approvals in place, and so the Applicant does not consider there to be significant additional movements to the existing commercial river traffic. The Preliminary Navigational Risk Assessment (pNRA) [**APP-548**] has set out the justification for screening out the assessment of emissions from river vessels used in connection with the Project. As explained in the pNRA [**APP-548**], marine imports are already being made to existing established facilities. The Project's position is that it would be operating within the permitted capacity of the Port of Tilbury and using a small proportion of that capacity. The Applicant did however carry out, as a sense check (test), an assessment aimed at estimating the volume (share) of existing vessel movements along the River Thames that would be linked to the transportation of Project materials to and from the Port of Tilbury. Whilst this assessment has been carried out in advance of the construction phase, it is based on the baseline commitment of river use for material transportation outlined in Section 6 of Environmental Statement Appendix 2.2 Annex B: Outline Materials Handling Plan (oMHP) [**APP-338**]. The findings of this assessment indicate that during peak periods, there are forecast to be 21 vessels (42 movements) per quarter, specifically associated with the transportation of Project materials. In contrast, the project's demand for port utilisation considered against the ports' existing activity, would equate to less than 3% and therefore is regarded as negligible. This assessment is reported in paragraphs 2.2.9 to 2.2.11 of the Preliminary Navigational Risk Assessment [**APP-548**]. It is not assumed that these trips would be additional to existing river trips, although even if they were, the increment is very small. As the Project advances, with the subsequent determination of the construction methodology and procurement strategy, the Contractor will be obligated to explore opportunities for optimising river use beyond the baseline commitment. This 'better than baseline' commitment, included in the oMHP [**APP-338**], could potentially lead to an increase in the Project's share of existing river vessel movements. However, given that the number of movements associated with the 'baseline' commitment set out in the oMHP [**APP-338**] would represent a negligible proportion

PINS ID	External Stakeholder (where applicable)	Question / Response
		(less than 3%) of existing vessel movements, any prospective rise in vessel movements, even under the requirement of the 'better than baseline' approach, would still translate to a minimal impact within the broader context of port operations. Under the sensitivity scenario described above, the projected number of river vessel movements associated with the construction of the Project is 168 two-way movements per year. As noted in paragraph 5.6.9 of ES Chapter 5: Air Quality [**APP-143**], the Port of Tilbury handled an average of 3,260 vessels[20] per year between 2016 and 2019 (which would generate at least 6,520 two-way vessel movements). In addition, in 2018, the total number of vessel movements passing Gravesend on the River Thames was approximately 17,000[21]. Furthermore, the Tilbury2 terminal opened in 2020, enabling the Port of Tilbury to increase its capacity, which was expected to increase the number of baseline movements by approximately 10%. As a result of the proposed use of vessels by the Project during construction, the number of vessel movements utilised will be less than 1% of the total movement on the River Thames. This demonstrates how small the proportion of movements is in the context of existing vessel movements on the River Thames. Given that emissions from river vessels generally occur well away from sensitive receptors when they are traveling along the river, the main air quality risk is when vessels load and unload material at the port facilities, which can be located closer to relevant exposure. Defra's LAQM TG.22[22] highlights that shipping emissions from high numbers of large vessels[23] can potentially lead to exceedances of the short-term Air Quality Strategy (AQS) objectives for hourly nitrogen dioxide (NO_2), daily particulate matter smaller than 10 micrometres (µm) in diameter (PM_{10}) and 15-minute sulphur dioxide (SO_2). It is understood that as part of Thurrock Council's Local Air Quality Management duties and as reported in its Annual Status Reports, that Thurrock Council has not identified any exceedances of short-term air quality objectives as a result of emissions from the existing port operations. Current monitored concentrations near to the port are well below short-term AQS objectives. The achievement of the short-term AQS objectives in an area where there are relatively high levels of existing river traffic indicates that shipping is not currently causing air quality issues around Tilbury. Furthermore, the proportion of river vessels associated with the Project (which are likely to be smaller sized vessels) is considered insignificant in the

[20] Average calculated from annual number of vessels provided by the Port of Tilbury for the period 2016 to 2019.
[21] Port of Tilbury (2017). Proposed Port Terminal at former Tilbury Power Station, Tilbury 2. Volume 6 Part A Environmental Statement
[22] Department for Environment, Food and Rural Affairs (2022). Local Air Quality Management Technical Guidance (TG.22). https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf
[23] A 'large' vessel is defined as cross-channel ferries, cruise ships, bulk carriers, container ships, roll-on roll-off shipping, etc.

PINS ID	External Stakeholder (where applicable)	Question / Response
		context of the current activities that are taking place in terms of use of the existing port facilities and movements along the Thames, and so further assessment of the air quality effects is not considered necessary. It is highly unlikely that the Project's use of river traffic during the construction phase would have material impact on local air quality given the existing baseline air quality conditions, and the fact that existing vessel movements on the river are not leading to local air quality issues. It is also understood that emissions from river traffic on the Thames are likely to decrease over time in the locality of the Project. The Port of London Authority (PLA) have published two Air Quality Strategies in 2018[24] and 2020[25] which detail the PLA's roadmap for better understanding air pollution from vessels using the Thames and for lowering emissions along the Tidal Thames. The 2020 Strategy includes emissions reduction targets which seek to reduce particulate and NOx emissions from shipping and inland vessels by 20% by 2026, and 40% by 2031 as compared to a 2016 baseline. This is to be achieved through incentivisation, mitigation, use of alternative fuels, and replacement of older vessels.
ExQ1_Q5.2.1	N/A	**Methodology** Paragraphs 5.3.92 and 5.3.106 of ES Chapter 5 – Air Quality [**APP-143**] outline the approach taken regarding background nitrogen at ecological sites. Can the Applicant confirm which guidance was followed in developing the methodology set out in paragraphs 5.3.92 to 5.3.106?
		Response: *Note: The Applicant has assumed that query above relates to paragraphs 5.3.92 and 5.3.106 (as these both relate to background nitrogen deposition rates at ecological sites) rather than 5.3.92 to 5.3.106 as these paragraphs concern future assumptions on monitoring trends and National Highways gap analysis tool for air quality modelling, rather than background nitrogen deposition at ecological sites.* The methodology was carried out in accordance with Design Manual for Roads and Bridges (DMRB) LA 105[26] paragraphs 2.43 to 2.46.1. With regard to background nitrogen deposition rates, DMRB LA 105 specifies that the assessor may acquire backgrounds from the Air Pollution Information System (APIS)[27].

[24] Port of London Authority (2018). Air Quality Strategy for the Tidal Thames. June 2018 – updated.
[25] Port of London Authority (2020). Air Quality Strategy for the Tidal Thames. Update – June 2020.
[26] Highways England (2019). Design Manual for Roads and Bridges, LA 105 Air Quality. https://www.standardsforhighways.co.uk/tses/attachments/10191621-07df-44a3-892e-c1d5c7a28d90?inline=true
[27] UK Centre for Ecology and Hydrology (2023). UK Air Pollution Information System (APIS). https://www.apis.ac.uk/

PINS ID	External Stakeholder (where applicable)	Question / Response
		Background nitrogen deposition data for the Project air quality assessment presented in Environmental Statement Chapter 5: Air Quality [**APP-143**] was obtained from the APIS database in line with the advice of DMRB LA 105. The data represented a three-year average deposition rate to moorland (short vegetation) or forest (tall vegetation) over the period 2017 to 2019. The background rate was selected according to the ecological receptor location and whether the ecological receptor was associated with short or tall vegetation.
ExQ1_Q5.2.2	N/A	**Methodology** Paragraph 5.3.106 of ES Chapter 5 – Air Quality [**APP-143**] explains that different approaches were taken for different habitat types "*whether moorland (short vegetation) or forest (tall vegetation)*". Can the Applicant explain how robust this approach is, given the differing ecological habitat types in the locality of the Proposed Development which do not consist of uniformly short or tall vegetation. What variables or flexibility have been included in the assessment to ensure that a worst-case scenario has been assessed?
		Response: Where designated sites consisted of a mix of habitat types in the area within 200m of the Affected Road Network, the most sensitive habitat type present was used to decide which method to use. If there was uncertainty as to the habitat type, a woodland habitat and corresponding conversion factors were used as these represent worst-case values when calculating the nitrogen deposition impacts. This precautionary approach to assessment has ensured a reasonable worst-case scenario has been assessed within ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403 to APP-406**].
ExQ1_Q5.2.3	N/A	**Sensitive Receptors** DMRB LA 105 lists public open spaces as sensitive receptors in relation to their biodiversity and ecological functions. Can the Applicant confirm if there are any such spaces in respect of which biodiversity and ecological open space functions could be affected by the Proposed Development and how they have been included within the assessment?

PINS ID	External Stakeholder (where applicable)	Question / Response
		Response: The Design Manual for Roads and Bridges (DMRB) LA 105 Air Quality[28] cites public open spaces for inclusion in the assessment of Human Health impacts and Compliance Risk (i.e. the impact of the Project in relation to Air Quality Strategy objectives and Limit Values). In terms of impacts in relation to biodiversity and ecological functions, DMRB LA 105 provides clear guidance on selecting sensitive receptors for assessment of impacts on designated habitats. Paragraphs 2.25 to 2.26 state that '*internationally, nationally and locally designated sites of ecological conservation importance on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity (known as designated habitats) within 200m of the ARN shall be included in the air quality assessment*'. These include Ramsar sites, Special Protection Areas, Special Areas of Conservation, Sites of Special Scientific Interest, Local Nature Reserves, Local Wildlife Sites, Nature Improvement Areas, ancient woodland and veteran trees. The air quality impact of the Project on designated ecological sites has been assessed in Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**], ES Appendix 5.6: Project Air Quality Action Plan [**APP-350**], ES Chapter 8: Terrestrial Biodiversity [**APP-146**] and ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403 to APP-406**]. Public open spaces which do not have an overlapping ecological designation do not require assessment for changes in air quality for Designated Sites in accordance with DMRB LA 105.
ExQ1_Q5.2.4a	N/A	**Nitrogen Deposition** Can the Applicant provide details regarding the tool which was used to calculate nitrogen deposition associated with the road ammonia (NH_3) component and explain how this tool was used to assess impacts on NH3 on designated sites?
		Response: Details regarding the ammonia (NH_3) tool and its use to assess the impacts of nitrogen (N) deposition on designated sites are provided in paragraph 5.3.101 to 5.3.103 of Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**]. There are currently no approved emission factors or Government tools for the assessment of NH_3 emissions from road traffic. The Applicant developed a tool (which has been peer-reviewed by the Institute of Air Quality Management (IAQM)) to calculate N deposition associated with the road NH_3 component.

[28] Highways England (2019). Design Manual for Roads and Bridges, LA 105 Air Quality. https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90

PINS ID	External Stakeholder (where applicable)	Question / Response
		The tool calculates road NH_3 concentrations using the modelled road nitrogen oxides (NO_x) concentrations, which are factored against NH_3/NO_x ratios specific to Light Duty Vehicles (LDVs) and Heavy Duty Vehicles (HDVs). The NH_3/NO_x ratio varies depending on the year being assessed as well as the dominant road type. The tool has been developed by reviewing the latest emissions literature and incorporating the Applicant's vehicle emission testing to develop the relationship between emissions of NO_x and NH_3 from the various vehicle types (e.g., diesel cars, petrol cars, Heavy Goods Vehicles). The ratios can then be applied to the modelled road NOx to derive an NH_3 concentration. Since the NH_3/NO_x ratios vary between LDVs and HDVs, the air quality models were rerun with only the HDV emissions. This enabled the contribution of LDVs and HDVs to road NO_x to be derived (HDV NO_x could be subtracted from total road NO_x to calculate LDV NO_x). The road NH_3 concentration was then converted to N deposition by a tool supplied by the Applicant which incorporates the deposition velocities for NH_3 depending on whether the habitat type was short or tall vegetation. The assessment of air quality effects on designated sites as reported in ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403 to APP-406**] has been completed in accordance with Figure 2.98 of the Design Manual for Roads and Bridges (DMRB) LA 105 Air Quality[29]. The approach taken assesses the nitrogen deposition against the relevant lower critical load. The nitrogen deposition values are calculated in the air quality model which incorporates using the tool described in the paragraphs above. The assessment methodology for this assessment is an agreed matter (item 2.1.96) within the Statement of Common Ground with Natural England [**REP2-008**]. The assessment of air quality effects on European sites as reported in the Habitats Regulations Assessment report [**APP-487**] has also been completed in accordance with Figure 2.98 of the DMRB LA 105. The approach taken assesses the nitrogen deposition against the relevant lower critical load. The nitrogen deposition values are calculated within the air quality model which incorporates NH_3 using the tool described in the paragraphs above. Following advice from Natural England the Applicant has completed a without-prejudice assessment of the air quality effects on European sites [**REP2-068**] which includes an assessment of the effect of airborne NH_3 against the relevant critical levels. The assessment approach uses the values for NH_3 concentration calculated by the tool described in the paragraphs above.

[29] Highways England (2019). Design Manual for Roads and Bridges LA 105 Air Quality. https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90

PINS ID	External Stakeholder (where applicable)	Question / Response
ExQ1_Q5.2.4b	N/A	**Nitrogen Deposition** Can the Applicant explain how the nitrogen deposition sites were selected? Can the Applicant also provide clarity on the link between impacted sites and compensation sites?
		Response: The method for selecting ecological receptors for the air quality assessment is described in paragraph 5.3.117 to 5.3.124 of Environment Statement (ES) Chapter 5: Air Quality [**APP-143**]. In summary, ecological receptors were selected at designated habitats sensitive to the effects of Nitrogen deposition (i.e., at locations where critical loads for Nitrogen deposition apply, which excludes designated sites for geology). Nitrogen deposition was modelled in designated habitats within 200m of the Affected Road Network (ARN) for construction and operation. Designated sites that were investigated included Ramsar sites, Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs), Local Nature Reserves (LNRs), Roadside Nature Reserves (RNRs), Local Wildlife Sites (LWSs), Nature Improvement Areas (NIAs), ancient woodland, and veteran trees. The rationale for site selection of nitrogen deposition compensation sites is provided in Section 7.4 of ES Appendix 5.6: Project Air Quality Action Plan [**APP-350**]. The link between impacted sites and compensation sites (i.e. the relevance or functionality of individual compensation sites to individual impacted sites) is also provided in ES Appendix 5.6: Project Air Quality Action Plan [**APP-350**]. The section on identification of search areas (paragraphs 7.4.6 to 7.4.12) identifies the ecological networks that the affected sites lie within, which were then used to search for suitable compensation sites where landscape-scale compensation would add ecological resilience to all sites within that ecological network. Each affected site is therefore linked to the compensation sites within that ecological network, i.e. the associated search area.
ExQ1_Q5.2.5	N/A	**Modelling NO_2** Plate 6.2 in ES Appendix 5.1 [**APP-345**] shows that there are three monitoring locations which are outside of the recommended 25% variation between the modelled and monitored total NO_2. Gravesham Borough Council have identified a particular concern with site GR142, which is close to 60µg/m³, suggesting that at this limit there is a greater chance of exceedances of the 1-hour short term objective for NO_2. However, the modelling is predicting concentrations around 20µg/m³ lower than this at this location. Site GR142 it located adjacent to the A2 within the existing Air Quality Management Area (AQMA). It is located close to the Shorne and Ashenbank Woods SSSI. There is a risk therefore that results in this area may be underpredicting.

PINS ID	External Stakeholder (where applicable)	Question / Response
		The Applicant is requested to revisit the model verification around GR142 to demonstrate that is it not significantly underpredicting the impacts on the area. The Applicant shall report the reassessment to the ExA.
		Response: Model Verification As described in paragraphs 5.3.156 and 5.3.157 of Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**], the base year air quality model has been verified against 241 roadside air quality monitoring sites in line with LAQM.TG22[30], which involves comparing modelled and monitored pollutant concentrations and, when required, adjusting the model output to account for systematic bias. The large modelled domain covers a range of environments and settings (i.e. motorway, urban and rural). Following the verification process, an overall Root Mean Square Error value of 5.8µg/m^3 was derived for the Project air quality model, which is well within the Defra[1] recommended Root Mean Square Error value of 10µg/m^3 and so the base year air quality model is considered robust. It should be noted that it is not considered robust to derive a verification factor from only one monitoring site to apply at receptors. Defra[1] notes that is considered better to have multiple sites at which to verify results rather than just one monitor. GR142 Site Specific Verification Although it is not considered to be good practice to use only an individual monitoring site for verification, a verification factor has been derived based only on GR142 and has been applied in a sensitivity test to the nearest human and ecological receptors to this monitoring location, as this would lead to the highest possible concentrations that could be derived based on monitoring sites in the vicinity of Gravesham A2 AQMA and Shorne and Ashenbank Woods SSSI. The verification factor for GR142 has been applied at the nearest human and ecological receptors which are located immediately north of the A2, these are the Inn on the Lake Hotel (LTC195_H), Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI), Shorne Woods Ancient Woodland (AW), OBJECT ID 9143 AW and 22 veteran trees. It should be noted that the modelled concentrations at other monitoring sites in the vicinity of GR142 (within circa 2km) and in Gravesham A2 AQMA and/or adjacent to Shorne and Ashenbank Woods SSSI are in agreement with total monitored concentrations (+/-5%) or overpredict total monitored concentrations following verification, as shown in Table 7, and so the model used for the Project air quality assessment is considered to be representative or to overpredict concentrations at other ecological and human receptors in this area.

[30] Department for Environment, Food and Rural Affairs (2022). Local Air Quality Management Technical Guidance (TG.22). https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf

PINS ID	External Stakeholder (where applicable)	Question / Response

Table 7 Monitored and adjusted total modelled NO_2 2016

Site ID	Monitored total NO_2 ($\mu g/m^3$)	Adjusted modelled total NO_2 ($\mu g/m^3$)	Ratio of monitored vs modelled total NO_2
GR141	31.4	36.5	0.86
LTC_ECO_05	33.0	33.9	0.97
LTC_ECO_11	38.2	38.4	0.99
GR110	34.5	33.4	1.03
A2EBB_014_0913	24.6	31.7	0.78

A road-NOx verification factor of 1.61 has been derived specifically for GR142 following the same verification methodology as outlined in Section 6 of ES Appendix 5.1: Air Quality Methodology [**APP-345**], and the monitored versus adjusted total modelled NO_2 concentrations are shown in Table 8. Note that a zone verification factor of 0.8 was derived for monitoring sites along the A2 (zone 12 which includes GR142) in the Project air quality assessment, and so this factor has doubled from what was previously applied at receptors in the vicinity of monitoring site GR142. The GR142 site-specific model verification factor of 1.61 has been applied to the aforementioned receptors in the vicinity of the monitoring site to determine how this affects the receptor results reported in the Project air quality assessment. The results are discussed below for human and ecological receptors.

Table 8 Monitored and adjusted total modelled NO_2 2016 at GR142 following site-specific verification.

Site ID	Monitored total NO_2 ($\mu g/m^3$)	Adjusted modelled total NO_2 ($\mu g/m^3$)	Ratio of monitored vs modelled total NO_2
GR142	58.9	58.9	1.0

Human receptors

Monitoring site GR142 is located on the verge of the Inn of the Lake Hotel carpark, within approximately 25m of the A2; car parks are not representative of relevant exposure in relation to the assessment of AQS objectives. The only

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human receptor where AQS objectives would apply in the vicinity of GR142 is receptor LTC195_H (Inn on the Lake Hotel building), which is located approximately 50m from the A2. Table 9 shows the modelled annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations predicted at LTC195_H in the opening year (2030) Do-Minimum and Do-Something scenario with the application of the GR142 site-specific verification factor.

Table 9 Annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations (µg/m^3) modelled at LTC195_H in the 2030 Do-Minimum and Do-Something scenarios (inclusive of verification factor of 1.61 derived at GR142)
<table>
<tr><th>Pollutant</th><th>Do Minimum</th><th>Do Something</th><th>Change</th><th>AQS Objective</th></tr>
<tr><td>NO_2</td><td>38.1</td><td>39.4</td><td>1.3</td><td>40</td></tr>
<tr><td>PM_{10}</td><td>20.2</td><td>20.6</td><td>0.4</td><td>40</td></tr>
<tr><td>$PM_{2.5}$</td><td>13.8</td><td>14.2</td><td>0.4</td><td>25</td></tr>
</table>
As shown in Table 9, modelled annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations are all below the annual mean AQS objectives in both the Do-Minimum and Do-Something scenarios. Furthermore, because predicted annual mean NO_2 concentrations are below 60µg/m^3 and the predicted annual mean PM_{10} concentrations are below 32µg/m^3, there are expected to be no exceedances of the 1-hour mean NO_2 or 24-hour mean PM_{10} AQS objectives. It should also be noted that, as the receptor is a hotel, the annual mean AQS objective would not apply here unless it was being used as a permanent residence. There would therefore be no change to the significance assessment on human health reported in ES Chapter 5: Air Quality [APP-143] as a result of the application of a GR142 site-specific verification factor.
<u>Ecological receptors</u>
The predicted nitrogen (N) deposition has been remodelled at the ecological receptors in the vicinity of GR142 in the opening year (2030) Do-Minimum and Do-Something scenarios. The change in N deposition at these receptors would be a factor of two greater than the change reported in ES Chapter 5: Air Quality [APP-143] as a result of the application of the GR142 site-specific verification factor.
The predicted increases in N deposition do not affect the assessment originally made regarding this location in ES Chapter 8: Terrestrial Biodiversity [APP-146] Table 8.37, which concluded that the change in N deposition on Shorne and Ashenbank Woods SSSI and the overlapping ancient woodland designations Shorne Woods AW and AW_Theme_ID_1486860 (Shorne Woods) AW leads to a major adverse impact and a significant effect. Furthermore, there would be no change to the extent of the N deposition impact (area where the increase is greater than 0.4Kg N ha^{-1} yr^{-1}) as a result of this change, as all receptors where there was an increase in N deposition in this area (including
</td></tr>
</table>

PINS ID	External Stakeholder (where applicable)	Question / Response
		veteran trees within 200m of the A2) also previously exceeded the 0.4Kg N ha^{-1} yr^{-1} criteria used to define the extent of impact in the assessment.
ExQ1_Q5.2.6	N/A	**Assessment** Whilst it is recognised that the assessment has followed DMRB LA105 in considering effects from construction of under two years will not result in significant effects, can the Applicant confirm that there would be no exceedances of the AQS limit values at any receptors relevant to ecological function and biodiversity significance during the construction phase?
		Response: The Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 set national air quality objective levels for local authorities to meet in England. These are the Air Quality Strategy (AQS) objectives, and are commonly referred to as 'AQS objectives'. There are no AQS objectives for the protection of vegetation and ecosystems which are of relevance to ecological function and biodiversity detailed in the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002. There are no AQS objectives for the protection of vegetation and ecosystems in the 2023 Air Quality Strategy[31]. The Air Quality Standards Regulations 2010 (as amended) implement EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe and remain in force in domestic law following EU exit as 'retained EU law'. The Air Quality Standards Regulations set the Limit Values (LV) for the protection of health and Ecosystems. These are referred to as 'Limit Values' and are legally binding. The limit value for the protection of vegetation for oxides of nitrogen (NO_x) incorporated into The Air Quality Standards Regulations 2010 for NO_x for the protection of vegetation is an annual mean of 30µg/m^3. The limit values for the protection of vegetation apply to locations more than 20 km from towns with more than 250,000 inhabitants (i.e. an agglomeration zone) or more than 5 km from other built-up areas, industrial installations or motorways. All of the modelled points at ecologically designated sites residing in the construction phase air quality study area (i.e. those within 200m of the construction phase affected road network) fall inside areas where the limit value for NO_x would not apply. In addition, Defra's Compliance Assessment Summary report[32] states that all non-

[31] Department for Environment, Food and Rural Affairs (2023). Air Quality Strategy – Framework for local authority delivery. Accessed August 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1180706/Air_Quality_Strategy_Web.pdf
[32] Department for Environment, Food and Rural Affairs (2022). Air Pollution in the UK 2021 – Compliance Assessment Summary.

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		agglomeration zones (i.e. those areas where the limit value would apply) comply with the limit value for annual mean NO_x of 30µg/m^3. Compliance in these non-agglomeration zones has been achieved since 2008. Therefore, limit values for exceedances of NOx will not be affected during construction the Project. The effects of changes in nitrogen deposition in relation to critical loads during the construction phase were assessed at all designated sites within the air quality study area (200m of the affected road network) where there was the potential for significant effects over a period of more than two years. This is reported in Environmental Statement (ES) Chapter 8: Terrestrial Biodiversity [**APP-146**], paragraph 8.6.47 and Table 8.30 for sites south of the River Thames, and paragraph 8.6.251 and Table 8.34 for sites north of the River Thames. No sites were assessed as significantly affected by construction phase air quality effects. The cumulative effect of both construction and operational phase air quality impacts has also been assessed and is reported in paragraphs 8.6.443 to 8.6.448 and Table 8.37 for sites south of the River Thames, and paragraphs 8.6.490 to 8.6.496 and Table 8.38 for sites north of the River Thames. The full designated sites air quality assessment is reported in ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403**].
ExQ1_Q5.2.7	N/A	**Mitigation** Mitigation measures for biodiversity are set out in the Project Air Quality Action Plan (PAQAP) [**APP- 350**]. Can the Applicant confirm where in the DCO the PAQAP is secured?
		Response: The specific mitigation and compensation measures within the Project Air Quality Action Plan (PAQAP) [**APP-350**] are secured as follows: • The mitigation measures within the PAQAP are secured via commitment TB025 within the Register of Environmental Actions and Commitments (REAC) contained in Environmental Statement Appendix 2.2: Code of Construction Practice [**REP3-104**]. The REAC commitments are secured under Schedule 2 Requirement 4 of the draft Development Consent Order (DCO) [**REP3-077**]. • The compensation measures are secured via the Design Principles [**REP3-110**] under Requirement 3 in the draft DCO [**REP3-077**] and outline Landscape and Ecology Management Plan [**REP3-106**] under Requirement 5 in the draft DCO [**REP3-077**].
ExQ1_Q5.2.8	N/A	**Additional Monitoring Sites** The ExA has been advised **[**REP1-228**]** that the Applicant has been discussing additional monitoring sites.

PINS ID	External Stakeholder (where applicable)	Question / Response
		What is the effect on the proposed development and the dDCO if further mitigation is found to be required through the additional monitoring?
		Response: The Applicant is not clear what the ExA is referring to with regard to [**REP1-228**] and additional monitoring sites. If the ExA is referring to the air quality monitoring sites outlined in Section 5: Air Quality, of the Gravesham Borough Council Local Impact Report [**REP1-228**], then it should be noted that the Applicant has not proposed to undertake air quality monitoring during the operational phase, and has made no commitment to do so, as the Project does not require mitigation for operational air quality effects for human health or compliance with Limit Values, as described in paragraph 5.8.2 of Environment Statement Chapter 5: Air Quality [**APP-143**]. If the ExA is referring to the request for dust monitoring outlined in paragraph 8.22 and 8.23 of [**REP1-228**], then it should be noted that dust monitoring would be undertaken to ensure that the dust control measures outlined in the Register of Environmental Actions and Commitments, which forms part of the Code of Construction Practice (CoCP) [**REP3-104**], are effective in the control of dust emissions and impacts at receptors. The monitoring would include onsite and offsite inspections for dust (REAC Ref AQ005) as well as dust and particulate monitoring where this is required (REAC Ref. AQ006). This monitoring would not be expected to lead to any additional mitigation requirements but may indicate where dust control methods already proposed and implemented need some adjustment in their management. For example, where dust monitoring shows that site action levels are being exceeded, this would require the contractor or delegated representative to investigate activities on the site to ascertain if dust is not being adequately controlled, and then record the actions taken to resolve the situation in a site logbook (REAC Ref. AQ008).

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