Lower Thames Crossing

9.54 Comments on LIRs Appendix H – Thurrock Council (Part 3 of 5)

Infrastructure Planning (Examination Procedure) Rules 2010

Volume 9

DATE: August 2023
DEADLINE: 2

Planning Inspectorate Scheme Ref: TR010032
Examination Document Ref: TR010032/EXAM/9.54

VERSION: 1.0

Lower Thames Crossing

9.54 Comments on LIRs
Appendix H – Thurrock Council
(Part 3 of 5)

List of contents

Page number

List of tables

Page number

1 Applicants Responses to Thurrock Council's Local Impact Report (Part 3)

Table 1.1 The Applicant's responses to Thurrock Council's Local Impact Report (LIR) – [REP1-281], dealing with Section 10

LIR Reference	Local Impact Report Extract / Applicant's Response
Page 124-125	**10 Assessment of Environmental and Health Impacts** **10.2 Air Quality** **Introduction** 10.2.1 The fraction of mortality attributable to particulate air pollution (Public Health Indication D01, PHE) in Thurrock in 2021 was 5.91%, above the national average and in the highest 20% of local authorities in England. 10.2.2 The Council has investigated air quality within its administrative area as part of its responsibilities under the Local Air Quality Management regime. To date, the Council has declared 18 AQMAs. These have been declared due to exceedances of the annual mean NO2 and 24-hour mean PM10 NAQOs because of traffic related pollution along busy roads, many of which (such as the M25 and sections of the A13) are controlled by National Highways. None of the TC AQMAs fall within the Order Limits for the Project. 10.2.3 The Council carries out monitoring of nitrogen dioxide at three automatic stations and at 67 locations using passive diffusion tubes. In 2019 measured concentrations have been above the annual mean NO 2 objective (40µg/m3) at nine sites within Thurrock, eight of which were within the existing AQMAs. There were also an additional 6 sites which reported within 10% of the NAQO. Overall, NO2 concentrations remained at similar levels during 2018 and 2019. 10.2.4 The Council carries out monitoring of PM10 at three automatic stations, concentrations have remained at similar levels between 2018 and 2020 and there have been no exceedances of the annual mean or 24-hour mean objectives. 10.2.5 The Council carries out monitoring of PM2.5 at one automatic station, concentrations have been below the NAQO of 20µg/m3 for the last 5 years and concentrations have remained relatively constant between 2017 and 2020. 10.2.6 Estimated background concentrations for the Borough are available from the latest 2018 based national maps provided by DEFRA. The background NO2 and PM10 concentrations are below the relevant NAQOs and limit value across the borough. The background PM2.5 concentrations meet the limit value of 20µg/m3, however background concentrations in 2030 (the latest year projections are available) are above The Environmental Targets Regulations 2023 annual mean target of 10µg/m3 to be achieved by 2040 at some locations across the borough.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.2.7 It is therefore evident that the residents of Thurrock have long been exposed to elevated concentrations of air pollution with resultant adverse health effects with NH controlled roads, likely to be a significant contributor. The following summary of key issues aligns with many of the SoCG issues being discussed, but not resolved, with NH over the last 2-3 years. Table 10.1: Summary of Key Issues Relevant Rep VIII – the Council has, since early 2022, requested NH to provide inputs and results for the air quality modelling in an accessible format to allow a meaningful review and understanding of the proposals and impacts. This has not been provided and therefore has not allowed for discussions on additional mitigation to be undertaken in a timely manner. This is documented in Principal Issue VIII within the Relevant Representation document (**PDA-009**). Comments on the previous SoCG issues that remain valid. **SoCG 2.1.101 and SoCG 2.1.196** – no additional information was provided for Tilbury Fields to determine how the highway affects the air quality at the proposed public park adjacent to the tunnel exit at Tilbury Fields. It is considered that additional receptor locations close to the tunnel exits should be considered in the assessment to determine the impact of the scheme on users of the Tilbury Fields. **SoCG 2.1.115** - only the impacts associated the Core Scenario (of the transport modelling) have been assessed within Chapter 5; whilst this is standard practice given the substantial increase in pollutants at receptors close to the route in Thurrock, some clarity on the likely range and likelihood of even more substantial impacts would allow acceptability to be determined. **SoCG 2.1.188** - PM2.5 concentrations were not modelled and instead the PM10 results were used. While it is acknowledged that the Environmental Targets (Fine Particulate Matter) Regulations 2023 and the Environmental Improvement Plan 2023 were published after the DCO was submitted, these documents set a lower concentration than those considered in the assessment. It is considered that further assessment against these targets is undertaken to determine the impact of the scheme within Thurrock. **SoCG 2.1.189 (2)** – the information provided in the Chapter 5 does not provide enough information to determine the overall burden to the residents of Thurrock. Particularly in respect to the increases in Chadwell St Mary, Baker Street and along the A13 between Baker Street and Stanford-le-Hope, where substantial increases in NO2 concentrations are predicted at the receptors presented in the assessment. The DMRB LA105 assessment methodology focuses on locations where there is an exceedance of the NAQOs, significance of the effects should be considered at locations below the NAQOs and additional information be presented on the quantitative health impacts.

LIR Reference	Local Impact Report Extract / Applicant's Response
	SoCG 2.1.189 (3) – it is acknowledged that under the methodology and guidance used within the assessment that mitigation and monitoring for the operational phase is not required by DMRB LA105. However, given the substantial increase predicted within Thurrock, the Council consider that it would be appropriate (and in line with non-Highway related developments) to undertake some monitoring post completion at receptors anticipated to have the greatest change in concentrations because of the scheme. **SoCG 2.1.198 (1)** – it is noted that National Highways were due to commence the baseline monitoring in 2022, confirmation that this has commenced. **SoCG 2.1.198 (2) –** modelling shows there are substantial increases in receptors in proximity to the route within Thurrock, particularly in Chadwell St Mary, Baker Street and along the A13 between Baker Street and Stanford-le-Hope, it is considered that monitoring would be proportionate in these locations. Other Issues The draft NPSNN highlights (paragraph 5.18 and 5.21) that air quality considerations will be important where there is a deterioration in air quality, particularly where substantial changes are expected, and not be limited to areas where breaches of any national air quality limits or statutory air quality objectives are predicted. The current significance criteria in DMRB LA105 guidance are not considered to reflect this emerging requirement and there are receptors where substantial increases in pollutant concentrations are predicted and the ES Chapter 5 (**APP-143**) does not consider them as significant due to the background level rather than the degree of deterioration. It is not clear from ES Chapter 5 (APP-143) and the appendices which diffusion tubes are contained with each verification zone or which receptors are within each verification zone. Given that the verification factors that might have been applied to the modelling results within Thurrock range from ~0.65 to greater than 3, this will have a major effect on the reported impacts. It is therefore considered essential that a figure be provided which shows where each zone has been applied and therefore which receptors are in each verification zone. This will help the Council to better understand the predicted changes in air quality within the Borough.
Applicant's Response	**Table 10.1: Summary of Key Issues** - This matter is addressed by the Statement of Common Ground (SoCG) [**APP-130**], item 2.1.77, summarised below. The Applicant maintains that the information provided on traffic, air quality and noise impacts, during both public consultation and engagement, has been sufficient to understand the Project-wide and localised impacts of the proposals, and to

LIR Reference	Local Impact Report Extract / Applicant's Response
	determine the suitability of the mitigation. During the Community Impacts Consultation this information[1] was set out on a localised basis in the ward summaries, then during the Local Refinement Consultation the Guide to the Consultation set out the proposed changes to the Project, and again confirmed the validity of this information previously released. It should be noted that during the consultation and engagement over the past few years, Thurrock Council made a number of recommendations for additional mitigation, such as low noise surfacing, increased bunding, and the Applicant has incorporated these recommendations into the proposals. An earlier version of Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**] was shared with Thurrock Council for the October 2020 submission and has been updated and shared for the October 2022 submission. The Applicant considers that ES Chapter 5 Air Quality clearly sets out the changes in air quality associated with the Project proposals and provides details of the traffic changes that are resulting in the changes in air quality at the receptors included in the air quality model. For Community Impact Consultation in July 2021, ward-based community impact summaries were shared to allow a better understanding of the impacts at a local level and the report was subsequently updated and submitted as part of the DCO application in the Community Impact Report [**APP-549**]. The Applicant has shared the full suite of DCO documents, including the full traffic assessment(s), air quality, noise and health assessments in December 2020, following the withdrawal of the first DCO application. Following this, technical engagement has continued in all the areas highlighted above via regular meetings, SoCG issue log discussions and topic-specific technical workshops (for topics such as modelling). Further details are presented in Appendix C. The Applicant explained its approach to sharing air quality and noise assessments in the Community Impacts and Public Health Advisory Group (CIPHAG) meeting on 9 December 2021. A schedule of environmental information was shared and discussed in the CIPHAG meeting in May 2022; outlining the changes to the environmental disciplines since the first DCO submission. Furthermore, the Applicant briefed the relevant authorities, including Thurrock Council, on the findings of the finalised noise & air quality assessments (focusing on impacts and mitigation) prior to the submission of the DCO application.

[1] https://highwaysengland.citizenspace.com/ltc/community-impacts-consultation-2021/supporting_documents/Ward%20impact%20summaries%20%20North%201.pdf

https://highwaysengland.citizenspace.com/ltc/community-impacts-consultation-2021/supporting_documents/Ward%20impact%20summaries%20%20North%202.pdf

https://highwaysengland.citizenspace.com/ltc/community-impacts-consultation-2021/supporting_documents/Ward_impact_summaries__South1.pdf

LIR Reference	Local Impact Report Extract / Applicant's Response
	SoCG 2.1.101 and SoCG 2.1.196 - A further discussion on this matter was held on 11 July 2023 and the Council questioned if the Tilbury Fields area and the tunnel entrances were looked at and the Applicant agreed to supply a technical note to demonstrate how these were assessed. These matters are under discussion. **SoCG 2.1.115 –** This should be 2.1.155. This is a matter not agreed in the SoCG. The operational phase air quality assessment presented in ES Chapter 5: Air Quality [**APP-143**] has been carried out in accordance with the guidance detailed in Design Manual for Roads and Bridges (DMRB) LA 105 (Highways England, 2019). Paragraph 2.2 of this states that which states that "*The air quality assessment shall be based on the most likely forecast traffic flows. NOTE: there is no requirement to model other traffic growth sensitivity scenarios for example high and low growth traffic scenarios*". In addition the air quality assessment has included an assessment of uncertainty as required by DMRB LA 105 and described in ES Chapter 5: Air Quality [**APP-143**], paragraphs 5.3.93 to 5.3.97 this results in a significant uplift in concentrations modelled at receptors when compared to the outputs of the air quality model based on the Defra tools. **SoCG 2.1.188 –** The targets for particulate matter where particles are less than 2.5 micrometres in diameter ($PM_{2.5}$) as set out in the Environment Act 2021 and the Environment Improvement plan, were enacted following the submission of the Development Consent Order (DCO), as part of The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (ETR) on 30 January 2023. It is currently not possible to determine how the Project would affect compliance with the $PM_{2.5}$ targets as there is no guidance from Defra on how the targets should be considered in the planning process. Furthermore, there are no air quality model inputs such as background pollution maps available for $PM_{2.5}$ beyond 2030, which means the legal target cannot be assessed quantitatively. The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 are clear that the legal target will only be measured and assessed at monitoring stations (such as Defra Automatic Urban Rural Network (AURN) monitoring network). It is the Applicant's understanding that the 12µg/m^3 interim $PM_{2.5}$ target set in the UK Government's Environmental Improvement plan are not legally binding and compliance is likely to be determined in the same way as the legal $PM_{2.5}$ target (i.e. at AURN monitoring stations). The Applicant has analysed the latest air quality monitoring data from the AURN Network and it should be noted that for 2022, the interim $PM_{2.5}$ target was achieved across the entire AURN monitoring network in England (which includes more than 80 monitoring stations). Only six monitoring stations monitored $PM_{2.5}$ concentrations which exceeded the legal target of 10µg/m^3, but only by a small margin (maximum annual mean 12µg/m^3). $PM_{2.5}$ concentrations are expected to decline in the future in response to ongoing actions undertaken by UK government and local authorities to reduce emissions, and so it is

LIR Reference	Local Impact Report Extract / Applicant's Response
	likely monitored concentrations would be lower by the legal target compliance date of 2040. It is therefore considered unlikely that the Project would impact on achievement of the $PM_{2.5}$ targets. The air quality assessment reported in ES Chapter 5: Air Quality [**APP-143**] showed that the Project would comply with the current legal thresholds for $PM_{2.5}$. Air quality modelling confirmed that there would be no exceedances of the annual mean $PM_{2.5}$ AQS objective of 25µg/m^3 and the annual mean $PM_{2.5}$ Limit Value of 20µg/m^3 across the study area in both the Do-Minimum and Do-Something scenarios of the construction and operational phases. In the draft NPSNN, the Applicant believes this is a repeat and addressed in the response to page 128. **SoCG 2.1.189 (2) -** There are both improvements and deteriorations in air quality as a result of the Project on roads within the area covered by Thurrock Council. The results of the air quality assessment are set out in ES Chapter 5. None of the receptors modelled within Thurrock are predicted to exceed the UK legal thresholds for either nitrogen dioxide nor particulate matter (PM_{10} and $PM_{2.5}$). A further discussion on this matter was held on 11 July and the Council expressed overarching concerns around the Applicant's approach and methodology. This is a matter not agreed in the SoCG. In response to air quality quantitative health assessment: The ES was appropriately scoped with all regulatory authorities and statutory consultees, and included an appropriate air quality assessment (ES Chapter 5 – Air Quality [**APP-143**]). This considered sensitive receptors, existing air quality and was assessed to the relevant air quality thresholds in the assessment years (Air Quality Objectives and Limit Values, which are inherently protective of the environment and health). The methodology applied follows the Applicant's DMRB LA 105, to ensure the Applicant can test the Project's impacts against the requirements in the National Policy Statement for National Networks (NPSNN) (Department for Transport (DfT), 2014). This assessment was completed, submitted and concluded that the operational phase does not result in a significant effect on human health receptors. Whilst sufficient to determine compliance with the NPSNN (DfT, 2014), residual concerns were noted through wider engagement, and additional clarity was deemed of value to set potential risk of changes in pollutants into context. This was deemed useful to respond to concerns from stakeholders in relation to non-threshold pollutants, and the perceived potential health risk from any changes in air quality as a result of the Project, regardless of meeting the legal air quality thresholds for protective of health. The voluntary Air Quality Quantitative Health Impact Assessment (AQQHIA) was therefore carried out, applying the approach and supporting evidence base collated by the Department of Health's Committee on the Medical Effects of Air Pollutants (COMEAP) and the Clean Air for Europe (CAFE) programme. The methodology includes the use of robust concentration response functions recommended for quantification by COMEAP, and applies a consistently precautionary approach, for

LIR Reference	Local Impact Report Extract / Applicant's Response
	example overly pessimistic $PM_{2.5}$ concentrations using the modelled road PM_{10} component added to $PM_{2.5}$ backgrounds. The AQQHIA has no lower threshold to the assessment, so changes of all magnitudes (no matter how small) both above and below the threshold objectives have been considered. The quantitative exposure response assessment as part of the AQQHIA demonstrates that the impact of changes in air pollution as a result of the operation of the Project is not significant, with no measurable change in public health. This conclusion further reinforces the findings of the submitted air quality assessment, that the impacts on Human Health receptors are not significant. On the above basis, the Applicant maintains it has followed the most appropriate guidance to determine whether the Project complies with the NPSNN (DfT, 2014). Engagement with stakeholders identified residual health concerns. The voluntary AQQHIA was commissioned to respond to such concerns. It concludes that the relative change in air quality within the area studied is neither at a concentration or exposure sufficient to quantify any measurable change in public health. A technical note will be produced which will provide the detail underpinning this conclusion, in deadline 3. **SoCG 2.1.189 (3) –** The air quality assessment has concluded there are no significant air quality effects during the operational stage, and consequently there is no requirement for mitigation or monitoring. This is a matter not agreed in the SoCG. **SoCG 2.1.198 (1) –** The Applicant can confirm the air quality monitoring has commenced. **SoCG 2.1.198 (2) –** Responded under 2.1.189 (3) above. **Other issues** The verification zones applied to each monitoring site and receptor correspond with the verification zone location descriptors provided in Table 6.3 of ES Appendix 5.1 Air Quality Methodology [**APP-345**]. Table 6.4 in ES Appendix 5.1 [**APP-345**] presents all the air quality monitoring sites used for model verification and shows which verification zone has been assigned to each monitoring site. Table 6.1 in ES Appendix 5.1 [**APP-345**] shows the grid references for each monitoring site and ES Figure 5.4: Air Quality Monitoring Sites and 2016 Annual Mean Data 1 of 3 [**APP-175**], 2 of 3 [**APP-176**] and 3 of 3 [**APP-177**] show where the monitoring sites are located. Receptors have been geographically assigned verification zones corresponding to the zones of the monitoring sites.
Page 126-128	**Local Impacts Identified by Thurrock Council** 10.2.8 It is acknowledged that there are both improvements and deteriorations in air quality because of the scheme. The information provided in the ES Chapter 5 (**APP-143**) does not provide adequate information to fully determine the overall burden to the residents of Thurrock, particularly in respect to the increases in Chadwell St Mary, Baker Street and along the

LIR Reference	Local Impact Report Extract / Applicant's Response

A13 between Baker Street and Stanford-le-Hope, where substantial increases in NO2 concentrations are predicted at the limited number of receptors presented in Table 1.1 of Appendix 5.4 of the assessment (**APP348**) and Table 5.28 of Chapter 5 (**APP-143**).

10.2.9 Overall, despite the sparsity of modelled receptors in residential areas in proximity to the Scheme, there are more receptors within Thurrock that experience an increase (81 No.) in concentrations compared to those that experience a reduction (56 No). Generally, there is a geographical divide within the Borough with those receptors located in the west of the Borough experiencing a reduction in concentrations, while those located in the east of the Borough experiencing an increase in concentrations.

10.2.10 Whilst NH has not provided complete data in a manner that would aid interpretation, from the data presented in Chapter 5 (**APP-143**) and Table 1.1 of Appendix 5.4 (**APP348**) considering all receptors within Thurrock there is maximum predicted increase in annual average NO2 concentration of 4.8 µg/m^3 (at receptor LTC326 as a result of a new section of road being constructed close to the receptor with predicted flows of 86,400 AADT) and an average increase in annual average NO2 concentrations of 0.3 µg/m^3. The draft NPSNN highlights (paragraph 5.18 and 5.21) that air quality considerations will be important where there is a deterioration in air quality, particularly where substantial changes are expected and not be limited to areas where breaches of any national air quality limits or statutory air quality objectives are predicted. The Council consider that the significance of these changes in concentrations, whilst below the current legal thresholds, should be considered as part of the EIA process.

10.2.11 As a result of the lack of transparent information provided by NH, the Council commissioned Borough-wide modelling in 2022 to clarify the burden of LTC on the residents of Thurrock. This modelling was based on a previous version of the traffic model data provided by NH, who have since declined to provide updated data to allow updates to be assessed. The full Technical Note and associated maps are presented in **Appendix D, Annex 1** and a summary of the findings are discussed below.

10.2.12 From analysis of the modelled impacts, the numbers of residential properties (from OS Address base data) experiencing a change (increase or decrease) in modelled NO_2 and PM2.5 concentrations are summarised in **Table 10.2**.

Table 10.2: Property Count with Predicted Magnitude of Change in Annual Average NO2 and PM2.5 concentration

Predicted Change	Number of Residential Properties with Predicted Increased Concentration	Number of Residential Properties with Predicted Decreased Concentration
'Small' change in NO2'	**18,052**	**9,343**

<table>
<tr><th>LIR Reference</th><th>Local Impact Report Extract / Applicant’s Response</th></tr>
<tr><td></td><td>
<table>
<tr><td>‘Medium’ change in NO2</td><td>1,863</td><td>42</td></tr>
<tr><td>‘Large’ change in NO2</td><td>124</td><td>1</td></tr>
<tr><td>‘Small’ change in PM2.5</td><td>8,782</td><td>3,474</td></tr>
<tr><td>‘Medium’ change in PM2.5</td><td>117</td><td>2</td></tr>
<tr><td>‘Large’ change in PM2.5</td><td>48</td><td>0</td></tr>
</table>
</td></tr>
<tr><td></td><td>10.2.13 These forecast changes in annual average NO2 and PM2.5 concentrations at residential properties have been considered alongside Index of Multiple Deprivation (IMD 2019 by LSOA), as summarised in the Tables 10.3 and 10.4 below.
Table 10.3: Property Count by IMD quintile with Predicted Change in Annual Average NO2 concentration
<table>
<tr><th></th><th colspan="2">Most Deprived</th><th colspan="3">Least Deprived</th><th>Total</th></tr>
<tr><td>IMD quintile</td><td>0-20%</td><td>20-40%</td><td>40-60%</td><td>60-80%</td><td>80-100%</td><td></td></tr>
<tr><td>No of Properties with Predicted Reduction in NO2 Concentrations</td><td>171</td><td>2,739</td><td>1,693</td><td>1,228</td><td>3,555</td><td>9,386</td></tr>
<tr><td>No of Properties with no appreciable change in predicted NO2 concentrations</td><td>4248</td><td>15,799</td><td>8,032</td><td>8,671</td><td>2,844</td><td>39,594</td></tr>
<tr><td>No of Properties with Predicted Increase in NO2 Concentrations</td><td>719</td><td>7,140</td><td>3,630</td><td>5,408</td><td>800</td><td>17,697</td></tr>
</table>
</td></tr>
<tr><td></td><td>
Table 10.4: Property Count by IMD quintile with Predicted Change in Annual Average PM2.5 concentration
<table>
<tr><th></th><th colspan="2">Most Deprived</th><th colspan="3">Least Deprived</th><th>Total</th></tr>
<tr><td>IMD quintile</td><td>0-20%</td><td>20-40%</td><td>40-60%</td><td>60-80%</td><td>80-100%</td><td></td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>LIR Reference</th><th>Local Impact Report Extract / Applicant’s Response</th></tr>
<tr><td></td><td>
<table>
<tr><td>No of Properties with Predicted Reduction in PM2.5 Concentrations</td><td>283</td><td>836</td><td>1,262</td><td>119</td><td>976</td><td>3,476</td></tr>
<tr><td>No of Properties with no appreciable change in predicted PM2.5 concentrations</td><td>6,028</td><td>20,861</td><td>10,200</td><td>13,284</td><td>6,223</td><td>56,596</td></tr>
<tr><td>No of Properties with Predicted Increase in PM2.5 Concentrations</td><td>1,169</td><td>3,981</td><td>1,893</td><td>1,904</td><td>0</td><td>8,947</td></tr>
</table>
10.2.14 The analysis of residential properties indicates that the number forecasted to experience an increase (‘small’, ‘medium’ and ‘large’) in annual average NO 2 and PM2.5 concentrations is substantially greater than the number of properties predicted to experience decreases.
10.2.15 Furthermore, the analysis of the forecast changes in annual average NO2 and PM2.5 concentrations at residential properties alongside Indices of Multiple Deprivation (IMD) indicate that the air pollution impacts of LTC are not equally distributed; residential properties within more deprived areas of Thurrock (lower 2 IMD quintiles) are more likely to experience increased concentrations of NO2 and PM2.5 whereas residential properties within the least deprived quintile are more likely to experience decreases.
10.2.16 These forecasts (and those presented by NH) are based on ‘opening year’ traffic flows and it should be recognised that traffic is forecast to increase significantly within the first 15 years of operation. The rate of renewal of vehicles and uptake of Electric Vehicles (EV) will contribute to anticipated reductions in NOx emissions from road transport; however, this is unlikely to result in any noticeable decrease in PM2.5 emissions (and heavier weights of EV could result in increased emissions). There is uncertainty as to the rate of this change and whether any decrease in NOx emissions will outweigh the growth in traffic flows using LTC.
</td></tr>
<tr><td>Applicant’s Response</td><td>
10.2.8 - 10.2.16
In response to the reference in 10.2.10, the Secretary of State has decided that for any application accepted for examination before designation of the 2023 amendments, the 2014 NPSNN should have effect.
The Applicant has not completed a detailed review of the work undertaken by Thurrock, however the Applicant’s initial comments are that the assessment has been undertaken using guidance that is not appropriate for the assessment of a nationally significant infrastructure project and references air quality thresholds with no legal basis in the UK. This is the case
</td></tr>
</table>

LIR Reference	Local Impact Report Extract / Applicant's Response
	where Thurrock are referencing non-compliance of WHO Air Quality Guidelines, which are not the relevant standards in relation to the assessment of impacts of schemes in the UK. There is not enough detail in the technical report to comment on the robustness of the air quality modelling undertaken on behalf of Thurrock Council, such as the details of the air quality monitoring used to validate the model and the coarseness of the model (i.e. modelling individual receptors vs coarse gridded outputs). In relation to the IAQM guidance that is referenced, Land-Use Planning & Development Control: Planning For Air Quality 2017, paragraph 6.4 of this guidance states "*The guidance provided by the Environment Agency and Highways England has a formal status, reflecting the connections these organisations have with Government departments. This EPUK/IAQM guidance has no such status and is not intended as a substitute for the formal guidance."* The technical note also makes inference in relation to the future $PM_{2.5}$ targets as laid down in Environmental Targets (Fine Particulate Matter) Regulations 2023, however, it is not possible to compare 2030 modelled results at receptors to a Target that applies to air quality monitoring stations. This is particularly the case in relation to the Population Exposure Reduction Target that will be assessed across the country not at individual locations. In relation to mitigation measures, mitigation would only be considered by the Applicant where an assessment has determined that impacts are significant in accordance with DMRB. Where significant effects are identified, the Applicant would only progress measures that are quantifiable and deliverable. The measures referred to by Thurrock are unlikely to be quantifiable, for example influencing driver behaviour, greater awareness etc. However, as no worsening of exceedances of legal thresholds has been predicted and no significant effects have been identified, mitigation measures are not proposed as part of the Project for air quality within Thurrock.
Page 128	**Policy Compliance and Local Impacts** 10.2.18 Paragraph 5.13 of the NPSNN states*:* • The Secretary of State should refuse consent where after taking into account mitigation, the air quality impacts of the scheme will: • Result in a zone/agglomeration which is currently reported as being compliant with the Air Quality Directive becoming non-compliant; or • • Affect the ability of a non-compliant area to achieve compliance within the most recent timescales reported to the European Commission at the time of the decision.' 10.2.19 However, paragraph 5.12 of the NPSNN states:

LIR Reference	Local Impact Report Extract / Applicant's Response
	'The Secretary of State must give air quality considerations substantial weight where, after taking into account mitigation, a project would lead to a significant air quality impact in relation to EIA and / or where they lead to a deterioration in air quality in a zone/agglomeration.' 10.2.20 Whilst the air quality assessment complies with the requirements of paragraph 5.13 of the NPSNN policy, the consideration of the significance of the impacts in relation to EIA (as required by paragraph 5.12) is limited by the DMRB LA105 methodology, which fails to consider the effect of substantial increases in pollutant concentrations at levels below the legal thresholds. 10.2.21 As outlined in **Tables 10.2 – 10.4**, in the absence of any consideration of this by NH, the Council's analysis indicates that as a result of LTC there are in excess of 100 residential properties within Thurrock that could potentially experience a 'large' increase (1,863 potentially experience a 'medium' increase) in annual average NO2 concentrations and 48 residential properties potentially experience a large increase (117 potentially experience a 'medium' increase) in annual average PM2.5 concentrations. 10.2.22 The significance of these impacts on relation to EIA has not been considered within the assessment and therefore does not comply with the requirements of paragraph 5.12 of the NPSNN.
Applicant's Response	10.2.18 – 10.2.22 The Applicant disagrees with the Council's position. The air quality assessment has been undertaken as a means of meeting the decision-making requirements of the NPSNN (paragraphs 5.12 and 5.13). DMRB LA 105 provides the framework of determining whether there is a significant air quality effect on sensitive receptors in line with the requirements of the NPSNN. This is consistent with all other highways schemes that have been through the DCO process. The significance assessment in relation to EIA within the NPSNN is focused on compliance with legal air quality thresholds.
Page 128-129	**Further Work or Mitigation Required** 10.2.23 It is acknowledged that under the methodology and guidance used within the assessment that mitigation and monitoring for the operational phase is not required by DMRB LA105 as NPSNN 5.10 only requires mitigation where there is a breach of air quality thresholds, summarised below. 'Where a project is likely to lead to a breach of the air quality thresholds, the applicant should work with the relevant authorities to secure appropriate mitigation measures with a view to ensuring so far as possible that those thresholds are not breached.'

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.2.24 As a result of the requirements of paragraphs 5.10 and 5.13 of the NPSNN, NH rely on the framework set by their DMRB LA105 guidance, which focusses solely on exceedances of the NAQOs. 10.2.25 However, this approach does not fully acknowledge or recognise the requirements of paragraph 5.12 of the NPSNN (to give substantial weight to significant air quality impacts in relation to EIA, which is given greater clarity and weight in the draft NPSNN) or the potential for adverse health impacts due to NO2 and PM2.5 at levels well below the current AQO (or limit values). 10.2.26 Given the impacts and deterioration in air quality forecast for numerous residential properties within Thurrock, the Council consider that appropriate mitigation measures should have been investigated by NH though the design process of the Scheme. 10.2.27 This should include consideration of mitigation measures related to the source, i.e. speed limit reduction, encouragement of EV uptake, influencing driver behaviour, etc.); pathway, i.e. alignment and use of barriers; and, receptor, i.e. filtration and awareness raising, as recommended in Highway England Research (this was a summary of research projects to improve air quality on or close to the strategic road network, December 2019). 10.2.28 No evidence has been presented to demonstrate that the efficacy and practicability of options to mitigate the air quality impacts of operational traffic have been considered through the design process of the Scheme and the Council consider that that mitigation, such as speed limits or additional physical barriers to protect the most impacted and vulnerable receptors, need to be secured through the DCO. 10.2.29 Additionally, given the inherent uncertain in the underlying traffic data and methodologies for modelling emissions from traffic, the Council consider that it would be appropriate (and in line with non-Highway related developments) to undertake extensive monitoring post completion at receptors identified by the air quality assessment to have the greatest change in concentrations because of the scheme. This would provide clarity as to the actual impacts of the Scheme on air quality (and risk of adverse health effects) and support the Council in its statutory duties in regard to Local Air Quality Management and Public Health. In addition, it is necessary for funding to be provided to the Council to mitigate any exceedances found due to such monitoring.
Applicant's Response	10.2.23 – 10.2.25 The Air Quality Assessment has been undertaken as a means of meeting the decision making requirements of the NPSNN (paras 5.12 and 5.13). DMRB LA 105 provides the framework of determining whether there is a significant air quality effect on sensitive receptors. This is consistent with all other highways schemes that have been through the DCO process. The significance assessment in relation to EIA within the NPSNN is focused around compliance with legal air quality thresholds.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.2.26 – 10.2.28 Mitigation would only be considered by the Applicant where there is an assessment which has determined that impacts are significant in accordance with the DMRB LA 105. Where significant effects are identified, the Applicant would only progress measures that are quantifiable and deliverable. The measures referred to by Thurrock are unlikely to be quantifiable, for example influencing driver behaviour, greater awareness etc. However, as no worsening of exceedances of legal thresholds has been predicted, and no significant effects have been identified, mitigation measures are not proposed as part of the Project for air quality within Thurrock. 10.2.29 The air quality assessment has concluded that there are no significant effects on human health receptors. Furthermore, the Project does not delay compliance with the Air Quality Directive. No mitigation is therefore required in relation to these effects. Operational phase air quality monitoring is not required as there are no significant air quality effects, and no requirements for mitigation. The Applicant would be required to work with any local authority as part of the Environment Act 2021 as an air quality partner if future exceedances of Air Quality Objectives were identified as a result of roads managed by the Applicant.
Page 130	**10.3 Noise and Vibration** **Introduction** 10.3.1 The Council has, since early 2022, requested NH to provide inputs and results for the noise modelling in an accessible format to allow a meaningful review and understanding of the proposals and impacts. This has not been provided and therefore has not allowed for discussions on additional mitigation to be undertaken in a timely manner. This is documented in Principal Issue VIII within the Relevant Representation document (**PDA-009**). 10.3.2 This review is therefore based solely on the information provided in a .pdf format within the relevant chapter and appendices of the DCO Environmental Statement (ES) documentation (APP-138 – APP-486). 10.3.3 The noise and vibration assessment (Environmental Statement Chapter 12 – Noise and Vibration) **(APP-150)** considers both the operational and construction phases of the proposed development. 10.3.4 Noise impacts have only been reported for human receptors. However, the chapter states that noise modelling has informed other technical chapters, including Chapter 8: Terrestrial Biodiversity. 10.3.5 Noise-sensitive receptors within the jurisdiction of the Council are currently exposed to noise from two significant road traffic sources, the M25 and the A13. Receptors in close proximity to these roads are likely to be subject to significant levels of noise. However, the majority and remaining receptors in the Council area are unlikely to be exposed to significant levels of road traffic noise. Table 10.5: Summary of Key Issues – Noise and Vibration

LIR Reference	Local Impact Report Extract / Applicant's Response
	Table 12.60 in Chapter 12 of the ES summarises the assessment findings (with mitigation in place), as below.. These are impacts summarised across the full geographical scope of the scheme and not just Thurrock Council: **Construction Phase** Construction Noise – significant impacts are likely during the construction phase due to construction plant. Construction Vibration - no construction plant outside of piling, such as vibratory rollers have been assessed. Construction Road Traffic – moderate or major impacts are likely at receptors due to construction traffic and no mitigation measures seemed to have been outlined. **Operational Phase** Road Traffic - impacts due to the development are likely to cause moderate and major changes in noise levels at receptors within the jurisdiction of the Council.
Applicant's Response	With regard to the "Summary of key issues" section, the council summarises that "significant impacts are likely during the construction phase due to construction plant". Significant impacts are only likely during the construction phase in the unmitigated scenario. With the implementation of BPM controls though commitments made in ES Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**], no significant impacts are likely during the construction phase. The Applicant has provided detailed responses to the other points above in the sections below.
Page 130-132	**Local Impacts Identified by Thurrock Council** 10.3.6 The construction receptors assessed do not cover all receptors that are potentially affected. It is likely that South Ockendon could be subject to construction noise impacts. Therefore, receptors along Cheelson Road, located within South Ockendon, which are in close proximity to the LTC should be included within the assessment. 10.3.7 Construction noise impacts are concluded as being not significant with mitigation measures being identified within the Register of Environmental Actions and Commitments (REAC) (**APP-336**). However, specific measures to mitigate impacts have not been identified. Significant daytime construction impacts are likely at Whitecroft Care Home. Baseline sound levels at this receptor are 55 dB, LAeq,T. Construction noise levels are predicted to be over 70 dBA. Impacts are therefore significant and specific mitigation measures are required for this receptor. Such increases in noise levels equate to a tenfold increase in energy and are likely to be perceived as doubling in loudness. Furthermore, given the sensitivity of the receptor the impact on residents is likely to be particularly significant.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.3.8 Significant adverse effects have been identified relating to construction traffic in the years 2025 – 2029, with over 200 receptors subject to a moderate or more increase in noise levels in 2025 and in 2028. It is unclear what specific mitigation measures have been identified to reduce the impact and what the residual impacts will be. Reference is only made to a Traffic Management Plan, but no details or resulting impacts have been provided. 10.3.9 Operational road traffic impacts due to the development are likely to cause moderate and major changes in noise levels at receptors within the jurisdiction of the Council. Whilst mitigation measures, such as the implementation and commitment to low noise road surface are welcomed, these impacts will remain. Therefore, receptors within the Council area will experience permanent increases in noise levels that are likely to be perceivable and be a potential source of annoyance. 10.3.10 Acoustic barriers have been appraised within the ES and some have been identified as being included in the assessment. However, given that major and moderate impacts remain, it is questioned why the use of additional barriers/increased lengths have not been included. Based on Section 6.2 of the ES Figures, Figure 12.7, these impacts remain at the following locations: • Edge of East Tilbury; • West Tilbury; • Linford; • North of Chadwell St. Mary; • To the North of South Ockendon and Ockendon; and • Orsett Heath. 10.3.11 Impacts above the SOAEL (Significant Observed Adverse Effect Level) will also be experienced at 2 receptors within Thurrock. These are Nos 1 and 2 Brook Farm Cottages, Brentwood Road. No specific mitigation measures or compensation have been put forward for these receptors. Furthermore, no operational monitoring is specified despite significant impacts being identified. 10.3.12 The assessment has considered a study area in accordance with DMRB. However, it is noted that certain receptors do not appear to have been included within the assessment despite having been raised previously with NH. The receptors that require further assessment are set out below. 10.3.13 Tilbury Fields has not been assessed as a receptor during the construction phase. With respect to operational noise, levels are presented in Figures 12.7 and 12.8 of the ES but have not been considered specifically in the ES. Therefore, it cannot be concluded as to how the construction or operation of the scheme affects Tilbury Fields.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.3.14 The Gammonfields Way traveller site has also not been assessed in the noise and vibration chapter (**APP-150**). Given the sound insulation for such receptors is likely to be less than for typical residential dwellings, impacts could be more significant. Gammonfields Way travellers' site is mentioned within *Section 6.1 of the ES Chapter 13 Population and Human Health.* However, there are no specific noise levels mentioned with regards to construction and no assessment of the suitability of the site with regards to private external amenity areas or internal noise levels. The ES Chapter simply concludes that with mitigation measures included, impacts are slight adverse and not significant. There is no justification for this conclusion and a full noise assessment should be undertaken for that travellers site.
Applicant's Response	The points raised are responded to in turn below. **Response to 10.3.6 -** As detailed in Section 12.3 of ES Chapter 12 - Noise and Vibration [**APP-150**], the study area for the noise assessment has been appropriately defined based upon the guidance of DMRB LA111 and supporting documents. Construction noise has been considered and assessed based upon the selection of representative receptors along the Project route. With regard to receptors along Cheelson Road within South Ockendon, the construction noise assessment location CN116 is located immediately to the north of these receptors, closer to the Project than the road stated, and therefore subject to higher predicted levels of construction noise. Therefore, this receptor is representative of the impacts expected at Cheelson Road. Reference to Table 12.34 of ES Chapter 12 - Noise and Vibration [**APP-150**] details that at CN116 unmitigated significant effects could be likely during the daytime and night-time periods in this locality. Further analysis presented in Table 12.35 detail these impacts to result from "*construction operations within Ockendon Road Compound, movements along construction haul routes and construction of utilities work No(s) MUT28, MU69, G9, MU68, MU70, MUT27*" as well as night time tie in activities on the B186 North Road. However, it is reiterated that this is an unmitigated scenario. The conclusion of the construction noise assessment details that with the proper implementation of mitigation through Best Practicable Means (BPM), secured through REAC commitments within ES Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**], specifically NV007 (Best Practicable Means) these impacts would not represent a significant impact. As a result of the location of CN116 it can be reasonably inferred that this conclusion would be consistent at Cheelson Road, located further away from the Project works. Within ES Appendix 2.2 - Code of Construction Practice [**REP1-157**] commitments NV001, NV002 and NV004 were specifically included to ensure noise and vibration from construction activities was fully considered and assessed, with mitigation provision set out prior to undertaking any works, once specifics of the working practices and programme were fully understood. This would involve consultation with the relevant local authorities. REAC commitment NV009 sets out a requirement for monitoring of noise and vibration during construction to ensure measures set out in Control of Pollution Act

LIR Reference	Local Impact Report Extract / Applicant's Response
	Section 61 applications are working effectively and allow, in association with community engagement (NV008), for additional measures to be taken where identified as necessary. **10.3.7 -** Much of the information presented in response to paragraph 10.3.6 remains consistent in the response to paragraph 10.3.7, with construction noise controlled through commitments in the REAC and through ES Appendix 2.2 - Code of Construction Practice [**REP1-157**]. Under the current UK guidance on construction noise, BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, which is used to consider and control construction noise on developments within the UK, a measured noise level of 55dB L_{Aeq} would equate to a construction noise impact threshold of 65dB(A) (Category A Threshold Level from BS 5228). This is the value that should be used in the consideration of impacts. The Applicant agrees that '*specific mitigation measures are required for this receptor*'. In Table 12.33 of the ES Chapter 12 - Noise and Vibration [**APP-150**] recommendations are made for specific measures at this receptor (CN85), concluding that BPM be implemented in the control of construction noise, secured through REAC commitment NV007 (Best Practicable Means) within ES Appendix 2.2 - Code of Construction Practice [**REP1-157**]. Within the scope of ES Chapter 12 - Noise and Vibration [**APP-150**] all receptors are given the same sensitivity, however, further consideration of the sensitivities of the Whitecroft Care Home is given in ES Chapter 13 - Population and Human Health [**APP-151**] and the Health and Equalities Impact Assessment [**APP-539**]. **10.3.8 -** The construction traffic impacts on the wider road network are temporary in nature, only occurring for the duration of the works in that area. As detailed within the ES Chapter 12 - Noise and Vibration [**APP-150**] significant impacts associated with construction traffic have been identified but these predominantly occur on local minor roads around the Project, where the existing flows are low; as detailed on ES Figure 12.2 - Construction Traffic Noise - Affected Links [**APP-310**]. The roads presenting the potential for significant impacts tend to be lower speed roads, with impacts occurring at properties directly adjacent, which when coupled with the temporary short term nature of the impacts, means that provision of physical noise mitigation such as low noise surfacing and acoustic screening are not considered to be sustainable or proportionate measures. Specific control of construction traffic noise is therefore implemented through the ability to actively monitor and manage the flows around the network, allowing route changes and other control measures to be implemented to alter flow patterns of construction traffic where problems are identified. This would be managed through measures in the outline Traffic Management Plan for Construction (oTMPfC) [**REP1-174**]. The oTMPfC provides a framework that would apply to the design, management and communication of construction traffic management. It sets out how the Traffic Management Plans (TMPs) will be determined and developed by the Contractors

LIR Reference	Local Impact Report Extract / Applicant's Response
	through consultation with all relevant stakeholders via the Traffic Management Forum. Additionally, the oTMPfC set out the minimum requirements the TMP would address for each stakeholder category i.e. residents, businesses, schools etc, set out in Table 2.3. This approach offers a robust framework for developing the TMP in consultation with relevant stakeholders, as the details associated with the construction methodology develop. The use of diversion routes is often necessary as part of a road closure to facilitate the safe construction of the works. Table 4.5 in the oTMPfC [**REP1-174**] sets out proposed diversion routes as a start point for further discussion via the Traffic Management Forum as stated in paragraph 4.7.3 of the same document: 4.7.3 The diversion route would be determined through discussions with the local highway authority closer to the time as other factors may need to be taken into account to make the decision (e.g., other works in the nearby area which may be external from the Project works). Through the TMP and the Traffic Management Forum, when evaluating the suitability of a diversion route, the Contractors will discuss and carefully consider the potential impacts on sensitive receptors, including residential dwellings and other identified sensitive receptors, in close proximity to the local road network and implement appropriate mitigation measures where reasonably practicable. Such measures would be set out in the Second Iteration of Environmental Management to be approved by the Secretary of State after consultation with bodies including relevant planning authorities and highway authorities in accordance with Requirement 4 of the draft DCO [**REP1-042**]. This plan will encompass sensitive receptors, including residential areas impacted by the construction works, and outline a robust monitoring strategy. As committed to in the REAC NV009 (ES Appendix 2.2 - Code of Construction Practice [**REP1-157**]) the Contractors will identifying monitoring in consultation with relevant local planning authorities to ensure that the mitigation measures suggested are working effectively. The Contractor will implement a monitoring system capturing real-time traffic data to confirm effective traffic control measures and Temporary Traffic Management performance. Monthly compliance reports, based on traffic monitoring measures, will be provided to the Traffic Management Forum to assess activity and ensure adherence to specifications, guiding actions to resolve non-compliance and address complaints. This requirement is secured in the oTMPfC [**REP1-174**] and described in paragraph 2.4.8 – 2.4.24 of the document. Specifying mitigation at this early stage, when the exact diversion routes and potential impacts are yet to be defined, is not be considered appropriate. Instead, a framework has been set to enable the relevant consultation with stakeholders to determine the suitability of diversion routes and appropriate mitigation measures, which is supplemented by a monitoring strategy to closely observe and identify areas that require improvement as a result of impacts, including diversion routes from

LIR Reference	Local Impact Report Extract / Applicant's Response
	temporary traffic management. This approach will enable the contractor to take evidence-based decisions to implement tailored mitigation measures where appropriate. In addition to measures set out in the ES Appendix 2.2 - Code of Construction Practice [**REP1-157**], the Contractor will secure Section 61 consent under the Control of Pollution Act 1974 (REAC NV004) at relevant stages of the Project as necessary, which is outlined in Table 4.2 of the Code of Construction Practice. In consultation with the relevant local authority, additional control measures will be agreed upon, to effectively manage potential disruptions and impacts resulting from the Project construction activities, including temporary traffic management and associated diversion routes. Such measures may include traffic calming measures and physical interventions such as acoustic barriers where these are proved to be necessary, effective and reasonably practicable. **10.3.9 and 10.3.10** are considered together here as they relate to a similar issue of operational noise impacts and mitigation provision. The mitigation for the operational phase of the Project is set out in Section 12.5 of ES Chapter 12 - Noise and Vibration [**APP-150**] and presents a balanced mitigation scheme. This mitigation is based around substantial earthworks keeping the Project low in the environment and maximising noise reduction through the use of more natural looking earthworks where possible, provision of noise reduction at source through Low Noise Surfacing (LNS) products and, where a balanced consideration of the performance and the potential for other significant effects outside of noise (ES Appendix 12.10 - Road Traffic Noise Mitigation and Cost Benefit Analysis [**APP-450**]) permits, acoustic fencing provision. Full consideration of the mitigation package was given within the scope of the noise assessment, with the justification for the inclusion or not of noise barriers in certain locations given in ES Appendix 12.10 - Road Traffic Noise Mitigation and Cost Benefit Analysis [**APP-450**]. Within the design of the Project, barriers reporting a low Value for Money and therefore not performing in an acoustic context relative to the cost of the measure, and barriers presenting the potential for new significant effects outside of noise were discounted as not cost effective. The length of barriers was generally constrained by the presence of existing earthworks measures within the design, or limitations set by other disciplines including civils and drainage. As such the Applicant concludes that the mitigation scheme presented within the scope of the design represents a balanced and proportionate view on the mitigation, according with the principles of Aim 2 of the NPSNN where noise is required to be reduced as reasonably possible to minimise adverse impacts. **10.3.11** – The Applicant acknowledges that impacts above a SOAEL are reported at two receptors in Thurrock, Nos 1 and 2 Brook Farm Cottages, Brentwood Road. However, it is not correct to suggest that no specific mitigation or compensation is

LIR Reference	Local Impact Report Extract / Applicant's Response
	provided for these receptors. Directly adjacent to these receptors, as detailed on ES Figure 12.6 - Operational Road Traffic Noise Mitigation [**APP-314**], is provision of a 96m long, 3m high acoustic fence extending between earthworks features. Full consideration of the mitigation package was given within the scope of the noise assessment, with the justification for the inclusion or not of noise barriers in certain locations given in ES Appendix 12.10 - Road Traffic Noise Mitigation and Cost Benefit Analysis [**APP-450**]. Barrier Option 9 as listed in Appendix 12.10 was considered in relation to noise performance and the potential for other significant impacts outside of noise. The results of this are presented in Table 4.9 Barrier Option 9 appraisal of said document. Consideration was given to a 1m, 2m and 3m barrier in this location, with higher barriers discounted as a result of Landscape and Visual concerns. The general conclusion with regard to noise was that, whilst the barriers did remove significant effects below a SOAEL, the value for money (VfM) calculations did not present a proportionate measure, returning a VfM of less than 1 in all cases. • The barrier at 1m does not remove any significant effects or change the number of dwellings above a SOAEL during the daytime or night-time • The barrier at 2m does not remove any significant effects but does remove two impacts from above a SOAEL during the daytime; does not remove any significant effects or change the number of dwellings above a SOAEL during the night-time • The barrier at 3m does not remove any significant effects but does remove two impacts from above a SOAEL during the daytime; does not remove any significant effects or change the number of dwellings above a SOAEL during the night-time Consultation with Landscape and Visual and Cultural Heritage concluded that a maximum fence height in this location of 3m would be suitable without introducing new significant effects. The provision of either a 2m or 3m acoustic fence as defined by Option 9 did not remove any significant effects from the assessment, but did remove two daytime impacts from above a SOAEL. The provision of the 3m fence, however, did not remove these significant night-time effects above a SOAEL. The driving factors in the specification of Barrier Option 9 were that the implementation of the measure above 3m would not remove significant noise effects, but would present the potential to introduce new significant effects relating to Landscape and Visual, and Cultural Heritage, as presented in Table 4.9. Hence, on balance the decision was made to include the acoustic fence at Option 9 location purely to address the significant effects above a SOAEL at Brook Farm Cottages.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.3.12 to 10.3.14 are considered together here as they relate to a similar concerns about receptors not having been included as part of the study. Specifically Thurrock raise concerns relating to Tilbury Fields and The Gammonfields Way Travellers site. These are considered separately below. Tilbury Fields Tilbury Fields relates to a publicly accessible area defined as a "new sculptural landscape earthworks on Goshems Farm designed to create vistas across the Thames Estuary and guide views to features such as Tilbury Fort and Coalhouse Fort". As defined within the scope of DMRB LA111, Chapter 12 relates to the assessment and consideration of "*likely significant effects on sensitive buildings within the relevant study areas*" (DMRB LA111, Section 2, Para 2.2). ES Chapter 7 - Landscape and Visual [**APP-145**] provides an assessment of the effects on the landscape resource and visual amenity. This includes the effects on local landscape character and views from publicly accessible locations such as public open spaces. The Gammonfields Way Travellers' Site The existing Gammonfields Way travellers' site located to the west of Baker Street would be acquired permanently for the Project road alignment. A replacement site would be constructed by the Applicant on adjacent land to the west of the existing site as part of the DCO. The new site would be constructed prior to the existing site being closed and residents relocated prior to construction of the Project commencing in this location. Assessment of potential noise impacts have been undertaken for all travellers' sites potentially affected by construction activities. Within Thurrock, this includes a site located at the end of Lower Crescent, Linford and the Gammonfields Way travellers' site. This is referenced within the Health and Equalities Impact Assessment [**APP-539**] which concludes that, with best practice measures (BPM) and other construction phase mitigation implemented through the controls inherent within the ES Appendix 2.2 - Code of Construction Practice [**REP1-157**], construction noise would be suitably controlled to a level where it would not constitute a significant effect at any of the travellers' sites identified and assessed. Construction Noise Assessment at the existing Gammonfields Way Travellers' Site During construction, unmitigated reasonable worst case construction noise levels at the existing site are predicted to have a moderate adverse impact during the night-time, with a maximum exceedance of 8.8dB(A) above the night-time period SOAEL. No significant impacts are reported at this location during the daytime or evening periods. • During the night-time these exceedances would occur during the construction of utilities Work No. OHT 4 and 7 and OH6. As a result of the exceedance of a SOAEL, mitigation will be required to be implemented through the controls inherent within REAC commitment NV007 (Section 7 of the CoCP [**REP1-157**]) relating to BPM.

LIR Reference	Local Impact Report Extract / Applicant's Response
	A comprehensive list of BPM measures is presented within Section 12.5 (Good Practice Mitigation) which will be implemented where appropriate across all construction activities associated with the Project. With regard to BPM for this receptor, measures would be required to include the following: • Fit construction plant with efficient exhaust sound reduction and equipment enclosure panels to be kept closed (BS 5228-1 indicates a 5 to 10dB reduction in noise) • Acoustic screening between construction works and noise-sensitive receptor (BS 5228-1 indicates up to 10 dB reduction in noise) • Enclose static plant in ventilated acoustic enclosure (BS 5228-1 indicates up to 20dB reduction in noise) As a conservative assumption, based upon the activities being undertaken in close proximity to at this receptor, a 10dB(A) attenuation attributable to the robust implementation of BPM measures can be reasonably applied. This correction for BPM would therefore reduce the predicted unmitigated reasonable worst case construction noise levels to below the night-time SOAEL and would therefore not constitute a significant effect. Operational road traffic noise assessment at the relocated Gammonfields Way Travellers' site The tables below presents the predicted change in road traffic noise in the opening year of the Project during the daytime and night-time periods by plot, as the Applicant has been advised that residents would retain the same plot number on the new site. It is noted that the Do-minimum (DM) relates to the current site and the Do-something (DS) to the new site. **Gammonfields Way Travellers Site Daytime Noise change Assessment, $L_{A10,18h}$ dB** **Gammonfields Way Travellers Site Night-time Noise change Assessment, L_{night} dB** As can be seen in the tables above, as a result of the geographic move of the site, the change in noise level would result in a Significant Beneficial Effect with Major Beneficial Impacts reported across all plots. This assessment is referenced within the Health and Equalities Impact Assessment [**APP-539**], which notes that the operational day-time and night-time impacts for all pitches has been assessed as beneficial.
Page 132	Policy Compliance and Local Impact 10.3.15 NPSNN states in paragraph 5.195 that the Secretary of State should not grant development consent unless satisfied that the proposals meet the following aims: • Avoid significant adverse impacts on health and quality of life from noise as a result of the new development; • Mitigate and minimise other adverse impacts on health and quality of life from noise from the new development; and,

LIR Reference	Local Impact Report Extract / Applicant's Response
	• Contribute to improvements to health and quality of life through the effective management and control of noise, where possible. 10.3.16 With regards to the first aim, the ES identifies that significant adverse effects have not been completely avoided and there remain receptors where effects above a SOAEL are predicted during operation. By exceeding the significant levels, the noise causes a material change in behaviour, attitude or other physiological response. This can include avoiding certain activities during periods of intrusion and where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. There is also potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Overall quality of life is diminished due to change in acoustic character of the area. 10.3.17 Construction traffic impacts are likely to increase noise levels to above moderate impacts. However, as no absolute noise level information has been provided, there is no evidence to confirm that significant effects are not likely at the receptors. 10.3.18 With regards to the second aim, the proposal includes acoustic barriers, cuttings and bunds as well as a low-noise surface. However, given that impacts remain moderate and major, further measures such as increased barrier heights/alternative routes should be considered to minimise adverse impacts. 10.3.19 With regards to the third aim, the development proposals are unlikely to improve health and quality of life with respect to noise. Whilst noise is typically still considered to be a nuisance rather than a threat to public health, research is growing to oppose this view. The UK Health Security Agency (UKHSA) has conducted a new study to better understand how noise can affect health and wellbeing. The full report is provided in **Appendix D, Annex 2** and further referred to in Section 10.13.7 below. The research builds on long established evidence that living in an area with higher noise levels from traffic can lead to stress and sleep disturbance, and more recent research shows that this can lead to an increase in an individuals' risk of developing more serious health problems such as heart disease or diabetes. The research undertaken shows that major sources of noise such as road traffic contribute to a burden of disease across the population. The study further demonstrates the need to consider health impacts of noise in the decision-making process for new transport infrastructure. This is particularly the case for residents of Thurrock who are to be exposed to increased operational road traffic with noise levels above levels defined as moderate and major in DMRB. 10.3.20 Construction activities to be undertaken for many years are also likely to contribute to higher noise levels than residents are currently exposed to which can impact on health and quality of life.

LIR Reference	Local Impact Report Extract / Applicant's Response
Applicant's Response	**10.3.16**. The Applicant fully acknowledges that Significant effects above a SOAEL remain at two receptors within the Thurrock Council area during the operational phase despite the substantial level of mitigation included within the design as detailed in Section 12.5 of ES Chapter 12 - Noise and Vibration [**APP-150**]. Information relating to the rationale behind the mitigation included is described within ES Appendix 12.10 - Road Traffic Noise Mitigation and Cost Benefit Analysis [**APP-450**]. **10.3.17.** Construction traffic has been fully assessed and considered within Section 12.6, paragraph 12.6.41 to 12.6.49 including Tables 12.36 and Table 12.37 of the ES Chapter 12 – Noise and Vibration [**APP-150**]. Table 12.37 presents a conclusion relating to significant effects relative to SOAEF. While absolute levels of road traffic noise are not presented in Table 12.37, the conclusions presented are that the significant effects all occur 'below a SOAEL' **10.3.18.**The mitigation for the operational phase of the Project is set out in Section 12.5 of ES Chapter 12 - Noise and Vibration [**APP-150**]. This presents a balanced mitigation scheme based around substantial earthworks keeping the road low in the environment and maximising noise reduction through the use of more natural looking earthworks screening where possible. In addition, the mitigation includes the provision of noise reduction at source through high performing Low Noise Surfacing (LNS) products and, where a balanced consideration of the performance and the potential for other significant effects outside of noise (ES Appendix 12.10 - Road Traffic Noise Mitigation and Cost Benefit Analysis [**APP-450**]) permits, acoustic fencing provision. Full consideration of the mitigation package was given within the scope of the noise assessment, with the justification for the inclusion or not of noise barriers in certain locations given in ES Appendix 12.10 - Road Traffic Noise Mitigation and Cost Benefit Analysis [**APP-450**]. Within the design of the Project, barriers reporting a low Value for Money and not performing in an acoustic context relative to the cost of the measure, and barriers presenting the potential for new significant effects outside of noise were discounted as not cost effective or proportionate. The length of barriers was generally constrained by the presence of existing earthwork measures within the design, or limitations set by other disciplines including civils and drainage. As such it is concluded that the mitigation scheme presented within the scope of the design represents a balanced and proportionate approach to mitigation, consistent with the principles of sustainable development. Paragraph **10.3.19** and **10.3.20** (with 10.3.20 being more of a statement) 10.3.19 highlights the recent UK Health Security Agency (UKHSA) study relating to how noise can affect health and wellbeing and states that this study 'further demonstrates the need to consider health impacts of noise in the decision-making process for new transport infrastructure'. The Health and Equalities Impact Assessment [**APP-539**] considers the health impacts of noise during the construction and operational phases of the Project within Section 7.9. The assessment is

LIR Reference	Local Impact Report Extract / Applicant's Response
	informed by the findings of ES Chapter 12: Noise and Vibration [**APP-150**] but in addition considers potential impacts as they relate to more sensitive populations. The assessment notes that both positive and negative health outcomes may arise during the operational phase of the Project as a result of changes in noise levels and that changes would be experienced differentially across the population according to levels of sensitivity. The duration of construction activities has been taken into consideration in the assessment of impacts on health and wellbeing of residents as part of the Health and Equalities Impact Assessment [**APP-539**]. Duration of activities does not necessarily equate to *higher* noise levels as suggested in paragraph 10.3.20, although it is acknowledged that longer durations can impact on quality of life. The Health and Equalities Impact Assessment notes that the duration of potential impact for individual communities would likely be medium-term (six months to two years in duration), taking into account individual construction phases. As has been noted in previous responses, a comprehensive list of BPM measures for construction is presented within Section 12.5 (Good Practice Mitigation) of ES Chapter 12: Noise and Vibration [**APP-150**] which will be implemented where appropriate across all construction activities associated with the Project. Planned community liaison groups would help to disseminate information to local communities regarding the programme for construction activities as set out in the ES Appendix 2.2 - Code of Construction Practice [**REP1-157**].
Page 133	Further Work or Mitigation Required 10.3.21 Compensation or specific mitigation measures have not been included for receptors, which are subject to a SOAEL increase in noise levels. Furthermore, operational monitoring has not been included within the REAC (**APP-336**). However, given the significant impacts and potential for further compensation, operational monitoring should be included for these receptors. 10.3.22 Operational impacts are likely to lead to moderate or major changes in noise levels. Further reasoning is to be provided as to why additional barriers/increased heights were not included in the scheme. 10.3.23 The ES chapter 12 (**APP-150**) is unclear on construction traffic mitigation and what resulting noise impacts will be after mitigation. 10.3.24 The ES Chapter 12 (**APP- 150**) states that the use of vessels using the river as part of this scheme would generate low noise levels and the distance to receptors is such that the effects are not significant. NH should provide justification as to what these noise levels are and if night-time works would be undertaken. The resulting assessment should be included within the ES. 10.3.25 The ES Chapter 12 (**APP-150**) states that CFA piling is considered to have a negligible effect. Justification should be provided within the ES with calculations and predictions being provided. No account has been provided within the ES of the

LIR Reference	Local Impact Report Extract / Applicant's Response
	current building conditions and should also form part of the assessment. Other vibration sources such as vibratory roller have also not been assessed and could be a source of potential significant impacts. 10.3.26 With regards to construction noise, mitigation measures which should be referenced to specific receptors should be set out in the REAC (**APP-336**), which can then inform the evidence for residual impacts. This is specific to receptors likely to be subject to significant impacts, such as Whitecroft Care Home (as referred to above). 10.3.27 Receptors previously identified to NH, have not been assessed. These should be included in updated assessment, including Tilbury Fields, Gammon field traveller site and receptors along Cheelson Road. 10.3.28 A discrepancy has also been noted, as the ES Chapter 12 (**APP-150**) states that moderate or greater changes in road traffic noise are expected at Stifford Clays Road. However, Figure 12.7 of the ES does not show this level of change and this needs to be explained.
Applicant's Response	**10.3.21 – 10.3.22** The Applicant believes this is a repeat and addressed in the response to pages 130-132. **10.3.23** The Applicant believes this is a repeat and addressed in the response to pages 130-132. **10.3.24** - As detailed in ES Chapter 2 - Project Description [**APP-140**] paragraph 2.7.293 "*Estimates have been made for the number of material supply vessels likely to be required for each three-month period (quarter of a year) during construction. These range between two and 21 vessels per quarter, and come to a total of 238 vessels over the five-year construction phase. The highest predicted annual number of material supply vessels is 63 in 2026. These numbers assume approximately 70% of vessels have a capacity of 8,000m^3 and 30% have 777m^3 capacity*." 2.7.294 of Chapter 2 further states that "*As a comparison, the Port of Tilbury handled an average of 3,260 vessels per year between 2014 and 2019. The predicted annual number of material supply vessels for the Project in its busiest year is less than 2% of the Port of Tilbury's annual average between 2014 and 2019. The total number of predicted material supply vessels for construction of the Project over five years is less than 1.5% of the Port of Tilbury's average over an equivalent time period.*" Paragraph 2.7.301 further qualifies that the river Thames "*typically sees over 900 vessel transits per month in some sections of the authorised channel within the Order Limits as well as some use of the navigable water on the north side of the channel within the Order Limits*." Given the low number of material supply vessels predicted to use the river, the Applicant considers that a qualitative approach is proportionate in determining likely significant effects and no further assessment is necessary. All river movements will take place on utilising existing port facilities and comply with the consented operating regimes at those sites.

LIR Reference	Local Impact Report Extract / Applicant's Response
	The Applicant notes that there are limited residential or other sensitive receptors, covered within the scope of ES Chapter 12 - Noise and Vibration [**APP-150**], fronting onto the river (with only industrial on the northern shore of the river) to be subject to any impacts, especially considering the river is approximately 1km wide through Thurrock. **10.3.25** - The conclusion of negligible effects from CFA piling is based directly upon the advice of the principal guidance document on construction noise and vibration within the UK, BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration. The British Standard states that "The levels of vibration associated with continuous flight auger injected piling and pressed-in piling are minimal, as the processes do not involve rapid acceleration or deceleration of tools in contact with the ground but rely to a large extent on steady motions". The Applicant therefore considers that no calculations are required to determine the impact from CFA piling and no further justification is necessary. Notwithstanding this, REAC commitment NV017 (Vibration from Piling) specifically covers the issue of vibration from piling and the mechanisms in place to control this. These requirements would be consulted on, and where appropriate included within the scope of any Control of Pollution Act Section 61 applications made under NV004 with Thurrock Council. REAC commitment NV009 sets out a requirement for monitoring of noise and vibration during construction to ensure measures set out in the Section 61 applications are working effectively and allow, in association with community engagement (REAC NV008), for additional measures to be taken where identified as necessary. A survey of building conditions is not considered proportionate for the ES and will not be undertaken at this stage. However, will be required in some locations prior to demolition including Thatched Cottage and Murrells Cottage and 1 & 2 Grays Corner as included under REAC commitment CH004 (Grade II Listed Buildings). With regard to the comment relating to other vibration sources, based upon the level of detail and surety of the plant selection within the ES, the Applicant reiterates the explanation given in Section 12.3 of ES Chapter 12 - Noise and Vibration [**APP-150**] that is based upon research undertaken by TRRL (Transport and Road Research Laboratory (now the Transport Research Laboratory (TRL)) in Supplementary Report 328 'Ground vibrations caused by road construction activities' (TRL Limited, 1997)) at distances greater than 20m it is unlikely that people would be disturbed by vibration from general construction activities; thus not likely to constitute a significant effect. However, mechanisms in place within ES Appendix 2.2 - Code of Construction Practice [**REP1-157**] commitments NV001, NV002 and NV004 were specifically included to ensure noise and vibration from all construction activities was fully considered and assessed, with mitigation provision set out prior to undertaking any works, once exact specifics of the working practices, areas, plant compliment and programme were fully understood. This would involve consultation with the relevant local authorities. REAC commitment NV009 sets out a

LIR Reference	Local Impact Report Extract / Applicant's Response
	requirement for monitoring of noise and vibration during construction to ensure measures set out in Section 61 applications are working effectively and allow, in association with community engagement (NV008), for additional measures to be taken where identified as necessary. **10.3.26** - The Applicant considers that sufficient detail is provided within Table 12.32 of ES Chapter 12 - Noise and Vibration [**APP-150**] to identify which mitigation measures would be applicable to which receptors. The use of these mitigation measures is secured within the commitments contained within ES Appendix 2.2 - Code of Construction Practice [**REP1-157**]. **10.3.27** - The Applicant believes this is a repeat and has already been addressed in the following responses: • Tilbury Fields – paragraphs 10.3.12 to 10.3.14 • Gammonfields Way Travellers site – paragraphs 10.3.12 to 10.3.14 • Cheelson Road – paragraph 10.3.6 **10.3.28** – The Applicant assumes that the notation in question is that in bullet point c of paragraph 12.6.133 of ES Chapter 12 - Noise and Vibration [**APP-150**] where it is stated that Stifford Clays Road is one of the roads along which receptors are identified as being predicted to experience a moderate adverse change in road traffic noise, specifically to the north west of the junction of Stifford Clays Road, Baker Street and Fen Lane. This conclusion is drawn based upon detailed noise modelling to receptor points located around all of the 94,707 buildings in the study area, specified in the assessment as the façade of each with the greatest magnitude of noise change. With regard to the contour mapping presented in ES Figure 12.7 - Opening Year Noise Change Contour (DSOY minus DMOY) [**APP-315**] and ES Figure 12.8 - Future Year Noise Change Contour (DSFY minus DMOY) [**APP-316**], the scale of the presentation and the granularity of the calculation grid to cover such a large area means these should only be used for general principles/reference and not to draw specific conclusions relating to specific properties. As such, there is no discrepancy evident in the ES assessment, and the conclusions drawn within Section 12.6 of ES Chapter 12 - Noise and Vibration [**APP-150**] are valid.
Page 134	**10.4 Cultural Heritage** **Introduction** 10.4.1 The Lower Thames Crossing (LTC) will impact extensive cultural heritage assets along the length of the proposed route. The Historic Environment Record shows many archaeological sites will be impacted with the complete loss of a Scheduled Monument and three listed buildings. The settings of several Listed Buildings and Conservation Areas will also be affected. Following consultation, a programme of aerial photographic rectification and extensive trial trenching has been

LIR Reference	Local Impact Report Extract / Applicant's Response
	undertaken across Thurrock. The Listed Buildings proposed for demolition have had an initial historic building recording completed, which will be enhanced as the buildings are dismantled. Table 10.6: Summary of Key Issues – Cultural Heritage Appropriate identification of harm to associated non designated asset to the Scheduled Monument of Orsett Cropmarks. Securing the appropriate level of mitigation to address the harm or loss of significance resulting from the demolition of three Grade II listed buildings (1-2 Grays Corner Cottages, The Thatches & Murrells Cottage, and Thatched Cottage) and the degradation of the setting of a fourth Grade II listed building (Baker Street Windmill). The Council is still awaiting a revised Holocene report and therefore is unsure with the current document not providing a full assessment of the Holocene deposits. Heritage assessment of the portal entrance has not been evaluated to the level of the remainder of the route. At present we do not know the significance of these deposits and no mitigation strategy has been discussed. The Council is still in discussions with NH on a revised Outline Written Scheme of Investigation (OWRSI) Role of Local Authority archaeological advisors should be clearly and consistently identified for their role of monitoring and signing off the mitigation strategy for each site within the REAC (**APP-336**).
Applicant's Response	The Applicant has addressed each of these matters in the responses to pages 134-137 below.
Page 134-136	Local Impacts Identified by Thurrock Council 10.4.2 The most significant impacts to built heritage within Thurrock resulting from LTC are the demolition of three Grade II listed buildings (1-2 Grays Corner Cottages, The Thatches & Murrells Cottage, and Thatched Cottage) and the degradation of the setting of Baker Street Windmill, also a Grade II Listed Building. 10.4.3 The most significant impacts to below ground archaeology is the destruction of the Cropmark complex Scheduled Monument (SM 1) at Orsett and certainly all the areas of archaeology that would contribute to the assets significance. The impact of LTC will result in the destruction of the vast majority of this monument. There would be a significant effect in EIA terms and in terms of the assessment the impact would be 'major adverse'. In policy terms this would be substantial harm. This has been identified in Chapter 6 **(APP 144)** 10.4.4 LTC will also result in the removal of an associated and related site (site 247), which sits to the north of Stifford Road and outside of the Scheduled Monument (SM1) red line, but should be considered to be of similar importance to the Scheduled Monument as defined in Policy NPSNN 5.124 . Sections 6.5.165 of Planning Statement 7.2 and 6.3.78 of Chapter

LIR Reference	Local Impact Report Extract / Applicant's Response
	6: Cultural Heritage (APP 144) do not recognise the importance of site 247, even though it is part of the same complex that is Scheduled to the south (SM1). 10.4.5 Historic Building Recordings have been carried out for the three listed buildings proposed for demolition (APP 374) and this will be enhanced as the buildings are dismantled. This is a specific commitment in the Register of Environmental Actions and Commitments (REAC commitment: CH004) (APP 336). The REAC also commits to adhere to the AWS-OWSI (APP 367) (REAC commitment: CH001), which includes the Level 3 Historic Building Recording of Baker Street Windmill. 10.4.6 There is potential for further mitigation for the loss of the Grade II listed Thatched Cottage in particular. As a timber-framed building of a modest size, it is a good candidate for dismantling, relocating and reconstructing if an appropriate site can be located It could have potential benefits of a legacy project involving the use of the building in training/upskilling in traditional building techniques. Whilst the building would lose its historic context and setting, its reconstruction would offer a level of mitigation as there would no longer be a complete loss of the building's significance. 10.4.7 Of the non-designated assets impacted an approximate total of 120 areas have been identified from the evaluation work which will require archaeological investigation in advance of the application being developed. Considerable knowledge will be gained; however, this will result in the complete loss of the archaeological resource where impacted. 10.4.8 The ES Cultural Heritage Chapter 6 **(APP-144)** Sections 6.4.398-3.4.431 and ES Figure 6.3 (APP-189) provide a summary of the key historical landscape components. This Section concludes that most of the features are of low to moderate value. This is considered appropriate as many parts of the Borough have experienced largescale impacts, such as from mineral extraction or draining of the fens and marshes. 10.4.9 The historic landscape assessment recognises that there would be significant effects on marshland and reclaimed marshland; open land, commons, heaths and fens; and farming landscapes. It is considered that the most significant effects on historic landscapes, which cannot be fully mitigated would be on the West Tilbury Conservation Area, due to the proximity of the Tilbury Viaduct and the Bulphan and Orsett Fens, due to the elevated section of LTC, including the Mardyke and Orsett Fen Viaducts.
Applicant's Response	10.4.2-10.4.3 The Applicant notes these statements. 10.4.4 This matter is addressed by SoCG [APP-130], item 2.1.191, summarised below. Nationally Significant Infrastructure Projects (NSIPs) are determined in accordance with the decision-making framework in the Planning Act 2008 and relevant National Policy Statements (NPSs), as well as any other matters that are both important and relevant (which may include the National Planning Policy Framework (NPPF)). The DMRB is a framework to set out and

LIR Reference	Local Impact Report Extract / Applicant's Response
	agree methodology for design and assessment for highway schemes. It allows for a consistent approach across all road schemes. The NPSNN and the NPPF both acknowledge that the loss wholly or in part of a scheduled monument could be classed as substantial harm. Following the assessment presented within the ES Chapter 6 – Cultural Heritage [**AS-044**], and discussions with Historic England, the Applicant acknowledges that the loss in part of the scheduled monument cropmark complex at Orsett, is substantial harm. However, the need for the Project along with its benefits constitute wholly exceptional circumstances, which justify the substantial harm (complying with paragraphs 5.131 and 5.133 of the NPSNN as demonstrated in the Planning Statement [**APP-495**]. In addition, asset 247 is identified as high value, experiencing a major magnitude of impact and permanent large adverse significance of effect in ES Chapter 6 [**AS-044**]. A further discussion on this matter was held on 11 July and the Council requested the Applicant to include asset 247 in CH003 and the Draft Archaeological Mitigation Strategy and Outline Written Scheme of Investigation (AMS-OWSI). The Applicant is planning to include specific reference to asset 247 in REAC CH003. Asset 247 is already included within the AMS-OWSI [**APP-367**], where its association with SM1 is clearly stated. Ongoing engagement with the Council regarding detailed mitigation proposals is informed by the archaeological trial trenching undertaken in this area that covered parts of both SM1 and 247, and therefore mitigation is being developed to address the archaeology that is present rather than the boundary of SM1. This matter remains under discussion. 10.4.5 The Applicant notes this statement. 10.4.6 The Applicant has considered dismantling and relocation of Thatched Cottage as a mitigation for the substantial harm to the building. However, this matter remains under discussion as part of the legacy and benefits work associated with the Project. 10.4.7 The archaeological mitigation proposed would provide a record of those archaeological remains that would be removed. Therefore while they would be physically removed, the record would preserve knowledge of them for the future. 10.4.8 The Applicant notes this statement. 10.4.9 The Applicant notes this statement.
Page 135-136	Policy Compliance and Local Impacts 10.4.10 Paragraph 5.127 of the NSPNN states that an applicant must describe the significance of any heritage assets affected in order to understand the impacts of a proposal. ES Chapter 6: Cultural Heritage (**APP-144)** and its associated appendices have complied with this policy.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.4.11 In regards to considering the impact of LTC on the setting of heritage assets, the methodology adopted complies with the established best practice Historic England guidance: The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning: 3 (2nd Edition). 10.4.12 The applicants have completed archaeological field evaluation, in the form of aerial photographic assessment (**APP-367**) and trial trenching (**APP-364, APP-365** and **APP-366**) along the majority of LTC in Thurrock to a satisfactory level and in compliance with the NPS policy. There is concern that the tunnel mouth has not been fully assessed and the detailed nature of the archaeological or paleoenvironmental deposits in this area remain unclear. 10.4.13 Design Principle LSP.08 (**APP-516**) specifically references the need to respect the historic landscape features. The landscape strategy set out in the oLEMP and EMP would not cause any adverse effects on the other historic landscape areas.
Applicant's Response	10.4.10 – 10.4.11 The Applicant notes these statements. 10.4.12 Archaeological evaluation of the North Portal area is constrained by the existing use of the site as a landfill, which prevents the excavation of trial trenches and means that remote sensing techniques are not effective. The draft AMS-OWSI [**APP-367**] acknowledges this and appropriate detailed mitigation is being developed in consultation with Historic England's Regional Science Advisor and Essex Place Services as archaeological advisors to Thurrock. The ES Appendix 6.5: Palaeolithic and Quaternary Deposit Model (PQDM) and Desk-based Assessment of Palaeolithic Potential [**APP-358**], ES Appendix 6.6: Standalone Palaeolithic Archaeological Assessment and Research Framework [**APP-359**] and ES Appendix 6.13: Holocene Geoarchaeological Desk-based Assessment of the Route of the Lower Thames Crossing [**APP-371**] have provided information to inform the baseline and assessment in ES Chapter 6: Cultural Heritage [**AS-044**]. The PQDM has been informed by the results of GI works undertaken from 2017 to 2021 and by trial trenching undertaken to the north of the North Portal. The GI works demonstrated at the North Portal the depth of landfill is 5-6m and the base of the alluvium is approximately. 20m below ground. This is significant as the greatest potential for in situ archaeological remains is on a buried land surface below the alluvium. The interpretation of the GI works, in conjunction with the trial trenching, which identified alluvium at a much shallower depth to the north of the North Portal, changed the value of these deposits to high, and this is presented in the ES. On the basis of this information the Applicant understands that the development of suitable mitigation is complicated and this will continue to be developed with Historic England's Regional Science Advisor and Essex Place Services as archaeological advisors to Thurrock. The Applicant considers the existing information to be sufficient to determine the impact of the Project. 10.4.13 The Applicant notes this statement.

LIR Reference	Local Impact Report Extract / Applicant's Response
Page 136	**Heritage Mitigation Statement** 10.4.14 The general mitigation strategy is defined in the Outline Written Scheme of Investigation, which is still under discussion (**APP-367**) and it is proposed that detailed Archaeological Written Scheme of Investigations for each area investigation will be agreed at a later date once a contractor is appointed. At this stage this work will comprise more than 120 areas of archaeological investigation north of the Thames. At this stage, it is recommended that the application should contain clear maps of the mitigation areas proposed, which are at a scale that is readable (potentially as part of the OWSI). 10.4.15 A revised Holocene report has been promised by NH for many months, but this has not yet been received by the Council. 10.4.16 The Council have commented repeatedly on the desirability of enshrining key underlying principles of archaeological mitigation within the CoCP and REAC. Though some progress has been made, the Council continue to press for archaeological management and especially the role of the local authority Archaeologists for monitoring and signing off the mitigation to be appropriately acknowledged and clearly and consistently defined as part of the wider environmental response **(APP-336** Table 7.1 CH007). 10.4.17 The design incorporates embedded mitigation to address the impact on Baker Street Windmill in the form of planting and the creation of an earth bund to limit the land required and provide visual and noise mitigation. The REAC (**APP-336**) and AMS-OWSI (**APP-367)** provide the commitment for the recording of the built heritage assets lost through LTC, which is considered to be 'essential mitigation'. There is a further commitment (REAC CH008) to implement Cultural Heritage Asset Management Plans for heritage assets remaining in their ownership at operational stage, which included a small part of Coalhouse Fort (a Scheduled Monument).
Applicant's Response	10.4.14 As part of the updates to the AMS-OWSI [**APP-367**] that are under discussion with the Council the Applicant proposes to provide figures of each mitigation area, alongside the description of the mitigation for that area, and an overview figure showing all the mitigation areas, archaeological features and Project design. 10.4.15 A Holocene report was submitted with the DCO application as ES Appendices – Appendix 6.13 - Holocene Geoarchaeological Desk-based Assessment of the Route of the Lower Thames Crossing [**APP-371**]. Any updates to the Holocene report, will be shared with relevant stakeholders including Thurrock's archaeological advisors, Essex Place Services, when available. 10.4.16 This matter is addressed by SoCG [**APP-130**] item 2.1.191, summarised below.

LIR Reference	Local Impact Report Extract / Applicant's Response
	The Council also committed to reading Requirement 9 in the draft DCO (which is directly related to the AMS-OWSI and how its implemented) confirming if they are satisfied with the role of the LPAs and offering any potential amendments for the Applicant's consideration. This matter remains under discussion. The role of the local authority archaeological advisors is specifically set out in para 2.6.5 of the AMS-OWSI [**APP-367**], which includes their role in monitoring and advising on sign-off of mitigation areas prior to construction. The AMS-OWSI [**APP-367**] is secured through REAC CH001 and arrangements for surveillance of heritage mitigation through REAC CH007 in ES Appendix 2.2 - Code of Construction Practice [**REP1-157**] and Requirement 9 of the draft DCO [**REP1-042**]. 10.4.17 The Applicant notes this statement.
Page 136-137	**Further Work or Mitigation Required** 10.4.18 The impact on the Scheduled Monument can only be mitigated by large scale open area excavation which has been agreed. This would be enhanced with the integration of site 247 excavated to the same standard. 10.4.19 There is potential for further mitigation for the loss of the Grade II listed Thatched Cottage in particular. As a timber-framed building of a modest size, it is a good candidate for dismantling, relocating and reconstructing. Further consideration is needed as to the appropriate location for its reconstruction and to the potential benefits of a legacy project involving the use of the building in training/upskilling in traditional building techniques. Whilst the building would lose its historic context and setting, its reconstruction would offer a high level of mitigation as there would no longer be a complete loss of the building's significance. The reconstruction of Thatched Cottage should be included within the REAC (APP-336), if a suitable site for its relocation is found. 10.4.20 With regards to Baker Street Windmill and the effects of LTC on its setting and significance, it needs to be clear within the AMS-OWSI that the Historic Building Recording is to have a particular emphasis on recording the setting of the Windmill. 10.4.21 It is important to have a clear programme of outreach defined for LTC and a proposal for long term storage and display of material. This has been discussed with the applicant's heritage consultants. Within Thurrock there may be the opportunity to link this with the restoration of Coalhouse Fort and the associated park proposed in the area. 10.4.22 A number of Scheduled Monuments are in close proximity to the proposed route or land take, such as The Tilbury Battery, Bowaters Farm World War II site and Orsett Causewayed enclosure would benefit from management strategies protecting and managing them into the future. At present these lie outside the red line, although in some cases are circled by it.

LIR Reference	Local Impact Report Extract / Applicant's Response
Applicant's Response	10.4.18 Asset 247 has been incorporated into the mitigation proposed for SM1, and this will be presented in the updated AMS-OWSI. 10.4.19 The Applicant believes this is a repeat and addressed in the response to pages 134-136 above. 10.4.20 As part of the updates to the AMS-OWSI [**APP-367**] it will be made clear that the Historic Building Recording of Baker Street Windmill will include focus on its setting. 10.4.21 The Applicant notes this statement. 10.4.22 The Applicant has proposed appropriate mitigation for the assessed impacts within the submission documents. Opportunities for additional management strategies for scheduled monuments near the Project may be explored through the legacy and benefits work associated with the Project.
Page 138-139	**10.5 Landscape and Visual** **Local Impacts Identified by Thurrock Council** 10.5.3 Mardyke Valley is a relatively tranquil area with scattered farmsteads and hamlets which is assessed in the Landscape and Visual Assessment (LVIA) as having a High Landscape Sensitivity. The LTC would pass through this landscape on a viaduct and bridges creating a major, elevated feature transecting the landscape. 10.5.4 The Environment Statement Chapter 7 – Landscape and Visual (LVIA) (**APP-145)** confirms that the effects on landscape character on this area during construction and during opening year would be Very Large Adverse, only reducing to Large Adverse by Design Year (15 years after opening). Visual effects would be Very Large Adverse for users of Bridleway 219 and moderate or Large Adverse from other rights of way. The Mardyke and Orsett Fen Viaduct will be a Project Enhanced Structure, included in the Design Principles STR.04. However, only broad principles are included. 10.5.5 The Tilbury Viaduct would be a large, elevated structure approximately 300m from the edge of the West Tilbury Conservation Area with Order Limits extending to the Conservation Area boundary. The LVIA confirms that there would be a Large Adverse effect from the residential properties on Low Street Lane during construction. The effects on the residential properties would still be Large Adverse by Design Year. Despite this it has not been identified as a Project Enhanced Structure in the Design Principles (**APP-516**), which the Council has repeatedly challenged and NH has declined to change its designation. 10.5.6 Little detail has been provided regarding the features that would be contained within the construction compounds, however, within 6.2 Environmental Statement Figure 7.8 (1 & 2) (**APP-204**) and (**APP-205)** the Zones of Visual Influence (ZVI) plans allow for elements up to 25m tall. These ZTVs show the extent of the potential effects that such elements would have in a generally low-lying landscape, with potential for structures being visible across large parts of the borough. Although the compounds are considered to be temporary, they would be in operation for up to six years.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.5.7 Paragraph 7.6.3 of the LVIA states that construction activities could give rise to adverse impacts over the short to medium term. Table 7.23 Schedule of Visual Effects on Representative Viewpoints north of the River Thames during construction confirms that Large Adverse effects will be experienced along many of the receptors close to the route as indicated by the ZTVs. 10.5.8 The construction phase essential mitigation measures (Table 7.14) include requirements to site compound facilities greater than 6m in height away from roads and residential properties. However, this will not help with mitigating the proposed elements of 15-25m in height to which NH has not proposed any mitigation. 10.5.9 The area around the North Portal has a long history of disturbance associated with landfilling and restoration, however, these activities did not require large equipment and therefore their visual effects were contained. The construction of the tunnel and the earthworks at Tilbury Fields would have a significant effect on users and setting of Coalhouse Fort and the Two Forts Way/England Coast Path.
Applicant's Response	10.5.3, 10.5.4 - The Applicant notes these statements. 10.5.5 - This matter is addressed by SoCG [**APP-130**] item 2.1.102, summarised below. The full design rationale for 'Project Enhanced Structures' is found in the Project Design Report, Part F - Structures and Architecture [**APP-513**]. The Applicant has sought to secure additional commitments within the Design Principles [**APP-516**] to ensure that the Preliminary Design presented at DCO is carried through to detailed design and implementation. There are Design Principles for all structures across the Project, with the aim of ensuring the designs: • Use a complementary and consistent material palette; • Are well detailed and coordinated; • Are integrated sensitively and seamlessly into the landscape. The Tilbury viaduct has not been included as a 'Project Enhanced Structure' for the following reasons: • It is already taller than the Mardyke Viaduct relative to the surrounding ground level, giving it better proportions and greater clearance for views under and through it; • In terms of long views, the landscape is less open with more woodland areas trees and hedge lines breaking up views. Through the landscape design, the existing wooded ridge would be strengthened with new tree planting, which (once mature) will effectively screen and integrate the viaduct on both sides; • The existing landscape already has a number of urbanising structures like the Overhead Line Electrification associated with the Tilbury Loop railway and in particular, parallel lines of pylons on a north-south axis.

LIR Reference	Local Impact Report Extract / Applicant's Response
	As a result of these factors it was felt that a good, but more standard approach would be appropriate here. 10.5.6, 10.5.7 - The Applicant notes these statements. 10.5.8 - Construction compound elements 15m-25m high (i.e. greater than 6m in height) would be located as far as reasonably practicable from sensitive visual receptors such as residential properties as described in ES Appendix 2.2: Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**] and as indicated on the Zone of Theoretical Visibility figures (ES Figure 7.8: ZTV - 5km DTM Analysis of Main Construction Compounds [**APP-204** and **APP-205**]). 10.5.9 - A significant adverse visual effect on users of the Two Forts Way/England Coast Path (Representative Viewpoints N-03 and N-04) during construction is acknowledged in ES Appendix 7.10: Schedule of Visual Effects [**APP-385**]. However, these effects would be temporary and limited to a relatively short stretch of the route east and west of the Order Limits and by direction of travel, with the greatest effects experienced from close-range views. The ES Chapter 6: Cultural Heritage [**AS-044**] (paragraphs 6.6.128 and 6.6.319-320) assesses the impact to Coalhouse Fort as a result of change to its setting that affects its value, which is assessed as very high. For the construction phase the impact is assessed as negligible, resulting in a temporary slight adverse effect, and for the operation phase the impact would be no change resulting in a neutral effect. The principal reasons for this are the distance between Coalhouse Fort and the North Portal and the existing setting, which has changed significantly from its historical setting. This assessment is supported by viewpoint photography in ES Figure 6.6, Viewpoint N-(CH)09 [**REP1-123 and REP1-125**].
Page 139	**Policy Compliance and Local Impacts** 10.5.10 Paragraph 5.144 of the NSPNN states that where the development is subject to EIA the applicant should undertake an assessment of any likely significant landscape and visual impacts in the EIA and describe these in the environmental assessment. Chapter 7 of the Environmental Statement – Landscape and Visual (**APP-145**) and its associated Appendices comply with this policy. 10.5.11 The methodology that has been adopted complies with the industry best practice. The Council has been consulted regarding local policy documents and to agree appropriate viewpoints and night-time views. 10.5.12 Paragraph 7.3.66 of ES Chapter 7 states that the new Thurrock Integrated Landscape Character Assessment, which was provided in draft was not used, as it was not publicly available before the DCO submission. While unfortunate, it is agreed that this is appropriate given that the completed assessment is still not on the Council website. 10.5.13 The embedded mitigation has been secured within the REAC CoCP (APP-336) and (APP-339) and Design Principles controlled documents

LIR Reference	Local Impact Report Extract / Applicant's Response
Applicant's Response	It is noted Thurrock Council considers that ES Chapter 7: Landscape and Visual [**APP-145**] complies with paragraph 5.144 of the NSPNN and that the methodology follows industry best practice.
Page 139	**Design Principles** 10.5.14 The Design Principles (APP-516) has been used to embed the proposed mitigation within a control document. These include Project- wide design principles and area- specific design principles. The principles were subject to detailed discussion with the Council and so are considered to be broadly acceptable. As noted above, however, the document only secures the broad principles and not the detailed designs.
Applicant's Response	It is noted Thurrock Council considers that the Design Principles [**APP-516**] are broadly acceptable. The Applicant considers that it is not appropriate, at this stage of design development, for the detailed design to be secured.
Page 139-140	**Further Work or Mitigation Required** 10.5.15 A key constraint to the provision of additional landscape mitigation has been the narrowness of the Order Limits corridor. This has resulted in landscape mitigation relying on measures such as false cuttings to achieve screening. This, however, limits the opportunity to provide more significant mitigation that would have a more positive outcome for the local landscape. A primary concern is the lack of robust screening around the Tilbury Viaduct to help mitigate the effects on nearby residents, as well as to provide improved north-south habitat connectivity. A wider mitigation area would allow more naturalistic shaped ponds to be provided as part of the water management requirements. 10.5.16 The narrowness of the landscape and ecology mitigation areas through the Mardyke Valley (see Plate 7.2 Ockendon Link – 6.6 Outline Landscape and Ecology Management Plan (oLEMP) (**APP-490**) restricts the scope for meaningful landscape mitigation and any enhancement that could help address the Very Large Adverse effects experienced in that area. While it is proposed that the viaduct will be a Project Enhanced Structure there is little scope to create fenland landscape that would help not only soften the visual effects but would be a positive addition helping to the restoring the historic landscape character. 10.5.17 Much of the new wetland would be situated very close to the structure which, while addressing the water management issues, limits its potential to contribute to achieving wider landscape benefits. The Council remains disappointed that the proposed landscape and ecological mitigation remains constrained within a narrow section of the Mardyke Valley, falling far short of the initial areas shown to environmental stakeholders, which was included within the LTC Green Infrastructure Study (**APP-503**) (EWT-01a&b). The objective was to recreate fenland habitat within the Orsett and Bulphan Fens. Such an appropriate measure would have delivered significant landscape benefits increasing natural screening of the viaducts, restoring historic landscape features and benefiting biodiversity.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.5.18 The creation of Tilbury Fields and the earthworks at the junction of A13/LTC have been largely driven by the need to reduce the amount of material being taken off site. 10.5.19 The location and design of Tilbury Fields and its use for ecological mitigation and recreation means that this is considered broadly acceptable. The Council, however, has previously raised concerns following the revision to the site layout regarding the potential visual impacts of the mounds, particularly for users of Coalhouse Fort Park, now that they extend further inland compared to what was originally proposed. NH's rationale for not including a north-south bridleway through Tilbury Fields is that where it would connect to the Two Forts Way that section is currently a Public Footpath (FP146), rather than a bridleway. NH recognises there is scope for at least part of FP146 to be upgraded, however, this is outside the Order Limits and therefore NH cannot commit to providing such a route. While this is accepted in principle, the Council wishes to see an aspiration within the Design Principles that that NH would support the upgrading their route if Two Forts Way can be upgraded. There is no information as to how the paths and interpretation will be managed in the long term, as these elements are not included within the oLEMP (**APP-490 – APP-493**). 10.5.20 The Council has also raised concerns in early 2022 when there were discussions with DHLUC and DfT about moving the previous Tilbury Fields area proposal to accommodate land for the Thames Freeport. Once agreed, the Council were not provided with an options appraisal for potential areas in the vicinity to accommodate the new Tilbury Fields area and this remains so, despite it is acknowledged that areas in the vicinity/adjacent are limited. In particular, the Council were keen to explore use of the unused East Tilbury Landfill site and retrieve it from disuse and remedy its long-standing contamination. It is understood that that area may now be important for invertebrates. The Council, therefore, we like to understand the option appraisal to arrive at the current smaller site and higher landform for Tilbury Fields. 10.5.21 In addition, proposed section plans have been provided by NH showing the earthworks in relation to the existing and proposed carriageways. These show the mix of land raising and excavations to achieve the A13 junction and based on these it is considered that the gradients would not be excessive. Success of establishment will depend on factors such as soils and site preparation, which can be dealt with at the detailed design stage.
Applicant's Response	10.5.15, 10.5.16, 10.5.17 - The rationale for the landscape design north of the River Thames is set out in the Project Design Report, Part D - General Design North of the River - North of the A13 Junction to the M25 [**APP-510**] and the Project Design Report, Part D - General Design North of the River - Tilbury to the A13 Junction [**APP-511**], including features such as the false cut earthworks and habitats within the Mardyke valley. This matter is also addressed by SoCG [**APP-130**] item 2.1.104, summarised below.

LIR Reference	Local Impact Report Extract / Applicant's Response
	The Applicant can only acquire land through compulsory acquisition for essential mitigation and compensation requirements – not for enhancement. On this basis, there are no powers to acquire additional land purely for the purposes of increasing the amount of landscape mitigation as this is not essential mitigation. That notwithstanding, the Applicant is content that it is providing the correct level of essential mitigation for the Project in relation to provision of landscape mitigation within the Order Limits. It should be noted that there are a limited number of locations where the hydrogeology allows wetland habitat to be successfully established – as is the case at the Mardyke where the water vole mitigation area is proposed. This area of habitat creation has been discussed in detail with Natural England and the Environment Agency. The Applicant has provided adequate and appropriate flood storage, landscaping and ecological mitigation as required by a scheme of this size and nature. Over provision would need additional spend of public funds and would require separate justification. Some examples are presented below. **1. Clause LSP.03 Landscape integration features for visual screening within Design Principles** [**APP-516**] The current landscape design proposals have been developed and designed to align with this Project-wide Design Principle; there is adequate space within the Order Limits. However, the landscape design itself will be further developed during the detailed design, in line with the controls and commitments of the DCO documents. There is no requirement to obtain additional land as the current landscape design proposals are compliant with the design principle. **2. Clause LSP.06 Landscape legacy** Where large-scale landscape mitigation is required, the design of this shall be developed to maximise the Project's legacy for local communities and landowners, whilst considering existing land use. Where compatible with mitigation proposals the Project shall provide, within the Order Limits, enhanced access, amenities and green infrastructure. Where there is alignment between the Project and other existing or planned green infrastructure, schemes identified by local authorities and other relevant stakeholders, the Project's detailed design will be developed to integrate with the delivery of green infrastructure by others. The current Project Order Limits do not constrain the achievement to Design Principle LSP.06, which is a Project-wide Design Principle. 10.5.18 - Tilbury Fields forms part of the embedded mitigation measures for the Project. It is a holistic design that provides multifunctional benefits, whilst utilising the excavated material from the tunnel. The landscape design of Tilbury Fields has also been developed to support the Project in achieving its biodiversity net gain target by delivering open mosaic habitats. The creation of Tilbury Fields has additional benefits of providing a local sustainable solution, reusing Project won material, increasing public amenity space, reducing transport of excavated material on the public road network and avoiding carbon emissions. This is supported by Clause S9.02 within the Design Principles [**APP-516**].

LIR Reference	Local Impact Report Extract / Applicant's Response
	The earthworks within the A13/A0189/A122 Lower Thames Crossing junction have been designed to help integrate the junction into the surrounding landscape by reflecting the character of the wooded ridgeline in that area. Site-won material has been reused to create a series of landscape mounds with woodland planting at a consistent height through the junction. This is supported by Clause S11.01 within the Design Principles [**APP-516**]. 10.5.19 - With regard to visual effects on users of Coalhouse Fort during operation, these have been assessed from Representative Viewpoint N-05 within ES Appendix 7.10: Schedule of Visual Effects [**APP-385**]. A slight adverse and non-significant effect on views has been assessed as a result of the Project, including the sculptural landscape mounding at Tilbury Fields. This is due to the distant and densely filtered nature of views towards the Project from Coalhouse Fort. The outline Landscape and Ecology Management Plan [**REP1-173**] focuses on management requirements for the land parcels that perform landscape and ecological mitigation and compensation, so therefore hardstanding areas such as footpaths have not been included. The surfacing of footpaths is subject to detailed design and therefore information on how these will be managed in the future has not been provided, as the final surfacing material and extent have not been agreed. This is covered by Clause PEO.03 of the Design Principles [**APP-516**]. The Landscape and Ecology Management Plan shall also be further developed by the Contractor, and future iterations of the document will include details of management regimes, management expectations and monitoring requirements for each part of the authorised development, not just those outlined in the document. The detailed Landscape and Ecology Management Plan is secured through Requirement 5 of the draft Development Consent Order [**REP1-042**]. With regard to FP146 (Two Forts Way), the Applicant is not proposing to change the route designation to a bridleway, as the area between Tilbury Fields and Coalhouse Fort is outside of the Order Limits. The proposed new footpath linking Two Forts Way and FP 200 was not proposed as a bridleway, as it would result in a dead-end and the river (boundary of Tilbury Fields). The Applicant design team would support this section of Two Forts Way to Coalhouse Fort becoming bridleway; however, the Design Principles can only cover the area within the Project Order Limits and therefore cannot have any bearing over land outside the Order Limits (specifically the link from Tilbury Fields to Coalhouse Fort).The Design Principles are to provide a framework in which to develop the detailed design. 10.5.20 - This matter is addressed by SoCG [**APP-130**] item 2.1.101, summarised below. East Tilbury Landfill is a much larger area of land than is needed to replace the land relinquished for the Thames Freeport Development. The Environment Agency has strongly advised against any activities on the landfill site that could result in the mobilisation of contaminants from within the landfill into the chalk aquifer. This particularly includes land raising/any form of ground disturbance and is therefore not compatible with the Applicant's vision for Tilbury Fields and the creation of placemaking earthworks. In addition, ecology surveys have identified the East Tilbury Landfill as an important site for

LIR Reference	Local Impact Report Extract / Applicant's Response
	invertebrates, reptiles and ground-nesting birds. This area is a valuable ecological habitat and by retaining it in its current form and linking it to the Applicant's areas of mitigation to the west and east, a strong connection of valuable ecological habitats is created along the northern side of the Thames. For these reasons, the Applicant has discounted the use of this area from its Tilbury Fields proposal. A further discussion on this matter was held on 19 July and the Council reiterated its position that the East Tilbury Landfill should have been considered as a viable option, after suitable decontamination by the Applicant. The Applicant disagrees with this statement and this matter is not agreed. 10.5.21 - The Applicant notes this statement.
Page 141	**10.6 Terrestrial Biodiversity** **Introduction** 10.6.1 The terrestrial ecology associated with the Order Limits within Thurrock is highly varied and includes habitat and species types that are not well understood. Large parts of the Order Limits area comprise arable farmland, which is relatively poor in biodiversity. However, there are extensive areas of previously developed land comprising former mineral and landfill sites and extensive industrial, commercial and infrastructure sites, which have developed as important grassland or open mosaic habitats. Many have high biodiversity value, particularly for invertebrate assemblages. Many of these sites are currently not covered by any designations despite LTC survey results confirming that five sites have nationally important invertebrate assemblages. 10.6.2 The ES Chapter 8 – Terrestrial Biodiversity (**APP-146**) and its associated appendices provide a detailed assessment of all aspects of the biodiversity within Thurrock Nitrogen Deposition Methodology, Impacts and Mitigation 10.6.3 The method for calculating Nitrogen Deposition (NDEP) and its potential to adversely affect designated sites and habitat changed during the preparation of the DCO, requiring additional compensation sites to be identified. The effects of NDEP would be a potential degradation in habitat quality rather than a direct loss of habitat. 10.6.4 The Council had sought further details regarding the NDEP methodology (SoCG 2.1.272 (**APP-130).** It is now confirmed that the methodology was developed in consultation with Natural England to achieve a more robust model. Additional details have been provided in ES Chapter 8: Terrestrial Biodiversity. The Council is now satisfied with the methodology. 10.6.5 Two compensation sites have been identified with Thurrock and these are the Hoford Road NDEP and Buckingham Hill landfill site.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.6.6 The oLEMP (**APP- 490**) LE8.7 Nitrogen deposition compensation habitat states that the overarching aim is to achieve an overall 70/30% split between woodland and over associated habitat across the compensation sites. The intention is to allow the woodland to develop through natural regeneration where possible. This principle is supported by the Council. 10.6.7 The Council has highlighted to NH that the soil and capping depths at Buckingham Landfill site are not known; therefore, it is not possible to be certain that the site would be able to support 70% woodland. This was discussed recently with NH in an SoCG workshop, but there was no full resolution, as the NH explanation was that the 70% ambition for woodland was an overall figure covering all sites earmarked for Nitrogen Deposition mitigation; and, that woodland on this site may not be appropriate, a position accepted by the Council.
Applicant's Response	The Applicant notes these statements.
Page 141-142	**Local Impacts Identified by Thurrock Council** 10.6.8 The Council has been engaged throughout with the LTC project ecologists to seek to minimise adverse effects on sensitive sites and to develop a package of mitigation and compensation sites have been grouped where possible to create large, robust areas that link existing valuable sites to achieve larger, more strategically significant blocks of habitat. This has resulted in a cluster of mitigation and compensation sites being located around Tilbury Fields and Coalhouse Fort and connecting to other similar large sites to the east of East Tilbury. This has the potential to create an extensive area of grassland and open mosaic habitat, which supports nationally important invertebrate assemblages and provides a buffer to the adjacent Thames Estuary and Marshes SPA, which is highly sensitive to recreational pressures. 10.6.9 There are to be a number of features within the Mardyke Valley close to the proposed viaduct that would create areas of wetland and grassland which are supported in principle. However, these were significantly scaled back compared to the areas originally identified during the development of the first DCO. While it has been demonstrated that there is sufficient area to deliver the ecological mitigation needs the limited space means there is a reliance of features, such as the spiral of water vole habitat rather than a wider network of ditches. This significantly lessened the scope to recreate the former fenland habitat, benefiting the landscape character and contributing to water management as well as mitigating for biodiversity. 10.6.10 LTC will not have any direct effects on statutory designated sites within Thurrock. 10.6.11 The ES Chapter 8 (**APP-146**) identifies a total of 29 Local Wildlife Sites within Thurrock within 500m of the Order Limits. It is predicted that the scheme would result in the loss or significant loss of three Local Wildlife Sites, Low Street, Rainbow Shaw and Blackshots Nature Park (as known as Ron Evans Memorial grounds) . Compensation measures have been identified for each of these sites, which have been agreed in principle with the Council and secured within the oLEMP.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.6.12 The scheme will result in a significant barrier to biodiversity connectivity through the Borough, with most protected and priority species, including bats, reptiles, amphibians and badgers and small mammals not being able to cross the route. The proposed green bridges would achieve some localised links once they have developed, however, over most of the project length the road would create a barrier species movement. The revised design of Tilbury Fields provides grassland and open mosaic habitat that benefits invertebrates and there is other suitable habitat to the north, however, there is no linking habitat provided around the Tilbury Viaduct, which creates a significant break in the connectivity, as this was refused by NH despite several Council requests for a linking wildlife corridor until the existing Tilbury Loop rail line.
Applicant's Response	10.6.8, 10.6.10, 10.6.11 - The Applicant notes these statements. 10.6.9 This matter is addressed by SoCG [**APP-130**] item 2.1.199 and 2.1.104, summarised below. It should be noted that there are a limited number of locations where the hydrogeology allows wetland habitat to be successfully established – as is the case at Coalhouse Point for the HRA mitigation area and at the Mardyke where the water vole mitigation area is proposed. These areas of habitat creation have been discussed in detail with Natural England and the Environment Agency both in relation to the Habitats Regulations Assessment and protected species licensing requirements. The Project has provided adequate and appropriate flood storage, landscaping and ecological mitigation as required by a scheme of this size and nature. Over provision would need additional spend of public funds and would require separate justification. 10.6.12 – The design of safe crossing points through the use of green bridges, viaducts, and culverts ensures that, in combination with the use of landscape planting such as hedgerows to guide animals to these locations and wildlife fencing to limit access to safe crossing points, the fragmentation effects are adequately addressed and that the Project route remains porous for east-west or north -south crossings by wildlife to be maintained. The detail of these measures are shown on ES Figure 2.4 - Environmental Masterplan [**APP-159**]. Although there is no specific ecological mitigation proposed to link Tilbury Fields with the Tilbury Viaduct, there are areas of landscape woodland and grassland planting that would connect to the Tilbury Loop rail line. These are described in the ES Figure 2.4 - Environmental Masterplan Section 9 (5 of 10) [**APP-163**].
Page 142	**Policy Compliance and Local Impacts** 10.6.13 Paragraphs 5.22 – 5.23 of the NSPNN states that where the project is subject to EIA the applicant should ensure that the ES clearly sets out any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance (including those outside England) on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity and that the statement considers the full range of potential impacts on ecosystems.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.6.14 The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests. 10.6.15 Chapter 8: Terrestrial Biodiversity of the ES (**APP-146**) and its associated Appendices provide details of the survey results for habitats and protected species recorded within the Order Limits, together with avoidance, mitigation and compensation requirements which comply with this policy. The survey methodologies for the Terrestrial Biodiversity assessment were agreed with the Council prior to their commencement.
Applicant's Response	10.6.13 The Applicant notes this statement. 10.6.14 The Applicant believes this is addressed in the response to pages 141-142. 10.6.15 The Applicant notes this statement.
Page 142	**Habitats Regulation Assessment** 10.6.16 The detailed assessment of the Habitats Regulation Assessment will be undertaken by Natural England and PINS will make the final decision in its role as competent authority. 10.6.17 The Council has concerns, however, that the scheme could result in indirect effects on the European sites and their functionally linked land due to the potential of the scheme to prevent repair works to the river frontage to prevent future contamination. These are summarised in Section 10.7 Marine Biodiversity below.
Applicant's Response	10.6.16 The Applicant notes this statement. 10.6.17 The Applicant believes this is a repeat and addressed in the response to page 144.
Page 143	**Further Work or Mitigation Required** 10.6.18 A key concern is that the proposed biodiversity mitigation is constrained along significant sections of LTC due to the narrowness of the landscape corridor. This has restricted the opportunities to provide good quality fenland habitat within the Mardyke Valley and to provide robust connectivity to enable species to cross the route. 10.6.19 Appendix 8.21 of the 6.3 Environmental Statement Appendices – Biodiversity Metric Calculations (**APP-417**) confirms that for the overall project LTC will result in a 7% increase of Area-based units, a -11% loss of Hedgerow units and a -7% loss of rivers and streams units. It is accepted that these calculations are based on the preliminary design and a number of limitations and assumptions, which is a worst-case scenario. However, given the wider environmental damage associated with LTC it is considered that the scheme should be able to demonstrate a minimum of 10% overall increase in all types of units.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.6.20 It is noted that in Item 2.1.199 of the SoCG (**APP- 130**) NH stated that the Project ensures that it meets Biodiversity Net Gain in line with emerging policy. It currently does not.
Applicant's Response	10.6.18 – 10.6.19 This matter is addressed by SoCG [**APP-130**] items 2.1.199 and 2.1.104, summarised below. It should be noted that there are a limited number of locations where the hydrogeology allows wetland habitat to be successfully established – as is the case at Coalhouse Point for the HRA mitigation area and at the Mardyke where the water vole mitigation area is proposed. These areas of habitat creation have been discussed in detail with Natural England and the Environment Agency both in relation to the Habitats Regulations Assessment and protected species licensing requirements. A further discussion on this matter was held on 11 July and both parties agreed that this is a challenging position, especially related to the BNG calculations for watercourses. The Applicant clarified that engagement on this issue will be ongoing and the Project will try to achieve the best outcome from an ecological perspective. Thurrock Council accepted that these calculations are based on the preliminary design and a number of limitations and assumptions, which is a worst-case scenario. With reference to the Project's biodiversity metric figures, reported in ES Appendix 8.21 - Biodiversity Metric Calculations [**APP-417**], the Project is applying the Natural England Biodiversity Metric several years ahead of this being a mandatory requirement. For Nationally Significant Infrastructure Projects, mandatory BNG is likely to commence in November 2025, and (subject to further announcements from government) is expected to apply to applications accepted for examination after that date, which would not include the A122 Lower Thames Crossing. In its design, the Applicant has focused on maximising biodiversity value through being ambitious in terms of the habitats proposed for essential mitigation requirements, shown in ES Figure 2.4 – Environmental Masterplan Sections [**APP-159** to **APP-168**], and their long-term management described in the outline Landscape and Ecology Management Plan [**REP1-173**], with a focus on the Lawton principles of more, bigger, better and joined up. It is recognised that the ambition demonstrated in the design does not necessarily maximise the value calculated by the Biodiversity Metric, but it is the view of the Applicant that the Project delivers a design of high biodiversity value. It is expected that the forecast Metric performance would improve during detailed design. Design refinements would seek to further reduce habitat loss during construction, minimise lags between habitat loss and creation and to maximise the condition and distinctiveness of habitats created, and the Project would seek to maximise biodiversity performance over the full Project lifecycle. 10.6.20 – This reference has been deleted.
Page 144	**10.7 Marine Biodiversity** 10.7.1 The Council has taken the position throughout the DCO process to defer the technical review of Marine Biodiversity to the Marine Management Organisation, Environment Agency, Natural England and Port of London Authority. However, the

LIR Reference	Local Impact Report Extract / Applicant's Response
	Council has raised concerns throughout the process regarding the condition of the river frontage south of the North Portal and the adjacent East Tilbury Landfill and absence of measures to reinforcement or replace the existing bank. This raises an increasing risk as the erosion continues that pollutants from the buried landfill will enter the River Thames immediately upstream of the Thames Estuary and Marshes SPA/Ramsar. 10.7.2 The ES Chapter 9 – Marine Biodiversity (**APP-147**) focuses on the habitat features within the estuary but makes no reference to the adjacent riverbanks. The Council has raised concerns about the need to manage the erosion of the river frontage adjacent to the North Portal/Tilbury Fields and East Tilbury Landfill with NH throughout the project design. The Geology and Soils Section 10.10 of this LIR confirms the lack of assessment that has been made of landfill as a manmade geohazard and that no survey of the river frontage has been undertaken (Section 10.10.16). It considers it 'extremely concerning that such significant contamination sources are not robustly understood.' 10.7.3 The Goshems Farm site, where it is proposed to construct the North Portal and the East Tilbury Landfill, which is situated east of the North Portal and west of the Coalhouse Point compensation site are two former landfill sites. The Environment Agency has stated that East Tilbury Landfill has potentially high levels of contamination including leachates. If the river frontage continues to fail, as set out in Section 10.10 of this LIR, there is a real risk that these pollutants will enter the river. It does not appear that the implications of this on the marine biodiversity and associated functionally linked land to the SPA have been considered within ES Chapter 8 **(APP-146)**. 10.7.4 LTC would significantly constrain access to the river frontage from the landside to enable works to reinforce the bank to take place once construction has commenced as the north portal and carriageway and HRA mitigation to the east would prevent all access from the land side. The mudflats fronting the site are part of the SPA functionally linked habitat and therefore it is not considered possible that works could be undertaken from the river. 10.7.5 ES Appendix 10.7 East Tilbury Landfill Risk Assessment (**APP-428**) only considers the potential impacts of the proposed North Portal construction on groundwater quality. The assessment confirmed that the site contained hazardous waste types and that the only active pathway is likely to by that of the leachate from East Tilbury Landfill into the River Thames. While LTC would not directly alter this potential pathway, the construction of the North Portal and HRA High Water roost would prevent access to reinforce the river frontage to prevent this leachate entering the river in ever-increasing quantities.
Applicant's Response	10.7.1 The East Tilbury Landfill river frontage lies outside of the Project's Order Limits and the current condition will not worsen as a result of the construction or operation of the Lower Thames Crossing. The Project will not prevent future interventions by either the landowner, local authority or environmental bodies from taking remedial action to repair or replace the river bank

LIR Reference	Local Impact Report Extract / Applicant's Response
	as the existing access is maintained via the track from Bowaters at the north-western edge of the East Tilbury Landfill and via the Public Right of Way, Footpath 146#2/Two Forts Way. The site walkover supporting ES Appendix 10.3: Site Walkover Factual Report [**APP-424**] visited the areas of Goshems Farm with no notable geohazard observations made along the area where the Project has a river frontage (noting that this does not include East Tilbury landfill). The ES is only required to assess impacts arising from the proposed Project. Further information has also been provided in the response to pages 152-154. The erosional face of the River Thames to the existing landfills is recognised as a pre-existing condition which is not considered to be adversely impacted by the Project. 10.7.2 The flora features of the riverbank / foreshore recorded along the river frontage adjacent to the North Portal are outlined in paragraphs 9.4.60 - 9.4.66 in ES Chapter 9: Marine Biodiversity [**APP-147**]. The Applicant refers to the response provided at 10.7.1 with regard to East Tilbury Landfill 10.7.3 The Applicant refers to the response provided at 10.7.1 with regard to East Tilbury Landfill The potential effects from changes in marine water quality on marine biodiversity have been assessed in paragraphs 9.6.4 - 9.6.38 in ES Chapter 9: Marine Biodiversity [**APP-147**]. The potential effects from pollution on the SPA have been assessed in the Habitats Regulations Assessment - Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**]. The East Tilbury Landfill Risk Assessment [**APP-428**] concluded that the Project will have a negligible impact on environmental quality by either affecting existing pathways or by the creation of new pathways. 10.7.4 As noted above in 10.7.1 The Lower Thames Crossing will not prevent future interventions by either the landowner, local authority or environmental bodies from taking remedial action to repair or replace the riverbank. The existing access is maintained via the track from Bowaters at the north western edge of the East Tilbury Landfill and via the public right of way Footpath 146#2/Two Forts Way. Access to the bank via the footpath will not be available for a short period during the construction of the water inlet with self-regulating valve or equivalent structure (secured in REAC commitment HR010) – a time frame of ca. 8-10 weeks due to a temporary closure of the footpath, but access would still be maintained via the access track at Bowaters. There would be no other restriction as a result of the Project's construction and operation. Conservation designations do not necessarily preclude access to undertake construction/maintenance works. Any works would be subject

LIR Reference	Local Impact Report Extract / Applicant's Response
	to assessment and review by the relevant regulatory bodies, and would likely attract control measures to mitigate for any effects. 10.7.5 The Applicant believes this is a repeat and addressed in response to 10.7.4 above.
Page 145-146	**10.8 Water Resources (Surface and Groundwater, Road Drainage and Flood Risk)** **Introduction** 10.8.2 As set out within the Statement of Common Ground between National Highways and Thurrock Council (APP-130), the majority of matters had been agreed with regard to Road Drainage and the Water Environment, including: • a. SoCG Item 2.1.260 Flood risk mitigation and water quality improvement through SuDS; • SoCG Item 2.1.261 Design matters related to flood risk mitigation and water quality improvement through SuDS; and, • SoCG Item 2.1.262 Commitments related to flood risk mitigation and water quality improvement through SuDS. 10.8.3 The review of the 2022 submission documents has focussed on ensuring that the principles established previously have not been eroded. Although, there was a further recent issue noted as being under discussion, regarding the Coalhouse Point flood defences, which is described below. Table 10.7: Summary of Key Issues Flood Risk The flood risk modelling has been updated to incorporate up to date climate change guidance (May 2022), no other updates have been carried out to the modelling, for example using the FEH hydrological methods and 2022 software versions for Flood Modeller and Tuflow , as the Environment Agency (EA) typically requires. Confirmation must be provided that the assumptions within the biodiversity calculations are consistent with the surface water drainage strategy. Clarification is required regarding the phasing at the North Portal junction with regard to the drainage strategy and whether temporary measures are required. Further information must be provided regarding the proposed pumping station in relation to the North Portal junction. This should include location, access proposals, maintenance and operational requirements and also definition of adoption responsibilities.
Applicant's Response	The Applicant believes this is a repeat and addressed in the response to page 147-148 below.

LIR Reference	Local Impact Report Extract / Applicant's Response
Page 146	**Local impacts identified by Thurrock Council** 10.8.4 The LTC has potential to increase flood risk locally, contrary to national and local planning policy. Part 6 of the FRA (**APP-465**) and ES set out essential and embedded mitigation measures and Design Principles in Chapter 6. The measures set out within this Section are described in a satisfactory level of detail at this stage. 10.8.5 The LTC has the potential to impact on both water quality, hydro-morphology and the wider water environment. Part 7 of the FRA (**APP-466**) sets out pollution control measures to manage any impacts on water quality in accordance with DRMB methodologies for each catchment. The WFD assessment (**APP-478**) sets out potential impacts on water quality and hydro-morphology and how these will be managed and the detail presented indicates that the proposals are compliant with the WFD and the level of detail presented is satisfactory. 10.8.6 Overall, the documents set out a framework which manage potential impacts satisfactorily, however, there are a few issues requiring further clarification, as set out in the sub section entitled 'Further Work Or Mitigation Required' below.
Applicant's Response	The Applicant notes these statements.
Page 146-147	**Policy Compliance and Local Impacts** 10.8.7 A comprehensive Flood Risk Assessment (APP-460 to APP-476) has been prepared, in accordance with 5.93 of the NPSNN. This demonstrates that the Sequential Test and the 2nd part of the Exception Test has been met. The first part of the Exception Test relates to wider sustainability benefits (described in NPSNN paragraph 5.108 bullet 1).
Applicant's Response	The Applicant notes this statement.
Page 147	**Flood Risk Assessment** 10.8.10 The Flood Risk Assessment is comprehensive and sets out the baseline flood risk and describes the mitigation measures required to ensure the proposals are in accordance with NPSNN and local policy with regard to flood risk and the methods used to determine these. The level of detail provided is appropriate at this stage in the design. 10.8.11 It is noted that the hydrological and hydraulic model methods and software versions have been superseded. From a hydrological point of view, the statistical method utilised WINFAP v3 with NRFA v7 data; where the latest software version is WINFAP v5 with NRFA 11.1 data. The rainfall runoff modelling utilises the FEH Rainfall Runoff method, which is superseded for all but reservoir safety work in England and while the more recent ReFH method is dismissed, no consideration is given to ReFH2. The latest method at the time of writing is ReFH2.4 supported by FEH22 data. Recent EA guidance is that

LIR Reference	Local Impact Report Extract / Applicant's Response
	justification should be provided where hydrological assessment is greater than 6months over and outdated software and data is used. 10.8.12 The 1 dimensional hydraulic modelling has been carried out using Flood Modeller versions 4.5 and 4.6; the latest version is version 6.2. The 2d modelling has been carried out using Tuflow version 2018-03-AD; the latest version is 2023-03-AB. It would typically be expected that these would be updated to the latest versions and this is something that the EA would request. The DCO has included modelling undertaken since 2020 to consider the most up to date climate change allowances, but no other updates have been undertaken, such as updating to latest software versions. It would be useful to understand whether this scope was agreed with the EA, and why the updated methods and software versions were not utilised when the latest climate change allowances were simulated. 10.8.13 As discussed in the SoCG EIA Workshop on 11 July 2023 with NH, it is noted that the Environment Agency (EA) has accepted the modelling approach as set out in SoCG item 2.1.56 of the EA's Statement of Common Ground (October 2022 (**APP-094**). However, it is further noted that the EA's SoCG predates the 2022 DCO submission documents.
Applicant's Response	10.8.10 The Applicant notes this statement. 10.8.11 The Applicant acknowledges that there have been updates to software versions and software tools since completion of the hydrology that informs the DCO FRA. However, from experience of the comparative performances of the latest versions and those superseded, it is considered very unlikely that there would be any meaningful change to the adopted flood flows. The Applicant has engaged frequently and in detail with the EA during preparation of the FRA and this engagement has continued since submission of the Application. The EA have not raised this matter as a concern, nor requested updates to the flood models hydrology (other than to apply the most up to date climate change allowances.) 10.8.12 As detailed in the response to point 10.8.11, the Applicant has engaged frequently and in detail with the EA during preparation of the FRA and this engagement has continued since submission of the DCO application. The EA have not raised updates to hydraulic modelling software versions as a matter of concern, nor requested updates to the flood models (other than to simulate flood events inclusive of the most up to date climate change allowances). 10.8.13 The Applicant notes this statement.
Page 147-148	**Further Work or Mitigation Required** 10.8.14 As noted above, the flood risk modelling which supports the FRA, described in (APP-463 and APP-464), has not been updated to latest methods and software versions, as the EA would typically require, when climate change scenarios have been updated. It is acknowledged that updated modelling is unlikely to change design parameters significantly and is

LIR Reference	Local Impact Report Extract / Applicant's Response
	very unlikely to alter the findings and recommendations. It may, however, impact the compensation flood storage areas proposed, in catchments EFR-2, EFR-4 and EFR-5. Confirmation that this approach was agreed with the EA is required. Further, additional information is required to confirm that there is sufficient area and volume available to accommodate any changes at detailed design when later methods are used. 10.8.15 Further information is required regarding the amenity and biodiversity benefits from SuDS. The allocated areas and assumptions made within the Biodiversity calculations (**APP- 417**) must be checked against the proposed drainage strategy. As discussed in the SoCG EIA Workshop on the 11 July 2023 with NH, it is noted that defining BNG values for SuDS is challenging, especially at concept design stage. Some detailed issues such as embankment profiles and planting regimes may necessarily be only verified at detailed design stage. However, there are some broad assumptions that should be coordinated at concept stage: • Assumptions about Water Bodies: type (attenuation, infiltration), retained water depth, area allocated for embankment, water quality/treatment performance, planting regime; • Assumptions about swales: as the swales are generally utilising infiltration, there is a possibility of standing water and therefore this assumption may not be valid; and, • Assumptions about ditches: area allocated for slope of ditch verge and embankments, allowance for vegetation and water vole habitat. 10.8.16 At the Northern Portal, the pond POS08-001 was designed to collect runoff from the North Portal ramp in the 2020 submission. The proposals in the 2022 submission [APP-048 Sheet 20 and APP-049 Sheet 23] include a junction that requires a different drainage strategy and consists of tworetention basins to receive runoff from the North Portal Junction. The concern raised is that pond POS08-001 would have to be relocated when the proposed junction is constructed and further information is required regarding temporary measures. Further information is therefore required regarding phasing and the design decisions in this location. As discussed in the SoCG EIA Workshop on the 11 July 2023 with NH, the construction team will also need to be consulted to determine phasing of the North Portal Junction and any requirements for interim or temporary attenuation basins. 10.8.17 In relation to the management of surface water at the North Portal junction, Section 3.5.6 of the FRA Part 7 [APP-466] states that *'Runoff that cannot gravitate to the retention ponds will be collected at the foot of the North Portal ramp and pumed up to RP-01'*. More information must be provided on the proposed pumping station in relation to the North Portal junction and RP -01 & RP-02; including the location, access proposals, maintenance and operational requirements and also definition of adoption responsibilities. Additionally, since the RP-01 and RP-02 will be confined by a junction, the access to these retention ponds for maintenance and inspection must be clearly defined. As discussed in the SoCG EIA Workshop on

LIR Reference	Local Impact Report Extract / Applicant's Response
	the 11 July 2023 with NH, the request for clarifications relating to the North Portal Junction will be directed to the drainage designer. 10.8.18 **Coalhouse Fort Drainage Proposal by NH (SoCG Item 2.1.263 in the soon to be updated SoCG)** – in October 2022 the Council received information from NH that it was considering options for ensuring a water supply to the functionally-linked land mitigation adjacent to Coalhouse Fort to the west. That mitigation requires a 'wet' field (ponds with ditch network and marshy grassland) for overwintering birds (and invertebrates), which requires NH to demonstrate to Natural England that it has secured a reliable source of water for HRA. A hydrology study has demonstrated that water in the catchment would not be sufficient to sustain water within the mitigation area. Therefore, alternative options for water supply needed to be investigated. The current proposal at that time within the DCO (as it is now) was to allow ingress of water from the River Thames through a water inlet with a self-regulating valve and the current Order Limits do allow for provision for working area to install the water inlet structure within the existing flood bund. However, supply from the Coalhouse Fort Moat would require agreement from the Council, which is not yet achieved. 10.8.19 Feedback has been received from Council officers and the Coalhouse Fort Ranger and there has been a meeting in late-November 2022 between NH and the Council and then a site visit including Historic England, Natural England, the Environment Agency, the Council and NH on 20 April 2023. Although notes have been received there has been no further progress from NH and the Council remains uncertain of any progress with this proposal. However, at the SoCG EIA Workshop on 11 July 2023 with NH, NH confirmed that it is unlikely to proceed with this option, preferring the option for the water inlet from the River Thames that is included within the DCO application, but would be undertaking further studies to confirm.
Applicant's Response	10.8.14 The Applicant agrees that updated modelling to apply latest software versions is very unlikely to alter the findings and recommendations of the FRA. It would not impact the compensation flood storage areas proposed, in catchments EFR-2, EFR-4 and EFR-5 because land set aside within the Order Limits for provision of compensation flood storage is larger than the land needed to provide the required volumes of compensation. This approach has been adopted, and agreed with the EA, to allow the Contractor flexibility in configuring the compensation areas and provides for a margin of safety to accommodate any changes at detailed design when later methods are applied. 10.8.15 The Applicant confirms that there was coordination and data exchange between the drainage and BNG teams to provide information about waterbody types, swales and ditches. The BNG assessment has been precautionary with regard to watercourse units. 10.8.16 The interim/temporary drainage requirements to manage surface water runoff during construction of the Project would be developed during the detailed design stage, in accordance with commitment RDWE006 within the Code of

LIR Reference	Local Impact Report Extract / Applicant's Response
	Construction Practice [**REP1-157**]. This requires to the Contractor to develop a construction phase drainage plan for approval by the Secretary of State following consultation with the relevant planning authorities. The plan shall demonstrate how the Contractor would manage surface water runoff across the worksite, including details of how offsite impacts would be prevented. The surface water drainage design for temporary works shall include climate change allowances up to 2030 in accordance with Flood risk assessments: climate change allowances (Environment Agency, 2022). 10.8.17 The proposed pumping station for the tunnel approach ramps is shown in Volume B and C of the Drainage Plans [**APP-048** and **APP-049**]. The pump will be located within the tunnel portal area with access for inspection and maintenance. The catchment area for RP-01 and RP-02 (attenuation pond 2 and attenuation pond 3 on sheet 20 of the Drainage Plans) will include the operational access and junction. The responsibility for maintaining this junction will remain with the Applicant as is forms part of the strategic road network. Access to maintain the two ponds is shown in the Rights of Way and Access Plans Volume B [**REP1-025**]. 10.8.18 /10.8.19 This matter is addressed by SoCG [**APP-130**] item 2.1.263, summarised below. The Applicant is considering options for ensuring a water supply to the Functionally Linked Land mitigation adjacent to Coalhouse Fort. A site visit was completed on the 20 April 2023 with Thurrock Council, and a number of other relevant stakeholders, and a greater understanding of the hydrological system was gained. Further studies into water demand and supply options have been undertaken and an update on this matter was provided at the SoCG EIA Workshop on 11 July. In this workshop the Applicant shared information on the current preferred option to allow ingress of water from the River Thames through a water inlet with self-regulating valve. The Applicant also confirmed that discussions with the Environment Agency are ongoing regarding consenting requirements for the water supply. A water supply from the moat is a less favoured option however is retained at this time whilst ongoing assessments are concluded. This remains a matter under discussion.
Page 149-150	**10.9 Geology and Soils** **Status of Statement of Common Ground (SoCG) Issues** 10.9.6 There are 30no Group 2 Geology and Soils (GS) Statement of Common Ground (SoCG) issues relating to comments on the Register of Environmental Actions and Commitments (REAC) (**APP-336)** and comments on ward summaries. The status of the ward summary comments are identified as resolved and/or superseded by the Application documents. It is uncertain whether the REAC comments (8no) are resolved as the actions identified include 'review of wording'. Within the REAC revised wording is considered necessary on the following matters:

LIR Reference	Local Impact Report Extract / Applicant's Response
	• GS001 (to be added by NH) – the Contractors would provide ground investigation method statements and scope of working (including schedule of exploratory holes with depths and testing) for acceptance; • GS003 (to be added by NH) – the assessment will include off-site receptors; • GS006 (to be added by NH) – the re-use criteria and locations for re-use are to be submitted for acceptance of National Highways in consultation with the Environment Agency and relevant Local Authorities prior to commencement of the works; • GS018 (to be added by NH) – the gas migration prevention measures identified in Appendix 10.11 – Remediation Options Appraisal and Outline Remediation Strategy will be implemented; • GS025 (to be added by NH) – the proposed measures are to be submitted for acceptance of NH in consultation with the Environment Agency and relevant Local Authorities, prior to commencement of the works; and, • GS027 (to be added by NH) – where supplementary investigation is undertaken to assess residual contamination risks in accordance with GS001, appropriate assessment in accordance with LCRM (Environment Agency, 2021) would be undertaken and the reports provided the LPA. Where unacceptable risks are identified (subject to agreement with the LPA), the Contractors would develop proposals for site-specific remediation strategies and implementation plans in consultation with the relevant local authorities prior to implementation. The Contractors would have regard for ES Appendix 10.11, Remediation Options Appraisal and Outline Remediation Strategy (Application Document 6.3), which identifies techniques that could be implemented by the Contractors for the remediation of contamination. 10.9.7 A further 57no comments were made on in August 2021 on documentation provided in the first DOC, which NH responded to on 23 December 2022 and all were identified as Group 2 (Tranche Issue ID: THURROCK-ES-NEW-CC. Of the 57no 11no are considered resolved (002, 007, 009, 012, 033, 036, 040, 042, 048, 051, 054) and six no longer applicable (031, 032, 034, 035, 038, 039). There are 40no comments that are considered to be unresolved.
Applicant's Response	It should be noted that as per the Applicant's Issue Resolution process, Group 2 issues are dealt with outside the SoCG, and not represented in the document. 10.9.6 • The method statements referred to in GS001, on which the Environment Agency and relevant local authorities would be consulted on, would include the scope of works.

LIR Reference	Local Impact Report Extract / Applicant's Response
	• This is already covered as GS003 requires the geotechnical risk register to align with DMRB CD 622, which is used to manage risk to the public, environment, construction and operational activities created by the site ground conditions as well as the asset or the Project. • This step would be unnecessary as MW007 (to which GS006 provides a cross reference) already explains that Materials Management Plans would be subject to compliance with relevant regulatory controls which would include consultation with the EA and LPA and that would include re-use criteria and locations for re-use where applicable. • The is already covered by GS027 whereby the Contractors would develop proposals for site-specific remediation strategies and implementation plans in consultation with the relevant local authorities prior to implementation and would include ground gas where relevant. The Contractors would have regard for ES Appendix 10.11: Remediation Options Appraisal and Outline Remediation Strategy [**REP1-165**], which identifies techniques that could be implemented by the Contractors for the remediation of contamination. • GS025 relates to gas protection measures to control risk to workers' health within the works compound and hence it is proposed that these measures are subject to acceptance by the Applicant. • The reports referred to would be shared with the relevant local authorities as part of the requirement set out in GS027 for the Contractors to develop proposals for site-specific remediation strategies and implementation plans in consultation with the relevant local authorities prior to implementation. 10.9.7 The Applicant has responded to all Group 2 comments and is available to respond on any outstanding issues that Thurrock Council has as a result of its review of the DCO application.
Page 150-151	**Missing Information and Evidence** 10.9.8 Appendix 10.11 - Remediation Options Appraisal and Outline Remediation Strategy (APP-434) paragraph 3.1.8 presents a list of identified contaminants of concern, however, it is not stated whether there are potential contaminants of concern that were identified but not tested for such as PFAs. The Applicant should amend this document to identify potential contaminants with no or limited data. 10.9.9 Following our review of the Application documents requests for clarifications/further information relating to Geology and Soils were made on the 12 and 27 June 2023, to date we have not received a response from NH. 10.9.10 The factual ground investigation reports have not been provided despite the need for this data being identified for the first DCO Application (Group 2 (Tranche 5) Issue ID: THURROCK-ES-NEW-CC-#021) . We are therefore unable to determine where intrusive works have been undertaken, the quantum and depth of the testing, whether the testing addresses

LIR Reference	Local Impact Report Extract / Applicant's Response
	all the identified contaminants of concern for the source of contamination and essentially where there are data gaps and uncertainty. It is considered that there is a high degree of uncertainty regarding the ground conditions and are therefore concerned that the identified preferred remedial options will not prove to be appropriate. The following information should be provided: • All the factual ground investigation reports; • A figure added to 6.2 Environmental Statement Figures (Figure 10.10) showing the location of the exploratory holes in relation to the identified sources of contamination; • A table of all the sources showing the risk rating, number of exploratory holes within the source, number of soils tested, number of leaching tests, number of groundwater samples and number of unflooded gas monitoring wells. The table should include a comment column to identify robustness of the data, if the testing undertaken addressed all the identified COC and uncertainty including whether additional ground investigation is considered necessary; • The revised risk table in Appendix 10.9 – Generic Quantitative Risk Assessment Report (**APP-430, APP-431, APP-432)** should be redone to show those sources within the study area that will not be disturbed and/or are not credible gas sources as Low, the remainder of those currently identified as Low to be reassigned as Medium/Low for differentiation. Where the risks associated with Medium/Low sources are considered to be adequately managed using measures in the EMP, this should be identified and justified; and, • For all other sites not identified as Very Low or managed through the EMP a table presenting the site, the commitment to undertaking additional ground investigation together with the objectives for the investigation to address, which will be specific to each source and reflective of the activity to be undertaken.
Applicant's Response	10.9.8 The contaminants of concern (COC) identified in ES Appendix 10.6: Preliminary Risk Assessment Report [**APP-427**] and tested for are presented in the "Potential contaminants and analysis" sections of ES Appendix 10.9: Generic Quantitative Risk Assessments [**APP-430**, **APP-431** and **APP-432**]. The testing suites were designed to correspond with the identified contaminants of concern. Where any limitation of testing occurred, this is detailed in the Limitation analysis sections of the ES Appendix 10.9: Generic Quantitative Risk Assessments [**APP-430**, **APP-431** and **APP-432**]. ES Appendix 10.11: Remediation Options Appraisal and Outline Remediation Strategy [**REP1-165**] considers the identified contaminants of concern requiring further assessment of remedial action. 10.9.9 The Applicant has responded to the email of the 12 June 2023. The Applicant's responses are repeated below.

LIR Reference	Local Impact Report Extract / Applicant's Response
	In response to "*Has Groundsure been asked to confirm that the report/data utilised is still current?"* The Applicant assumes that the Council is referring to the environmental datasets as received from Landmark Information Group Ltd rather than Groundsure and the Applicant responds to this point on that basis. The Applicant receives updated Landmark information on an annual basis. On receipt of the dataset it is reviewed to ensure that there is no material change to that assessed and presented in the ES Appendix 10.6: Preliminary Risk Assessment Report [**APP-427**]. The most recent review of the dataset was undertaken in 2022 which revealed no material change to the dataset assessed and presented in the Preliminary Risk Report. In response to "*Last walkover 2020 and not sitewide coverage 'updated' using Google Earth aerial*" Please refer to the ES Appendix 10.6: Preliminary Risk Assessment Report [**APP-427**] paragraph 3.3.1 which states "*Site walkover surveys were conducted between July 2017 and October 2017, September 2018, August 2020 and May 2022. The objective of these surveys was to gather information on existing site conditions within the study area. It was not the objective of the site walkovers to visit the entire study area, but to focus on areas of potential interest in relation to geology, soils and potentially contaminated land.*" ES Chapter 10 - Geology and Soils [**APP-148**] refers to Google Earth as a desk-based tool utilised to review site conditions which is one of a number of lines of evidence used to understand the baseline conditions assessed. It should be noted that the most recent review of the study area, undertaken via a site visit in 2022, has been reflected and considered in ES Chapter 10 - Geology and Soils and its supporting studies. In response to "*Has a search request for private water supplies been undertaken and if so please can a link to the document containing the result be provided?"* Please refer to the ES Appendix 10.6 – Preliminary Risk Assessment Report [**APP-427**] paragraph 7.4.9 which states "*The local authorities recorded no private water supplies (as defined by the Private Water Supplies Regulations 2016 (as amended)) within the study area (Chapter 14: Road Drainage and the Water Environment (Application Document 6.1))*." In response to "*Competency of person(s) to identify stability hazards not identified*" Stability hazards were assessed by a collective of appropriately qualified professionals, led by a Chartered Engineer (CEng MICE and Register of Ground Engineering Professionals Advisor). In line with National Highways' DMRB CD 622 Managing Geotechnical Risk, this work, was overseen by the Designer's Geotechnical Advisor (a role defined in CD 622 and a person with substantial experience with geo/ground risk approved by the Applicant) and included a review by the Applicant's Geotechnical Advisor. In response to "*Risk matrix 'simplification' of C552 – results in more sites being designate Low*"

LIR Reference	Local Impact Report Extract / Applicant's Response
	Note that as stated in the ES Appendix 10.6 – Preliminary Risk Assessment Report [**APP-427**] the low risk rating incorporates Moderate/Low Risk, Low Risk or Very Low Risk. While Historic Land Uses (HLUs) are given a low rating at Preliminary Risk Assessment they are not discounted, but continue to be assessed in the GQRA. In response to "*Disagree with some of the hazard ratings generated eg likelihood based on size of source – results in sources being designated Low which should be Medium*" The risk rating attributed to a source takes into account all the information gathered for each identified HLU, including but not exclusively, its size. In response to "Whilst the element is now removed from the ES (NH guidance) if the scheme goes ahead it would be good to get some benefit – the river frontage is subject to erosion and waste entering the river. As the applicant is promoting a public footpath and public amenity etc is there a lever to ask them to offer betterment to the frontage?" The Applicant is offering a betterment to the river frontage. As set out in paragraph 4.3.8 of the Project Design Report - Part E - Design for Walkers, Cyclists and Horse Riders [**APP-512**], Tilbury Fields will extend south to the shore of the River Thames. As a section of Two Forts Way will run through this new Country Park, it will have its surface improved, be widened and be designated as pedestrian-cycle track in readiness for similar future improvements (by others) to the west and east. Further, this is a commitment secured through Design Principle S9.19 in the Design Principles [**APP-516**]. The Benefits and Outcomes Document [**APP-553**] describes a framework for the potential delivery of local benefits outside of the DCO framework should these be considered necessary / acceptable in planning terms. In response to "*The ES and/or its Appendices refer to GI factual reports have these been provided and if so please can the location be identified?*" The Applicant provided the GI factual reports to the council on 24 July 2023. In response to *"Is there a Figure showing Exploratory Hole locations relative to PSCs?"* These are provided in the Figures sections of ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**]. Figure references are HE540039-CJV-GEN-GEN-MAP-GEO-00202; HE540039-CJV-GEN-GEN-MAP-GEO-00204; HE540039-CJV-GEN-GEN-MAP-GEO-00205 and HE540039-CJV-GEN-GEN-MAP-GEO-00208. In response to: "*Is there a Table showing all PSC (with nature), number of holes, soil and water samples tested, gas monitoring rounds in number of holes*" ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (1 of 3) [**APP-430**, **APP-431** and **APP-432**] provide a number of summary tables for soils, groundwater, surface water (where tested) and ground gas. Where exceedances are recorded these are reviewed and discussed with specific consideration to the identified HLUs. This

LIR Reference	Local Impact Report Extract / Applicant's Response
	is presented in the main body text of the GQRA Report and presented graphically in the embedded plates. Please note if it is the case that GI was not carried out at an identified HLU and the HLU is considered to be a potential medium or high risk, the HLU was carried forward to the ES Appendix 10.11 - Remediation Options Appraisal and Outline Remediation Strategy [**REP1-165**]. In response to *"Is there a drawing showing the PSC highlighting which ones are to be committed to being* subject *to additional GI, which ones a deemed not to require further action and which ones are to be managed under CoCP/REAC"* ES Figure 10.5 - Refined Conceptual Site Model - Credible Contamination Sources [**APP-303**] presents the low, medium and high risk sites which should be read in conjunction with the respective Generic Quantitative Risk Assessment tables presented in the following annexes: • Annex A-A Generic Quantitative Risk Assessment (ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (1 of 3) [**APP-430**]) • Annex B-A Generic Quantitative Risk Assessment (ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (2 of 3) [**APP-431**]) • Annex C-H Generic Quantitative Risk Assessment (ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (3 of 3) [**APP-432**]) • Annex D-A Generic Quantitative Risk Assessment (ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (3 of 3) [**APP-432**]) The issues raised in the emails of the 27 June 2023 have subsequently been raised in the LIR and are therefore addressed in this document. 10.9.10 a. The Applicant provided the GI Factual Reports to the Council on 24 July 2023. b. Figures showing the exploratory hole locations and credible contaminant sources for each Package are, available at Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**]. Figure references are HE540039-CJV-GEN-GEN-MAP-GEO-00202; HE540039-CJV-GEN-GEN-MAP-GEO-00204; HE540039-CJV-GEN-GEN-MAP-GEO-00205 and HE540039-CJV-GEN-GEN-MAP-GEO-00208. ES Figure 10.5 - Refined Conceptual Site Model - Credible Contamination Sources [**APP-303**] presents the credible contaminant sources as assessed low, medium and high risk sites and which should be read in conjunction with the Generic Quantitative Risk Assessment figures.

LIR Reference	Local Impact Report Extract / Applicant's Response
	c. The location of the HLUs and respective exploratory holes are presented on Figure B for each Package (see response to 10.9.10 b.). The tables showing the risk rating for each of the HLUs is presented in Generic Quantitative Risk Assessments [**APP-430**, **APP-431** and **APP-432**]. ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**] provide a number of summary tables for soils, groundwater, surface water (where tested) and ground gas. Where exceedances are recorded, these are reviewed and discussed with specific consideration to the identified HLUs. This is presented in the main body text of the GQRA Report and presented graphically in the embedded plates. In response to other information requests, the Applicant notes: Number of soils tested per location – Tables 3.1, 3.2 and/or 3.3 in ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**]. Number of leaching tests per location – Tables 3.1, 3.2 and/or 3.3 in ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**]. • Number of groundwater samples per location – Tables 3.1, 3.3 and/or 3.4 in ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**]. • Number of unflooded gas monitoring results – as stated in the ground gas section of ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**] only ground gas data from unflooded monitoring installations were considered in the assessments. • Robustness of the data – This is discussed in sections 3 (Data Available), 6 (Refined Conceptual Site Model), and 7 (Limitations Analysis) of ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**]. • If testing undertaken addressed all the identified COC and uncertainty – this is discussed in sections 6 (Refined Conceptual Site Model), and 7 (Limitations Analysis) of ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**] in respect to relevant sources of contamination. • Whether additional ground investigation is considered necessary – this is discussed in the Executive Summary, sections 6 (Refined Conceptual Site Model), and 8 (Conclusions (and Future Stages)) of ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation [**APP-430**, **APP-431** and **APP-432**] in respect to relevant sources of contamination. d. and e. The information has been presented in the following format.

LIR Reference	Local Impact Report Extract / Applicant's Response
	All identified credible contaminant sources have been assessed to establish whether there is a credible pollutant linkage and risk ratings determined for them (low, medium and high). This has led to the revision of the CSM and the identification of residual risks. This is presented in the Generic Quantitative Risk Assessment tables presented in the following Annexes of the GQRAs and includes discussion on the development proposals and likelihood of complete pollution linkages: • Annex A-A Generic Quantitative Risk Assessment (ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (1 of 3) [**APP-430**]); • Annex B-A Generic Quantitative Risk Assessment (ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (2 of 3) [**APP-431**]) • Annex C-H Generic Quantitative Risk Assessment (ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (3 of 3) [**APP-432**]) • Annex D-A Generic Quantitative Risk Assessment (ES Appendix 10.9 - Generic Quantitative Risk Assessment Report for the Phase 2 Investigation (3 of 3) [**APP-432**]) 15 medium risk sites and one high risk site are identified, and the remaining credible sources are assessed as low risk. Low risk ratings are further divided. Those where no further action is considered necessary when taking into consideration the proposed works in their proximity; and those that can be managed through the standard construction processes. The commitment for these requirements is made in Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**], including the specific requirements of GS028, GS006 and GS018. Relevant data gaps and uncertainties have been identified as part of this process. Medium and high risk credible contaminant sources including those sources identified where ground investigation has not been undertaken therefore data gaps exist, and where the pollutant linkages cannot be managed via the provisions set out in the REAC, have been brought forward to ES Appendix 10.11: Remediation Options Appraisal and Outline Remediation Strategy [**REP1-165**]; with the commitment to undertake supplementary ground investigation, DQRA and the identification of specific remedial measures if required. The management of these residual risks are secured through REAC GS001 and GS027.
Page 151-152	The Council's LIR and Evidence 10.9.11 Point 9 of the Principal Areas of Disagreement (PADs) relates to Geology and Soils and our request to have an additional Requirement. The reply from NH ends '*That measure (GS027) means that a specific requirement which requires a "investigation and assessment report" is not necessary*'.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.9.12 GS027 requires assessment of the additional GI data and **where unacceptable risks are identified** the submission of a remediation strategy to be accepted by NH in consultation with LPA. This potentially means that Thurrock would not have sight of the additional GI data and would have to accept without review the contractor's assessment of what is acceptable risk, noting that the DCO definition of contaminated land is for Part 2A rather than the minimal risk or low level of toxicological concern that is required by planning. 10.9.13 The proposed wording of the additional Requirement for Geology and Soils relating to ground conditions and ground stability is provided below. • (1) No part of the Works may commence until an investigation and assessment report to identify ground conditions and ground stability has been submitted to and approved by the relevant planning authority; • (2) The report submitted pursuant to sub-paragraph (1) must identify the extent of any contamination and the remedial measures to be taken to render the land fit for its intended purpose, together with a management plan which sets out long-term measures with respect to any contaminants remaining on the site; • (3) In the event that the report submitted pursuant to sub–paragraph (1) identifies necessary remedial measures, no part of the Works may commence until a remediation verification plan for that part has been submitted to and approved by the relevant planning authority; and, • (4) The authorised development must be carried out in accordance with the approved report referred to at sub-paragraph (1) and, where necessary, the approved plan referred to at sub-paragraph (3). 10.9.14 The following table summarises the key issues identified by Thurrock Council; these issues are then expanded in the text below. Table 10.8: Summary of Key Issues Identified by Thurrock Council • Outdated data has been used to inform the baseline conditions which is not considered robust. • The river frontage is potentially being eroded by the river and where this frontage is formed by landfill waste is being exposed. This potential has not been investigated/identified and there is the potential for increased exposure being generated by the development. • The creation of a destination point and improved recreational amenity at Tilbury Fields could result in people using the Thames Estuary Path inadvertently being exposed to leaking landfill waste. • The Stability Report does not reference relevant planning guidance and does not provide a statement of competency.

LIR Reference	Local Impact Report Extract / Applicant's Response
	• The factual ground investigation report has not been provided and here is insufficient information provided to allow the Council to determine if the assessment is robust, for example, a plan showing where the exploratory holes are located is not available, nor is it possible to determine the adequacy of the data to inform the ground conditions assessment. • The contamination status of medium and high-risk credible contaminant is stated to be unknown or not fully characterised due to limitation ground investigation. These are significant sources of contamination. Potentially the additional work could reveal ground conditions that cannot be managed through the identified approach, meaning that the actual impacts have not been assessed. • Whilst other environmental control regimes are assumed to mitigate environmental impacts associated with the processing activities these regimes do not limit impacts arising from the transportation of material to a temporary storage area or processing compound. • Impacts due to vermin (birds, insects, flies and rodents) arising from the excavation of landfills, temporary storage and processing of materials. • The proposed processing and reuse of excavated material including that from landfills is not explicitly stated to be done under an Environmental Permit (EP). If these activities are not to be undertaken under an EP, there are potential impacts that cannot be assumed to be adequately mitigated. • The implications of restoration/level raising by Ingrebourne Valley Ltd are not presented and potentially these activities could result in a greater volume of material requiring excavation, disposal and/or re-use.
Applicant's Response	10.9.11 – 10.9.13 This matter is addressed by SoCG [**APP-130**] item 2.1.26, summarised below. Following feedback (including from the Council) and further development work, further specificity can be provided on the risk classification of contaminated land sites. The Applicant can also confirm that assessments are undertaken in line with the Land Contamination: Risk Management guidance. The assessments which will be provided in the ES, submitted as part of the DCO application, take into account the full dataset available on completion of the Phase 2 ground investigation. This was not available as part of the withdrawn DCO application, but has now been factored into the assessments. In relation to the proposed Requirement, the Applicant considered that the site investigations carried out are appropriate for this stage of development. Historic contamination, and appropriate investigations, have been identified as part of the environmental assessments. The application contains an Outline Remediation Strategy which sets out remediation options to address known land quality and contamination concerns and demonstrates that suitable remediation techniques are

LIR Reference	Local Impact Report Extract / Applicant's Response
	available to treat the potential contamination present, if required. This outline strategy is in turn informed by a Preliminary Risk Assessment Report, which is presented as an appendix to the ES. Requirement 6 sets out the process the Applicant would follow if contaminated land is encountered. Requirement 4 requires that an Environment Management Plan (Second Iteration) (EMP2) is submitted and approved by the Secretary of State. That plan must reflect the mitigation measures in the REAC and must include plans for the management of contaminated land (see Requirement 4(3)(h)). The mitigation measures are included in the REAC, which made the suggested Requirement unnecessary. The Applicant refers specifically to GS027 in the REAC which requires, 'The Contractor would develop proposals for site-specific remediation in consultation with the relevant local authority prior to implementation.' That measure means that a specific requirement which requires an "investigation and assessment report" is not necessary. This is a matter not agreed. It should also be noted that Thurrock Council was informed of a number of other REAC items which made the proposed provision unnecessary. In particular: • GS001 - requirement to undertake further investigation for detailed design. • GS016 - requirement to prepare a verification plan after remediation. • GS018 – investigation to inform gas regime and appropriate mitigation in design of structures on site. As noted, GS027 is a requirement to develop site specific remediation in consultation with the relevant local authority. In light of the level of information, and the further commitments and controls provided, it is considered inappropriate to adopt Thurrock Council's proposed novel approach so far as transport DCOs are concerned. Table 10.8 This matter is a summary and addressed in detail in the responses to paged 149-156, with the exception of bullet points nine and ten, for which responses are made here. In relation to the ninth bullet point regarding environmental permits, the approach to environmental permits is confirmed in the Consents and Agreements Positions Statement [**REP1-047**] and are dependent on finalisation of detailed design, the detailed construction site set-up and methodologies, and discussions with the consenting authorities. These are not sufficiently developed at this stage to confirm the requirements, and therefore it is not practical to include them within the DCO. In relation to the tenth bullet point regarding the restoration/level raising, in developing the earthworks quantities the Project has assumed that restoration/level raising carried out by the waste operator at Goshems Farm has achieved their currently consented levels, thereby establishing a responsible worst-case scenario with regard to the excavation volumes and

LIR Reference	Local Impact Report Extract / Applicant's Response
	placement of excavated material to achieve the Tilbury Fields design levels. It should be noted that the current planning permission for Goshems Farm expires in 2026.
Page 152-154	**Local Impacts Identified by Thurrock Council** 10.9.15 Appendix 10.6 – Preliminary Risk Assessment Report (**APP-427**) Table 3.1 identifies that the environmental dataset was obtained in 2019. Many of these datasets are updated on a regular basis and therefore the data may well change in the four years since it was obtained. The ES Chapter 10 – Geology and Soils (**APP-148**) Table 10.1 describes the walkover surveys as '*Targeted site walkover surveys were conducted between July 2017 and October 2017, and in September 2018 plus a geomorphology visit in August 2020. A review of the geology walkover survey study area using Google Earth aerial photography was undertaken in 2021 and 2022 to confirm that the baseline information*'. It is noted that the last time there was a physical inspection was three years ago. In the absence of a robust baseline, it is considered that there may be impacts that have not been identified. A current dataset should be obtained and a comparison undertaken to ascertain the presence of differences that require additional assessment. A current and thorough walkover by a competent person for each of the elements being inspected should be undertaken. The need for a current and thorough walkover is further demonstrated in the text below regarding the condition of the river frontage. 10.9.16 Appendix 10.2 – Stability Report (**APP-423**) Table 5.1 does not identify landfill as a manmade geohazard and from Figure 10.1 – Geology Site Walkover (**APP-299**) page 3, it would appear that a visual inspection of the river frontage within the Order Limits has not been undertaken. The photograph below is from an article in the Guardian in May 2023 (The rubbishscapes of Essex: why our buried trash is back to haunt us) Waste from the former landfill site in Thurrock, slowly falling into the Thames. 10.9.17 It is considered that the Application has the potential to cause further degradation and/or destabilisation which is identified as a negative impact. A visual inspection of the frontage should be undertaken by a competent person and the Stability Report should be revised identifying landfill as a potential man-made stability hazard. The potential for negative impacts due to compressibility and slope failure should be assessed and mitigation measures to be implemented identified. 10.9.18 The ES Chapter 2 (**APP-140**) sets out a description of Tilbury Fields in Section 2.4.179 – 2.2.180, including stating it will be a 'destination point' and will provide 'improved recreational amenities.' The extent of WCH improvements are set out in Section 2.4.122 stating that there will be 'improved connectivity.' This proposal will potentially lead to an increase in footfall along the Thames Estuary Path and potentially adverse effects due to exposure to the waste. The Applicant should provide betterment to the current situation as part of the promise to provide 'improved recreational amenities.'

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.9.19 Appendix 10.11 – Remediation Options Appraisal and Outline Remediation Strategy (PP- 4344) Table 3.1 identifies that for all medium and high risk sources '*the potential source requires further assessment and possible remedial works / specific design*' and paragraph 3.1.15 identifies a number of data gaps and uncertainties including: • 'The contamination status of medium and high-risk credible contaminant sources detailed in Table 3.1 is unknown or not fully characterised due to limitation ground investigation.' 10.9.20 It is extremely concerning that such significant contamination sources are not robustly understood. From paragraph 3.1.16 the Applicant is relying on the REAC (APP-336) to secure additional works to address the data deficiencies. Such an approach is not considered appropriate for significant sources of contamination. Potentially the additional works could reveal ground conditions that cannot be managed using the stated preferred remedial techniques and alternative solutions would not have been assessed in the ES. 10.9.21 Appendix 10.11 – Remediation Options Appraisal and Outline Remediation Strategy (APP-434) identifies that 'processing' will occur (see paragraph 7.10.5 Excavated made ground/ contaminated soils and reworked natural soils shall designated for assessment at soil processing compound at the Project and note to Table 8.2 * – *Reuse of soils from excavations assumes soils have been subject to some form of treatment.)* The nature of the processing is not identified in this document and whilst it is possible that such activities would be undertaken under an Environmental Permit it is not certain that this is the case. Without this certainty and the associated assumption of adequate control it is considered that potential negative impacts have not been identified and assessed. The Applicant should provide further information on the nature and location of the processing operations.
Applicant's Response	10.9.15 The Applicant receives updated Landmark information on an annual basis. On receipt of the dataset it is reviewed to ensure that there is no material change to that assessed and presented in the ES Appendix 10.6 – Preliminary Risk Assessment Report [**APP-427**]. The most recent review of the dataset was undertaken of the 2022 dataset which revealed no material change to that assessed and presented in the Preliminary Risk Report [**APP-427**]. Site walkover surveys were conducted between July 2017 and October 2017, September 2018, August 2020 and May 2022. The objective of these surveys was to gather information on existing site conditions within the study area. It was not the objective of the site walkovers to visit the entire study area, but to focus on areas of potential interest in relation to geology, soils and potentially contaminated land. ES Chapter 10 - Geology and Soils [**APP-148**] refers to Google Earth as a desk based tool utilised to review site conditions which is one of a number of lines of evidence used to understand the baseline conditions assessed. It should be noted that the most recent review of the study area, undertaken via a site visit in 2022, has been reflected and considered in ES Chapter 10 - Geology and Soils [**APP-148**] and its supporting studies.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.9.16 Whilst there is not an explicit reference to landfill in the man-made geohazards section of ES Appendix 10.2 – Stability Report [**APP-423**] there are several references to landfill(s) and Made Ground in the document, see in particular Sections 4.1.14, 4.1.22 and 6.2.15. The 2017 site walkover supporting ES Appendix 10.3: Site Walkover Factual Report [**APP-424**] visited the areas of Goshems Farm with no notable geohazard observations made along the area where the Project has a river frontage. For clarity, the East Tilbury Landfill river frontage (which is the presumed subject of the photograph included in 10.9.16) lies outside the Project's Order Limits and the current condition will not change as a result of the construction or operation of the Lower Thames Crossing. The Project will not prevent future interventions by either the landowner, local authority or environmental bodies from taking remedial action to repair or replace the river bank as the existing access is maintained via the track from Bowaters at the north-western edge of the East Tilbury Landfill and via the Public Right of Way Footpath 146#2/Two Forts Way. The ES is only required to assess impacts arising from the proposed Project. The erosional face of the River Thames to the existing landfills is recognised as a pre-existing condition which is not considered to be adversely impacted by the Project. 10.9.17 The potential impact of the proposed works in the area of the Goshems Farm landfill, in particular due to the placement of material to form the Tilbury Fields landscaping features, has been considered in ES Appendix 10.2 – Stability Report [**APP-423**] see in particular Section 6.2. The main works Contractors would manage geotechnical risks associated with the construction of works, including to the river frontage, in line with REAC GS003. The Applicant does not deem that an amendment to the ES Appendix 10.2 – Stability Report [**APP-423**] is warranted. 10.9.18 The Applicant is offering a betterment to the river frontage. As set out in paragraph 4.3.8 of Project Design Report - Part E - Design for Walkers, Cyclists and Horse Riders [**APP-512**], Tilbury Fields will extend south to the shore of the River Thames. As a section of Two Forts Way will run through this new Country Park, it will have its surface improved, be widened and be designated as pedestrian-cycle track in readiness for similar future improvements (by others) to the west and east. Further, this is a commitment secured through Design Principle S9.19 in the Design Principles [**APP-516**]. The Benefits and Outcomes Document [**APP-553**] describes a framework for the potential delivery of local benefits outside of the DCO framework should these be considered necessary / acceptable in planning terms. The Two Forts Way is an existing route, passing through the area and crossing multiple landowners property. Both the Two Forts way and the provision of public open space in this area were identified by Thurrock Council in 2018 as an aspiration for project development during the

LIR Reference	Local Impact Report Extract / Applicant's Response
	development of the Green Infrastructure Study, included as Appendix H of the Planning Statement [**APP-503**], which informed the development of the proposals in this area. The Applicant has responded to that aspiration, but considers that it is not appropriate to then additionally take accountability for issues arising elsewhere along this route. 10.9.19 - 10.9.20 The limitations on site investigation as identified in ES Appendix 10.9 Generic Quantitative Risk Assessments [**APP-430**, **APP-431** and **APP-432**] relate to HLU0330 (Nursery, medium risk); HLU0960 (Welcome Villa, medium risk); HLU1062 (Ockendon Grays Areas II & III Landfill, medium risk) and HLU1151 (possible asbestos irrigation pipes, Hall Farm, medium risk). These have therefore been considered as medium risk sites due to a lack of ground investigation. In the knowledge of the information obtained and reported in ES Appendix 10.6: Preliminary Risk Assessment Report [**APP-427**] and subsequent conceptualisation of these sources of contamination in the context of the proposed scheme, it is concluded that they can be managed using the remedial techniques set out in Section 4 and Annex B of ES Appendix 10.11 - Remediation Options Appraisal and Outline Remediation Strategy [**APP-434** updated at Deadline 1 to **REP1-165**]. 10.9.21 The feasible remediation option is considered to be a combination of containment, excavation and disposal. Table 8.2 relates to the chemical testing frequency assuming the soil has been subject to processing or treatment. The nature of this to enable soils to be reused as part of the Project is not explicitly stated in Paragraph 7.10.5 because it is dependent on the geotechnical and chemical nature of excavated soil, which will vary with location and geology. However, possible remediation/ treatment options, based on contaminant and medium is detailed in Annex B, Feasible Remediation Options, of Appendix 10.11 - Remediation Options Appraisal and Outline Remediation Strategy [**APP-434** updated at Deadline 1 to **REP1-165**]. Furthermore, paragraphs 7.11.6 to 7.11.11 refers to possible treatment options that could be adopted if asbestos materials or organic contaminant were recorded in the excavated soils. This is an outline remediation options appraisal and outline remediation strategy and the exact treatment options will be selected by the Contractor during the detailed design phase of the Project.
Page 154-155	**Policy Compliance and Local Impacts** **Instability** 10.9.22 The Application addresses the NPS policy instability requirements (Sections 6.5.141- 6.5.150) in so far that it includes a preliminary assessment of potential ground instability. However, the NPS also requires that *supporting guidance* is also taken into account. Planning Practice Guidance (PPG) - Land Stability published by the Ministry of Housing, Communities & Local Government in 2014 and updated in 2019 by the Department for Levelling Up, Housing and Communities (refer to **Appendix M**) is not referenced and it is noted that this guidance states that instability risk assessment

LIR Reference	Local Impact Report Extract / Applicant's Response
	reports should be prepared by an appropriately qualified person, such as chartered members of a relevant professional institution. The Council have identified above the need to revise Appendix 10.2 – Stability Report (**APP-423**). The revision should reference and be guided by the PPG and a statement of competency should be provided. **Contamination** 10.9.23 For contamination NPS 5.168 requires – 'for developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination and how it is proposed to address this'. Whilst the Application complies with the policy in that consideration has been given to the presence of and risk posed by land contamination, the factual ground investigation report are not provided and there is insufficient information provided to allow the Council to determine if the assessment is robust. For example, a plan showing where the exploratory holes are located is not available, nor is it possible to determine the adequacy of the data to inform the ground conditions assessment. **Pollution Control and Other Environmental Protection Regimes** 10.9.24 The NPS assessment principles state that *'Decisions under the Planning Act should complement but not duplicate those taken under the relevant pollution control regime'*. It is noted that the Application 3.3 Consents and Agreements Position Statement (APP-058) identifies the following key matters: Environmental Permit - Multiple permits are likely to be required for construction activities, e.g., storage and treatment activities such as materials crushing, concrete/bitumen plants, remediation plant, transfer stations, short-term (less than three years) material storage. Locations where such permits would be required are primarily construction compounds across the Project. During construction, co • Environmental Permit - Permits will be required where treatment or storage of waste is proposed during construction or operation where it exceeds the provisions/requirements of an appropriate waste exemption. At the northern tunnel entrance compound, a permit(s) will be required where construction activities interact with the extant and currently permitted waste activities (operated by others); and, • Control of Asbestos Regulations – works identified as Notifiable. • Construction compounds would be located along the Project route. Larger compounds would be required at the North and South Portals to allow for tunnelling operations and materials management; 10.9.25 Whilst works undertaken under the above consents are to be assumed to be appropriately controlled to prevent environmental impacts, a permit does not set limits on travel therefore the Applicant should provide further information on what transportation impacts are being incorporated into the Application associated with the processing of excavated material.

LIR Reference	Local Impact Report Extract / Applicant's Response
	Common Law Nuisance and Statutory Nuisance NPSNN, Sections 4.57 and 4.59 10.9.26 The Application identifies noise and vibration and notes that other nuisances are identified, however, this identifies dust, odour, artificial light, smoke and steam. There is no mention of vermin or attraction of birds to excavations in the former landfills. However, the Council notes that with regard to statutory nuisance, birds are not considered a nuisance under Section 79 of the EPA 1990. But insects are identified as a nuisance, in fact, Section 79 (fa) any insects emanating from relevant industrial, trade or business premises and being prejudicial to health or a nuisance. 10.9.27 Vermin is not considered a nuisance because it is covered by other legislation, namely the Prevention of Damage by Pests Act, 1949 (PDPA), which requires all landowners to kept their property free of vermin defined as rats and mice.
Applicant's Response	10.9.22 ES Appendix 10.2 – Stability Report [**APP-423**] was prepared by a collective of appropriately qualified ground engineering professionals, led by a Chartered Engineer (CEng MICE) registered at Adviser grade on the UK Register of Ground Engineering Professionals (RoGEP). Furthermore, in line with the Applicant's DMRB CD 622 Managing Geotechnical Risk, this work was overseen by the Designer's Geotechnical Advisor (a role defined in CD 622 and a person with substantial experience with ground risk approved by the Applicant), this individual being a Chartered Geologist, Fellow of the Geological Society and registered at Adviser grade on the RoGEP. Finally, the Project governance for ES Appendix 10.2 – Stability Report [**APP-423**] included a review by the Applicant's Geotechnical Advisor, also a Chartered Engineer (Ceng MICE). The Applicant does not deem that an amendment to the ES Appendix 10.2 – Stability Report [**APP-423**] is warranted. 10.9.23 See related response to 10.9.10 10.9.24 Statement noted. 10.9.25 As set out in para 7.1.1 in the oMHP [**APP-338**] an assessment of bulk earthwork quantities has been carried out to establish an illustrative approach to handling excavated material. This includes mass haul movements, i.e., how is the transportation of excavated material handled between point of excavation to destination for placement, stockpiling and/or management offsite. This assessment has been used as a baseline position to support the traffic and environment assessments. 10.9.26 See related response to 10.9.28a.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.9.27 See related response to 10.9.28a.
Page 155-156	**Further Work or Mitigation Required** 10.9.28 The following collates the identified further work and/or mitigation set out above: • In relation to complying with NPSNN requirements for common law nuisance and statutory nuisance we note that Requirement 4 relating to the reparation of EMP (second iteration) does not identify control of vermin and whilst Appendix 2.2 – Code of Construction Practice, First iteration of Environmental Management Plan – Annex C – Preliminary Works Environmental Management Plan **(**APP-336**)** Section 1.10 'Construction site layout and good housekeeping' does identify vermin control, this is not in relation to excavated landfill waste stockpiling and processing. A Nuisance (Vermin) Management Plan for the excavated materials from the former landfills should be prepared; • To address the uncertainty and potential negative impacts associated with the proposed processing of material for re-use and specifically excavated materials from former landfills Application 3.3 Consents and Agreements Position Statement **(**APP-058**)** should be revised to identify that an Environmental Permit to permanently deposit waste on land as a recovery activity will be obtained. Under the directions of the NPS we would assume that the environmental impacts arising from processing are adequately controlled; • Further work is required to show that the proposed development will not lead to an increase in the erosion/failure of the river frontage and release of landfill waste. In addition, given that the Application seeks to promote the use of the Thames Estuary Path, mitigation measures to prevent exposure to the existing exposed waste are necessary and could lead to beneficial impacts; • Further work is required to understand the interaction/implications of the land raising by Ingrebourne Valley Ltd are unclear, particularly in respect to the volumes of materials to be excavated and whether the raised restoration profile has been incorporated in the proposed landscape plans and volumes required; • The Applicant should provide information on what transportation impacts are being incorporated into the ES associated with the processing of excavated material; • A number of the SoCG issues for Geology and Soils relate to re-wording of the REAC (APP-336). The REAC wording does not appear to have been revised and so alternative wording has been provided for the convenience of the ExA; • The Applicant should identify which potential contaminants of concern have no or limited data and as such still require assessment;

LIR Reference	Local Impact Report Extract / Applicant's Response
	• The Applicant should provide all of the factual ground investigation reports; • The Applicant should provide a figure showing the location of the exploratory holes in relation to the identified sources of contamination; • The Applicant should provide a table of all the sources showing the risk rating, number of exploratory holes within the source, number of soils tested, number of leaching tests, number of groundwater samples and number of unflooded gas monitoring wells. The table should include a comment column to identify robustness of the data, if the testing undertaken addressed all the identified COC and uncertainty including whether additional ground investigation is considered necessary; • The revised risk table in Appendix 10.9 – Generic Quantitative Risk Assessment Report (APP-430, APP-431, APP-432) should be redone to show those sources within the study area that will not be disturbed and/or are not credible gas sources as Low, the remainder of those currently identified as Low should be reassigned as Medium/Low for differentiation. Where the risks associated with Medium/Low sources are considered to be adequately managed using measures in the EMP, this should be identified and justified; and, • For all other sites not identified as Very Low or managed through the EMP a table presenting each of the sources, the commitment to undertaking additional ground investigation together with the objectives for the investigation to be addressed (which will be specific to each source and reflective of the activity to be undertaken).
Applicant's Response	10.9.28 a. The Applicant agrees that vermin control is identified as a requirement under 'Construction site layout and good housekeeping'. This applies to all activities undertaken by the contractor for the Project. More detailed task-specific management and control plans will be prepared by the contractor, where required, prior to those tasks taking place. A Vermin Management Plan for excavated materials from the former landfills may be one of these. 10.9.28b The approach to environmental permits is confirmed in the Consents and Agreements Positions Statement [**REP1-047**] and are dependent on finalisation of the detailed design, the detailed construction site set-up and methodologies, and discussions with the consenting authorities. The Environment Agency is being consulted extensively on the nature of the permits and the Applicant continues to engage in enhanced pre-application advice. 10.9.28c The erosional face of the River Thames to the existing landfills is recognised as a pre-existing condition which is not considered to be adversely impacted by the Project. Addressed in response to 10.9.16.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.9.28d In developing the earthworks quantities, the Applicant has assumed that level raising carried out by the waste operator at Goshems Farm has achieved their currently consented levels, thereby establishing a responsible worst-case scenario with regard to the excavation volumes and placement of excavated material to achieve the Tilbury Fields design levels. It should be noted that the current planning permission for Goshems Farm expires in 2026. 10.9.28e As set out in para 7.1.1 in the oMHP [**APP-338**] an assessment of bulk earthwork quantities has been carried out to establish an illustrative approach to handling excavated material. This includes mass haul movements, i.e., how is the transportation of excavated material handled between point of excavation to destination for placement, stockpiling and/or management offsite. This assessment has been used as a baseline position to support the traffic and environment assessments. 10.9.28f Addressed in response to 10.9.6. 10.9.28g Addressed in response to 10.9.6. 10.9.28h Addressed in response to 10.9.6. 10.9.28i Addressed in response to 10.9.6. 10.9.28j Addressed in response to 10.9.6. 10.9.28k Addressed in response to 10.9.6. 10.9.28l Addressed in response to 10.9.6.
Page 157	**10.10 Materials and Waste** Table 10.9: Summary of Key Issues Materials and Waste

LIR Reference	Local Impact Report Extract / Applicant's Response
	Within Section 2.1 of Appendix 11.1 – Excavated Materials Assessment (APP- 435) NH identify that the development of LTC will produce 12.5 million m3 of excavated materials over the 6 years of its construction. Of the total excavated material NH identify that 11,176,500 m3 will be re-used within the Order Limits, the remaining material will be considered a waste and will require management outside of the Order Limits in line with the waste hierarchy. NH assume the excess will be exported at a constant rate of 1,680t/day over the 5 years that excavated materials will be generated totalling 200,000 m3 annually. The basis for the identification of these figures is not provided, therefore it is not possible to determine whether the quantities identified is not appropriate. NH have not identified where or how excavated materials will be utilised within the construction, therefore it is not possible to determine whether excavated materials are to be used within the compound or may require movement between compounds, which would potentially change the classification to wastes requiring additional management and mitigation measures and increase transport impacts with potential transport taking place on the public highways. Within Section 3.1 of Appendix 11.1 – Excavated Materials Assessment (**APP-435**) identifies the evaluation criteria for the selection of local and regional waste sites suitable to manage the excavated wastes exported from the Order Limits and the output from the assessment identifying the acceptable sites is provided in section 4. The assessment approach appears to consider the relevant criteria for the identification of suitable receiver sites. Within the oSWMP (**APP-337)** NH set out how they will comply with the waste hierarchy through their REAC commitments. Whilst the REAC commitments are largely appropriate the supporting statements in Section 4 provides only high-level actions that will be taken to achieve these aims. The document does not set out the actions that NH require/expect the contractor to deliver to achieve the REAC commitments and what regulatory requirements these may trigger.
Applicant's Response	As set out in paragraph 7.1.1 in ES Appendix 2.2 – Annex B – Outline Materials Handling Plan (oMHP) [**APP-338**], an assessment of bulk earthwork quantities has been carried out to establish an illustrative approach to handling excavated material. This includes mass haul movements, i.e., how is the transportation of excavated material handled between point of excavation to destination for placement, stockpiling and/or management offsite. This assessment has been used as a baseline position to support the traffic and environment assessments. ES Appendix 2.2 – Annex A – Outline Site Waste Management Plan (oSWMP) [**APP-337**] sets out the overarching principles and procedures that would be applied for the management of waste, including surplus excavated material identified through the earthwork quantities, during the construction phase of the Project. ES Appendix 11.1 – Excavated Materials Assessment [**APP-435**] is to demonstrate that there is sufficient capacity to manage surplus excavated materials at suitable potential sites. This includes identifying third-party potential receiver sites based on project-defined criteria, as well as validating available fill capacity.

LIR Reference	Local Impact Report Extract / Applicant's Response
	Control documents such as ES Appendix 2.2 – Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**], oMHP and oSWMP provide a robust framework and principles that the Contractors must adhere to when developing their detailed Materials Handling Plan (Second Iteration) and Site Waste Management Plans. These would be required as part of the second iteration of the Environmental Management Plan (EMP2). During the construction phase with regard to handling and transporting excavated materials classified as waste by the Project would in any event be subject to duty of care, and material tracking. Therefore, the Applicant does not anticipate any complications with a change in status of the transfer of waste generated by the Project. In addition, the Contractor would still be the designated producer and holder of the waste. This is a matter for the Contractor and part of detailed design. The DCO application presents principles, structure to ensure that waste and excavated materials are managed within the Project. Chapter 6 of the oSWMP [**APP-337**] sets out the plan's implementation during the construction phase including the roles and responsibilities of those involved in the construction, the implementation of Project waste commitments and the monitoring of compliance against Project commitments and targets. The detailed design has not been completed yet so the Applicant is not in a position to provide the exact detail on how or when the approaches to the management of the wastes will be delivered. As set out in Chapter 6 of the oSWMP [**APP-337**], the Contractor will be required to provide the detailed Construction Site Waste Management Plan (CSWMP) and report monthly predictions, actual waste arisings and waste management routes for the Project. If would not be appropriate to provide a detailed CSWMP when the Project is still at planning stage. The Applicant believes the rest of the matters are a repeat and addressed in the responses below.
Page 158	**Local Impacts Identified by Thurrock Council** 10.10.3 The management of the excavated materials either through temporary or permanent placement within the Order Limits or through reuse, recovery or disposal without the Order Limits will generate vehicle movements (considered in Section 9.8 above) with the associated noise, dust, vibration and air quality/emissions impacts on local residents. The ultimate magnitude of these impacts will be determined by the overall quantity of material generated and the proportion of materials directly placed, stored prior to use and managed outside the Order Limits. 10.10.4 NH recognise that the export of wastes beyond the Order Limits has the potential to impact upon the local and regional waste management market capacity due to the quantity of excavated materials that will require reuse, recovery or disposal throughout the duration of the works. The exact impact of the management of materials exported beyond the Order Limits will depend upon the overall quantity of material generated during the works and the proportion of the excavated material that can be reused, recovered or disposed of within the Order Limits. The assumption that the rate of waste inert

LIR Reference	Local Impact Report Extract / Applicant's Response
	material generated from the construction will be exported at a steady rate as stated within Appendix 11.1 – Excavated Materials Assessment (**APP- 435**) is not justified and if incorrect could lead to a greater than stated impact on local waste sites which could further exacerbate these impacts. 10.10.5 Within Section 5.2 of 6.3 Environmental Statement Appendices Appendix 2.2 – Code of Construction Practice, First Iteration of Environmental Management Plan – Annex A – Outline Site Waste Management Plan (**APP-337**), NH identify that there will be a *'… space within a compound for segregation and storage'* of wastes. However, there is no detail provided on the segregation processes proposed or the quantities of storage that will be undertaken at any individual compound to determine wither the sites will require consideration under the Environmental Permitting regime or whether an exemption is proposed. The two routes have significantly differing levels of regulatory rigour, impact control requirements and third party monitoring associated with them therefore without understanding the regulatory environment that will be in place it is not possible to understand potential for the generation of environmental impacts from the management of wastes in the compounds.
Applicant's Response	10.10.3 – repeated in 10.10.8 below 10.10.4 - The ES Appendix 11.1 - Excavated Materials Assessment [**APP-435**] submitted as part of the DCO submission shows a significant capacity of reuse/recycling/recovery operations within 20km of the Project and the Applicant is confident that any impact due to a change in volume or programme could be covered by the significant capacity available as demonstrated by the Excavated Materials Assessment detailed assessment list of sites. To provide context, if in the unlikely event that all surplus excavated materials were generated and removed from the Order Limits in a single year this would represent 2.7% of the capacity to the North of the River Thames. Furthermore, the Contractor will report monthly on waste generated, reused on site, exported off-site and the predicted volumes of waste over the subsequent programme. This rolling reporting will give early sight of any changes or deviations from the predicted outcomes. 10.10.5 - The Applicant is surprised at the suggestion of using waste exemptions given its limited scope in terms of EWC codes accepted and waste volumes that can be stored. It is more likely that the Contractor through its detailed design will require environmental permits for storage and that this will be undertaken through pre-application discussions with the Environment Agency. Regardless of the management/permitting regime, the Applicant has the necessary management plans in place to control and mitigate releases to the environment such as dust, stockpile runoff, for example.
Page 158	**Policy Compliance and Local Impacts**

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.10.6 Paragraph 5.39 of the NPSNN states that government policy is to '… protect human health and the environment by producing less waste and by using it as a resource wherever possible', furthermore paragraph 5.40 states that 'Sustainable waste management is implemented through the waste hierarchy.' The Environmental Statement Appendices Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan - Annex A - Outline Site Waste Management Plan (**APP-337**) sets out the principles of managing the wastes from the construction phase of LTC in accordance with the waste hierarchy, but lacks details on how this will be delivered specifically. 10.10.7 Paragraph 5.43 of the NPSNN states that the SoS should be satisfied that '… the waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available.' Appendix 11.1 – Excavated Materials Assessment (**APP-435**) sets out the infrastructure that is available and appropriate for the management of the waste inert material generated. However, the lack of verification of the assumptions on excavated material arisings and the ability to reuse it within the Order Limits means that it is not possible to confirm the quantities of waste arising. The assumption of a flat rate of inert waste arising from the works is also not justified or validated, therefore it is not possible to accurately identify the impact on the local waste infrastructure.
Applicant's Response	10.10.6 – The detailed design has not been completed yet therefore the Applicant is not in a position to provide the exact detail on how theses will be specifically delivered. The construction phase will be managed by the contractor. However the DCO application as it stands imposes a requirement for the contractor to consider, implement and evidence adherence to the waste hierarchy. As detailed in REAC commitment MW007 in Register of Environmental Actions and Commitments (REAC) [**REP1-157**]. 10.10.7 – The Applicant has followed DMRB LA 110 Material assets and waste (Highways England, 2019) as detailed in ES Chapter 11: Material Assets and Waste [**APP-149**]. The Applicant has provided an appropriate level of information for the application to be understood. Refer to response provided for page 157. This matter has been discussed with Thurrock and as agreed with the Council will be addressed through a technical note to be issued to Thurrock Council.
Page 159	**Further Work or Mitigation Required** 10.10.8 Without NH demonstrating the basis for the waste/excavated material arisings and ability to place materials within the Order Limits it is not possible to identify the local impacts. Due to the large quantities of excavated materials generated even relatively small percentage differences in projected the rates of generation or consumption would have a significant impact on the quantities of material. NH need to identify how the excavated material arisings and usage within the Order Limits has been calculated to provide confidence in the figures presented.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.10.9 The identification of the impact on the shortlisted receiver sites should split the sites to separately consider the impact on the sites allocated as reuse/recover or disposal allocations based on the expected arisings of each waste management route within the ES Appendix 2.2 – Code of Construction Practice, First Iteration of Environmental Management Plan – Annex A – Outline Site Waste Management Plan (**APP-337**) and Appendix 11.1 – Excavated Materials Assessment (**APP-435**). This would provide a more appropriate identification of the impact on the local waste markets. 10.10.10 The assessment of the impact on the receiver sites should be based on the maximum quantity of material to be sent to each route under either the baseline or high recycling scenarios considered. At present the calculation potentially underestimates the quantities of recycled or recovered materials to be managed, as it only considers a 70% recycling/recovery level, in the event that the higher level rates are achieved, then those sites receiving the material would be receiving ~20% more material. 10.10.11 Within Table 5.2 of the ES Appendices Appendix 2.2 – Code of Construction Practice, First Iteration of Environmental Management Plan – Annex A – Outline Site Waste Management Plan (**APP-337**) NH should identify an initial estimation of the quantities of each material to be sent for reuse, recycling, recovery and disposal based on industry good practice. This would provide guidance for any contractor to be appointed and also validate the claims of the recycling rates that will be achieved. It would also provide a similar level of detail for each material within the oSWMP setting an appropriate base for the development of the SWMP by the contractor. 10.10.12 The ES Appendix 2.2 – Code of Construction Practice, First Iteration of Environmental Management Plan – Annex A – Outline Site Waste Management Plan (**APP-337**) should consider both the temporal phasing and location of waste arisings to provide an appropriate basis for the assessment of the impact of the management of the wastes, the identification of appropriate regulatory regimes to be implemented and to set an appropriate framework for the management of wastes throughout the construction phase by the contractor.
Applicant's Response	10.10.8 - Information on the classification of the excavated materials (inert, non-hazardous and hazardous) is provided within the Excavated Materials Assessment (EMA) and within the outline Materials Handling Plan (oMHP). A further discussion on this matter was held on 13 June 2023 and further information was requested by the Council around how the waste amounts in the oMHP have been generated, the classification of material as 'waste' and 'clean excavated material'. The Applicant agreed to produce a technical note to describe the process behind how waste quantities have been derived. This matter remains under discussion. 10.10.10 - For the purposes of the waste assessment, it has been assumed that 70% of non-hazardous construction wastes leaving the Order Limits would be diverted from landfill, as required by the WaFD (REAC Ref. MW013). Table 11.7 in ES Chapter 11: Material Assets and Waste [**APP-149**] provides information of the annual permitted tonnage of

LIR Reference	Local Impact Report Extract / Applicant's Response
	recycling/recovery sites in the study area and Figure 11.1 illustrates these sites. It shows that there is over 65 million tonnes of permitted annual capacity within the study area for recycling, treatment and recovery. 10.10.11 - For wastes that are being taken off-site outside of the Order Limits the contractor will have to demonstrate application of the waste hierarchy. The current predicted waste types are conventional construction waste (wood, plastic metal) which there are well established routes for reuse, recycling and recovery. 10.10.12 –The detailed design has not been completed yet so the Applicant is not in a position to provide the exact detail on how or when these will be delivered. As the detailed design progresses the contractor will be legally required to identify and apply for the correct consenting route for the management of waste e.g. an environmental permit. This consenting route will require evidence to demonstrate compliance with the relevant regulations and codes of practice in order to protect the environment and human health.
Page 160	**10.11 Land Use and Open Space** **Introduction** 10.11.1 There are three Appendices to the Planning Statement that address open space and green infrastructure, which have been provided by NH. These are: • **Planning Statement Appendix D Open Space** (APP-499) has focussed solely on providing compensation land for open space and common land directly impacted by the scheme. Lower Thames Crossing would directly impact three open space sites, one informal public open space and two areas of registered common. It has not considered the indirect effects on open spaces close to the route arising, for example, from increased noise and air pollution. Further issues related to compensation for temporary use of open space are dealt with below in Section 14; • **Planning Statement G – Private Recreation Facilities** (APP-502) confirms that only one private facility, Thames View Camping would be permanently lost to the scheme. This is a new operation that operates under pd rights. None of the other 10 operations would result in significant permanent losses of land, most would have temporary impacts associated with utilities works. No assessment has been provided, however, regarding the indirect effects on public open spaces close to the route; and, • **Planning Statement Appendix H – Green Infrastructure Study** (APP-503) is an update of the document created for the first DCO in October 2020. While some of the policies have been updated, no attempt has been made to review the projects which were identified via a small number of stakeholders, mainly comprising biodiversity-focussed NGOs in 2018/2019. The Council has previously identified numerous issues with the project list.

LIR Reference	Local Impact Report Extract / Applicant's Response
	• The project list is made up of principally small projects, nearly all below £150,000 and some as low as £4,000, so they would not deliver any strategic benefits. • Many of the projects are situated significant distances from LTC which dilutes any impacts and means areas most affected by LTC would get fewer benefits. • Many of the projects were short-term schemes, for example, the Land of the Fanns project has already ended. • Several projects proposed by stakeholders include sites that now form part of LTC mitigation or have been developed, e.g. sites within Tilbury 2 and Ockendon Landfill. • The project list has not been updated to reflect the proposed LTC mitigation. • Of the very few projects within Thurrock none were aimed at addressing health and wellbeing issues, such as open space improvements and with no focus on those communities most adversely impacted by the scheme. 10.11.2 The list was prepared without any discussion with local authorities or the Council.
Applicant's Response	The Green Infrastructure Study [**APP-503**] was commissioned by the Applicant to provide evidence and advice in support of a deliverable approach to retain and improve Green Infrastructure, this in turn has helped the Applicant to define and embed the necessary mitigation into the Applicant's Environmental Masterplan [**APP-159** to **APP-168**] providing a framework for the delivery of large-scale Green Infrastructure to maximise the benefits for people and wildlife. Appendix A NPS Accordance Table of the Planning Statement [**APP-496**] demonstrates how the Project accords with NPS policy in respect of public open space impacts (e.g. paragraphs 5.174, 5.175, 5.180 and 5.181). Appendix C to the Planning Statement [**APP-498**] presents an assessment of relevant local policy including the Thurrock Core Strategy and Policies for Management of Development in Table C11 and addresses Policies CSTP18 & CSTP20 dealing with open space and green infrastructure. Planning Statement - Appendix D - Open Space [**APP-499**] addresses the impacts of the Project on open space and common land.
Page 160-161	**Local Impacts Identified by Thurrock Council** 10.11.3 Thurrock contains several communities with relatively high population densities and which have high levels of deprivation, including low car ownership levels. These settlements often only contain small parks and play areas. This makes access to these open spaces particularly important. 10.11.4 The Open Space assessment has focussed solely on those open spaces where there would be a direct and permanent loss of land as a result of LTC. The proposed compensation land for each site is considered appropriate and has been designated to integrate with other LTC landscape and biodiversity mitigation, as much as possible.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.11.5 No consideration has been given to indirect effects such as visual, noise or air quality effects and the general amenity of these open space sites during construction or operation to those open spaces close to the route despite this being raised during the first DCO application process. For some open spaces access will be impacted by road or rights of way closures or diversions. 10.11.6 New masterplans have been produced for six public open spaces within the Tilbury and Chadwell St Mary areas, funded by NH Designated Funds as part of the LTC Legacy programme, however, other sites, for example, in Orsett and South Ockendon have not been assessed. 10.11.7 The original LTC Green Infrastructure Study (**APP-503**) was produced in mid-2019 with little direct consultation with local authorities, despite the claims made in its Executive Summary. Since it was produced it has been necessary to 'retrofit' mitigation and legacy projects to try to deliver the scale of improvements necessary to achieve the GBI benefits required. 10.11.8 The Green Infrastructure Study was originally produced in mid-2019 and has not been updated and so is considered to be out of date and so does not have a clear function. The South Essex and Thurrock GBI strategies that have been published based on much wider stakeholder consultation, since the LTC document was prepared. Legacy development work funded through NH Designated Funds is not informed by the document. The LTC Legacy team has tried to progress green infrastructure projects, however, most local authorities do not have the resources to development, implement and manage projects and it is felt that LTC should have taken a more proactive role in ensuring green infrastructure delivery.
Applicant's Response	10.11.3 – The Applicant notes this statement . 10.11.4 – The Applicant notes this statement. 10.11.5 – ES Chapter 13 - Population and Human Health [**APP-151**] provides an assessment of the Project during the construction and operation phases on Community land and assets including public open spaces. Effects on community land have been have been assessed within a study area based on the Order Limits plus a 500m area surrounding it. Where likely effects have been identified beyond this (for example relating to potential catchment areas of individual facilities), the study area has been extended to reflect this, in line with DMRB LA 112. These are summarised at Tables 13.57 and 13.58 for South of the River Thames and north of the River Thames respectively. Effects on community land during operation are summarised at Tables 13.69 and 13.70 for South of the River Thames and north of the River Thames respectively. In addition, the landscape and visual effects arising during the construction of the Project have been addressed under ES Chapter 7 – Landscape and Visual [**APP-145**], which includes the construction phase mitigation measures to be undertaken. Noise and air quality effects have been assessed under ES Chapter 12 – Noise and Vibration [**APP-150**] and ES Chapter 5 – Air Quality [**APP-143**], respectively.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.11.6 The Applicant notes that the Council asked for £100,000 to fund the delivery of masterplans for six key sites in the Borough. The funding has been granted by National Highways' Designated Funds Programme on the basis of the co-ordinated masterplans which would be produced to demonstrate how the identified future investment(s) would increase levels of physical recreational activity and trips by foot or bike, and the impact this would have on public health, and improvements to biodiversity. These open spaces were part of the Hatch ask L15. Thurrock Council continues to have opportunities to apply for further funding from Designated Funds (outside of the Project's funding envelope) to fund projects that meet the eligibility criteria; this process is managed via the Benefits Steering Group and supporting working groups. 10.11.7 – Please refer to response to 10.11.8 below. 10.11.8 – Planning Statement - Appendix H - Green Infrastructure Study [**APP-503**] considers how existing and proposed Green Infrastructure can connect and enhance communities and wildlife at the sub-regional and city-scale as part of a holistic approach to mitigation and design solutions for the Project. The Study was originally undertaken in 2019 but validated in 2022 prior to submission of the DCO application in consultation with a broad range of stakeholders including Thurrock Council. The Green Infrastructure baseline has not fundamentally changed and the recommendations in the Study remain valid. Any updates to the baseline since 2019 have been captured in the Study are considered in Section 6: Stakeholder Project Identification Sheets and Section 10: Green Infrastructure Review. The landscape design of the Project will be further developed during the detailed design, in line with the controls and commitments of the DCO documents. The design of large-scale landscape mitigation for the Project would be developed to maximise the Project's legacy for local communities and landowners, whilst considering existing land use. Where there is alignment between the Project and other existing or planned green infrastructure schemes identified by local authorities and other relevant stakeholders, the Project's detailed design will be developed to integrate with the delivery of green infrastructure by others in accordance with Design Principle LSP.06, which is a Project-wide Design Principle. The Applicant has, through the designated funds programme, worked with Thurrock Council to progress substantial green infrastructure improvements outside the framework of the DCO. As set out in SoCG item 2.1.241, the Applicant has provided funding for feasibility studies for a number of PRoW proposals including: 1. FP1 south of Dennises Lane 2. Improved link north south links via the Gatehope route through Little Belhus to Dennis 3. North south link on western side of M25 from Stifford Road to Bridleway 230 Belhus Chase 4. Gatehope Drive to Dennis Road 5. Aveley to Purfleet link

LIR Reference	Local Impact Report Extract / Applicant's Response
	6. Buckingham Hill Lane The Applicant has agreed to consider capital works applications in relation to these proposals.
Page 161	**Policy Compliance and Local Impacts** 10.11.9 It is considered that the Open Space compensation sites for permanent loss accords with NPS policy. The Council has been engaged in discussions with NH regarding the design of the compensation sites.
Applicant's Response	The Applicant notes this statement.
Page 161	**Further Work or Mitigation Required** 10.11.10 The Planning Statement Appendix D - Open Space study (**APP-499**) has focussed solely on those open spaces where there would be a direct and permanent loss of land. It has not considered any indirect effects on existing open spaces. A package of measures should have been provided for those open spaces close to the route to help lessen air quality, noise and visual intrusion arsing from LTC. 10.11.11 Through the Legacy programme new masterplans have been prepared for six open spaces and Conservation Management Plan for Belhus Park. It is important that funding is made available through the Legacy programme to enable these plans to be implemented. 10.11.12 The proposed Tilbury Fields and the associated additional permissive footpath links through the adjacent mitigation areas will help extend open space provision close to Coalhouse Fort. However, there are real concerns regarding the lack of detail concerning wardening to ensure this provision does not attract antisocial behaviour.
Applicant's Response	10.11.10 – This matter is a summary and addressed in detail in the response to page 160-161 above. 10.11.11 – The Applicant notes this statement. 10.11.12 – This is a matter of detail which will be addressed in discussion with the Council and other relevant stakeholders in due course as appropriate.
Page 162-164	**10.12 Walkers, Cyclists and Horse Riders (WCH)** **Local Impacts Identified by Thurrock Council** 10.12.4 This low number and poor connectivity of routes means the prolonged closure of any, be it permanent or 'temporary' for up to 5 years for some key routes, will have a significant impact on walkers, horse riders and cyclists. While it has been

LIR Reference	Local Impact Report Extract / Applicant's Response
	possible to divert some routes, it is not possible for routes, such as BW219 that follows the Mardyke from South Ockendon to Bulphan. 10.12.5 An issue throughout the DCO process has been that responsibilities for different aspects of WCH, such as assessing the existing network and mitigating effects, arranging diversions and closures, and identifying legacy opportunities, have been dealt with by separate LTC teams. This has made trying to achieve a coordinated package of measures very difficult. In addition, the provision of new permissive provision, primarily around Tilbury Fields and Coalhouse Battery has been developed separately as part of the Tilbury Fields design work. 10.12.6 There has been no single plan showing the existing network, the proposed temporary and permanent changes and the legacy opportunities although the Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders (**APP-512**) and the Rights of Way and Access Plans Volume B & C (**APP-204** and **APP-205**) have started to draw some of the strands together, but not comprehensively as required by the Council. 10.12.7 The information contained in these documents and plans accord with discussions regarding permanent changes to the rights of way network and additional permissive routes focussed in the mitigation areas close to Coalhouse Fort and at Tilbury Fields. What is not included is any detail regarding types of surfacing, structure and signage. Although, Design Principle S9.02 Tilbury Fields makes reference to the provision of the accessible permissive routes, but does not refer to a specific standard. It is assumed that PEO.04 – WCH detail design standards covers permissive routes, as it refers to WCH rather than PRoW, however, this is not explicitly stated. 10.12.8 A positive measure has been the NH policy to upgrade all affected public footpaths to public bridleway. This is welcome as it has enabled a near continuous bridleway connection to be provided between Coalhouse Fort and Thames Chase Visitor Centre, which forms a useful spine route through the Borough. However, there has been little opportunity to create or enhance other routes that would create the additional recreational loops identified in Design Principle PEO.10 (**APP-516**) 10.12.9 Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders (**APP- 512**) is useful in providing a summary of the proposed changes to the PROW network. However, it is not a control document and is purely illustrative and therefore not acceptable to the Council. 10.12.10 Design Principles (**APP-516**) contains a total of 11 principles relating to WCH. PEO.01-PEO.04 provide high level statements regarding the quality of provision. PEO.04 states that WCH routes shall be designed in accordance with a suite of standards including Local Transport Note 1/20. PEO.10 commits to creating improved recreational loops north of the Thames.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.12.11 The Council as Highways Authority has sought to obtain more details regarding future design and maintenance, e.g. types of surfacing (SoCG Issue 2.1.103) and future maintenance liabilities (SoCG Issue 2.1.142), but NH have not provided further details. 10.12.12 Streets Subject to Temporary Restrictions of Use Plans Volume B & C (**APP-028** and **APP-029**) show those routes that will be subject to temporary alternation. However, they do not show the proposed diversions routes. DCO Schedule 5 Part 6 – Other public rights of way and permissive paths (**AS-038**) lists all routes that are affected. Outline Traffic Management Plan for Construction **APP-547** Appendix B provides a summary of WCH mitigation measures. 10.12.13 Structure Plans Volume A & B (**APP-043** and **APP-044**) do provide indicative plans showing the proposed bridges, including the green bridges.
Applicant's Response	10.12.4 – The Applicant notes this statement. 10.12.5 – Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] summarises the overall WCH strategy; permissive footpaths around Coalhouse Fort and Bowaters Battery are also discussed in PDR Part E section 4.3.2, 4.3.11, and 4.3.13. 10.12.6 – Schedule 3 (Article 12) of the draft DCO [**REP1-042**] lists which streets (including PRoWs) and private means of access would be impacted by the Project works. Schedule 4 (Article 14) of the draft DCO [**REP1-042**] lists which streets (including PRoWs) and private means of access would be permanently stopped up by the Project. The schedule also includes details of the routes for which a substitute is to be provided by the Project. Appendix B of the outline Traffic Management Plan for Construction (oTMPfC) [**REP1-174**] provides a list of mitigation measures and plans showing proposed diversions for WCH routes affected by long-term closures during construction. The oTMPfC proposes that for WCH routes affected by short-term closures, engagement would be undertaken with the relevant local authority to determine whether a temporary diversion is required and what route it would follow, considering footfall/likely usage, and length and suitability of an alternative route. 10.12.7 –The exact type of surfacing and specification for WCH routes (including signage) will be developed at the detailed design stage. This has been discussed with the Council during numerous design workshops and presentations and broadly covered in is addressed by SoCG [**APP-130**] item 2.1.103. Design Principle [**APP-516**] PEO.04 sets out the design standards that shall apply – this also applies to PRoWs, explained in Section 4.1.2 of the Design Principles and is further defined by PEO.01 and PEO.03. 10.12.8 The enhancement and creation of WCH routes is constrained to areas within the Project Order Limits. In developing the overall WCH strategy, the Applicant has sought to enhance existing routes where technically practicable.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.12.9 – The Applicant notes this statement. The Project Design Report is intended to give an overview of the Project design including measures for WCH. 10.12.10 – The Applicant notes this statement. 10.12.11 - this matter is addressed by SoCG [**APP-130**] item 2.1.103 and 2.1.42, summarised below. All walking, cycling and equestrian routes will be designed in accordance with the latest standards and guidance with a surface appropriate for its intended use. Design Principle DP PEO.03 requires that surfacing needs to balance design quality and practicality, within the context of the local environment. Further details of surfacing materials will be developed at detailed design. Configurations of the WCH routes are also a matter for detailed design. At this stage, the Applicant has provided an appropriate framework of design principles for the detailed design to be based on. Design Principle DP PEO.04 list out the WCH detailed design standards. The current wording of PEO.01 states: '*All PRoWs crossing the Project route shall have a detailed design that is safe and considers the convenience of the users and appropriateness to the context of the adjacent landscape character, with changes in level minimised where appropriate.*' During the construction phase, management of PRoW infrastructure will remain the responsibility of Thurrock Council as the local highway authority. As committed to in the oTMPfC [**REP1-174**], the Applicant would ensure any temporarily diverted routes are designed with users in mind and that consideration is given to visual, hearing and physically impaired users. Diverted and existing routes will also be clearly signed and segregated from construction sites. During the operational phase, public highway assets including PRoW that sit within the jurisdiction of Thurrock Council will be maintained by Thurrock Council as the local highway authority, and this will include the road surfacing over structures from the (but not including the) waterproof layer. Green elements of Green Bridges will be managed by the Applicant who will put in place an appropriate maintenance programme. Further information will be communicated to local authorities as the detailed design develops. 10.12.12 ES Figure 13.4 - Population and Human Health Assessment - Proposed WCH Links [**APP-320**] shows indicative temporary PRoW diversion routes in addition to permanent route diversions. 10.12.13 - The Applicant notes this statement.
Page 162-164	10.12.14 For the green bridges incorporating roads, Muckingford Road and North Road, the Council is unclear what the purpose of the 'raised verges' is. For example, are these the areas for horse riders and what they will comprise. 10.12.15 In addition, the Council has proposed that sufficient width to incorporate a future dedicated cycle path or bus route at crossings of the LTC, which complements an intent from the Council to promote and increase active travel and public transport use along routes that cross the proposed LTC alignment. This requirement is reflected in the Council's emerging

LIR Reference	Local Impact Report Extract / Applicant's Response
	transport strategy. The Council is highly concerned that NH has unilaterally decided, without substantiation, that people in Thurrock are never likely to adopt cycling and bus use to the level that would warrant the need for dedicated facilities. The Council is concerned that the approach adopted by NH will mean that LTC acts as a future constraint to active travel and bus use and to restrict the provision associated with emerging major developments in the borough. It will not be cost- effective to widen the crossings once they have been constructed. To avoid LTC becoming a constraint on the potential for Thurrock to promote active travel and bus use, NH must ensure that the crossings are of adequate width to accommodate these requirements. NH argue that it needs only to provide capacity for shared-space standards, at best, stating simply that the rationale for this is to achieve best value for investment. The Council has not been provided any details of NH's assessment of the benefits of a future-proofed design with wider bridge widths compared to its preferred approach and is concerned that NH is basing decisions likely to leave a lasting negative legacy with an over-reliance on bias and anecdote. 10.12.16 The Council would like NH to agree to engage with Active Travel England and their remit is to help arbitrate on such matters. NH should also include sufficient width for dedicated bus facilities in the locations noted by the Council.
Applicant's Response	10.12.14 The area shown as raised verges on the proposed green bridges provides a shared space allocated for use by walkers and cyclists. 10.12.15 – 10.12.16, This matter is addressed by SoCG [**APP-130**] items 2.1.256 and 2.1.257. The Applicant strongly refute the suggestion that the Applicant has unilaterally decided not to provide dedicated facilities for active travel and public transport. The Applicant has worked closely with the Council over a period of time to agree the requirement. In the majority of cases, the Applicant has made provision for WCH as requested by Thurrock Council. During the development of the proposals the Council were asked to provide emerging local plan information which would substantiate the need for high capacity segregated WCH facilities and bus priority measures on rural connections. The Applicant considers that the proposed provision of capacity on these bridges is proportional to the current and likely forecast usage. Increasing capacity on bridges would lead to an increase in the requirement for land, and increased cost, which is not proportionate to the identified need. Please refer to Project Design Report: Part E Walkers, Cyclists and Horse Riders [**APP-512**] for details on all WCH proposals and to the Design Principles [**APP-516**] for proposed WCH provision on crossings over the Project.
Page 162-164	10.12.17 **Baker Street Closure/Impacts and its Implications (including SoCG Issues 2.1.81, 2.1.163 and 2.1.242)** – the Council has had several meetings about the construction effects on PRoW routes along and near Baker Street on 9 August and 23 November 2021, 12 May and 9 August 2022. Further, there was a Hatch meeting in which NH set out its proposals for Baker Street dated 19 November 2021. The Council believed these were interesting ideas that you stated would be reviewed and shared again. Unfortunately NH did not share these proposals again or develop further. Baker Street was also

LIR Reference	Local Impact Report Extract / Applicant's Response
	No. 5 on the list of 39 locations in the identified issues in the Council's work on construction impacts issued to NH in early May 2022. This set out clearly the Council's concerns and which was the subject to a range of subsequent technical discussions. 10.12.18 The significant construction impacts on Baker Street within Orsett Ward are set out/summarised in Section 6.13 (Pp 203 – 238) of the Community Impacts Report within the DCO application (APP-549) . Table 6.30 makes it clear that Baker Street will be closed several times in different locations, summarised below. • For 5 years south of the A13 for road realignment; • For 10 months (February – November 2026); • Utility modifications for 7 months; and, • Weekends for bridge works and for alignment changes. 10.12.19 NH also intends to impose a range of access restrictions, traffic, bus, pedestrian and cycle diversions for various periods. Bus journey times would increase on affected routes. In addition, there would be noise and air quality and cultural heritage effects and significant visual effects and impacts that will seriously impact the health and wellbeing of residents. These all comprise very significant individual impacts and especially cumulative impacts. It remains a matter of upmost concern that insufficient and very limited mitigation is being proposed by NH and there is inadequate commitment to legacy improvements to help compensate for a pro-longed period of serious disruption. 10.12.20 These issues are referred to in the SoCG as a 'Matter Not Agreed', especially within SoCG Issue 2.1.242 referred to above. The proposed options previously set out by NH (and referred to above) were for the post LTC completion treatment of Baker Street, in recognition of the severe impact and disruption caused by LTC over a prolonged period. NH have now taken a unilateral and wholly inappropriate decision to do nothing, without consulting the Council or residents. NH cites various justifications to renege of commitments previously made to local residents. The Council fails to see how doing nothing within the DCO application to Baker Street in terms of additional mitigation or legacy, after the construction disturbance is completed, cannot be considered just. Furthermore, NH have confirmed that such works cannot be included within any Designated Funds application, as it would not meet the criteria. The NH response on this matters was received on 4 January 2023 and stated: 'Further review has been undertaken on the proposals on WCH improvements on Baker Street. This review has identified that these works are not necessary to address any severance or other issues created by the Lower Thames Crossing project. As a result, it is not appropriate to seek powers through the DCO process. The proposals do not meet the criteria for

LIR Reference	Local Impact Report Extract / Applicant's Response
	Designated Funds, due to the limited size of the community benefitting from the improvements and the relatively short section of improvements reduces the amount that could be invested'. 10.12.21 The approach set out above by NH is unacceptable. The Council is strongly of the opinion that NH amend their approach, as set out below. Furthermore, the Council's response on 13 February 2023 has not yet been responded to by NH.
Applicant's Response	These matters are addressed by SoCG [**APP-130**] items 2.1.120, 2.1.242 and 2.1.287, summarised below. The Applicant has undertaken a series of construction-specific engagement sessions with Thurrock Council in 2022. All 39 locations were discussed, including Baker Street. The mitigation discussed and proposed is contained in a series of control documents notably the REAC (environmental impacts) and the oTMPfC [**REP1-174**] (traffic management during construction, management of PRoWs). A series of additional commitments have been included into the oTMPfC to reflect these discussions, including mitigation and monitoring, and the oTMPfC further sets out provisions for ongoing engagement on these matters throughout construction. Detailed construction plans for the Baker Street area will be developed by the Contractor. A number of controls are set out in the oTMPfC, especially as part of Table 2.3, which will need to be developed in the TMP and consulted with Thurrock Council before approval by the Secretary of State. A further discussion on this matter was held on 13 June and the Applicant requested the Council for potential additional commitments over and above the existing commitments in the oTMPfC for further consideration. This matter remains under discussion. The Applicant investigated potential measures to improve PRoW provision on the northern side of Baker Street and shared this further information with the Council. Furthermore, the works in this area do not provide mitigation for an adverse impact of the Project, and as a consequence it would not be appropriate to seek the powers through the Project DCO.
Page 164	Policy Compliance and Local Impacts 10.12.22 NPSNN paragraphs 3.17, 3.22, 5.184 and 5.216 all relate to WCH and protecting and enhancing routes for walkers, cyclists and horse-riders during construction and operation. In principle, it is considered that the requirements have been met. However, the mitigation measures will still result in long term closures of important routes, where there is no way to provide a temporary diversion where it is cut by LTC. It has been outlined above that the Borough has a restricted ProW network, therefore the long term closure of key routes, such as BW219 would be a significant concern to the Council.
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item 2.1.130, summarised below. Three topic-specific meetings have been organised to date with Thurrock Council, most recently on 9 August 2022, to discuss the suitability of proposed temporary diversion routes during construction. The Applicant has completed discussions with other relevant parties, such as local riding schools, before finalising the proposals. The final proposals (for closures and

LIR Reference	Local Impact Report Extract / Applicant's Response
	diversions) and the associated commitments, which will be secured via the outline Traffic Management Plan for Construction oTMPfC [**REP1-174**] are presented in Appendix B and the Rights of Way Plans. Additionally, the oTMPfC provides a framework for dealing with such stakeholder considerations. Table 2.3 outlines the relevant stakeholders (i.e. WCH users), their requirements and how subsequent Traffic Management Plans (TMPs) will take these requirements into account. These TMPs will be developed post consent (if the Project is consented to), and in line with the controls and commitments in the oTMPfC. Thurrock Council will be a consultee when developing this document. A further discussion on this matter was held on 13 June and the Council expressed concerns around the level of details presented. The Applicant requested the Council for potential additional commitments over and above the existing commitments in the Table 2.3 of the oTMPfC related to PRoWs, for further consideration, which has now been received within the LIR. This matter remains under discussion.
Page 165	**Further Work or Mitigation Required** 10.12.23 Through the LTC development it has been difficult to identify opportunities to create improved networks that connect to the enhanced routes within the Order Limits. As part of first DCO a Walking, Cycling and Horse Riding Assessment was commissioned covering the wider area. A summary of its recommendations is set out in Project Design Report (**APP-512**). That sought to focus on longer distance active travel routes rather than identifying opportunities to enhance the PROW network. 10.12.24 More recently several routes have been subject to feasibility studies funded through the NH Designated Funds. However, resource issues at the Council has meant that it has not been possible to progress these matters. 10.12.25 The Council has sought to include bridleway/permissive horse/cycle route north from the Two Forts Way to the upgraded FP200 into the Tilbury Fields design to create an alternative route. This has not yet been shown. 10.12.26 The proposed new permissive routes proposed as part of Tilbury Fields, but which run through the ecological mitigation areas are listed as not surfaced. These are routes that could experience significant use due to their location close to Coalhouse Fort. It is considered that these will need to have some form of surfacing and details are required from NH. 10.12.27 **Baker Street Closure/Impacts and its Implications** – A range of additional mitigation or legacy options for Baker Street is necessary following construction completion and consideration by the Council and residents. These options should offer a range of alternatives for residents covering the following matters (as covered in the November 2021 presentation): • On-street parking; • Footpath improvements/provision/widening (possibly as shared use); • Provision for cyclists;

LIR Reference	Local Impact Report Extract / Applicant's Response
	• Possible traffic calming; and, • Bus stop improvements and bus route provision that help to mitigate the significant and deleterious effects of construction. 10.12.28 It is appreciated that this will require some preparation and surveys, but NH has had ample time over the last 18 months. These options should then be shared with residents, views obtained and then taken forward, as appropriate.
Applicant's Response	The statements at 10.12.23 and 10.12.24 are noted. In response to 10.12.25, this matter is addressed by SoCG [**APP-130**] item 2.1.101, summarised below. The North Portal is located within East Tilbury Marshes and would not result in any severance to walkers, cyclist or horse-riders within the Tilbury Fields area, given it does not cross any existing Public Rights of Way. Although there is no specific impact to mitigate in this area, the Applicant is proposing WCH routes as an enhancement within this area with the aim of creating walks that link the heritage assets in areas such as Coalhouse Fort, East Tilbury Battery and Bowaters Battery. This will be achieved by linking Two Forts Way and the proposed country park at Tilbury Fields to the improved PRoW network further north. To provide public access through the country park at Tilbury Fields, the Applicant is proposing two north-south routes. These routes will connect to the FP200, proposed to be realigned and redesignated as bridleway to Two Forts Way along the shoreline of the Thames, where the Applicant proposes to resurface, widen and redesignate the footpath to a pedestrian-cycle track in readiness for similar future improvements (by others) to the west and east. The western of these routes will be designated as a permissive footpath and will follow the newly created topography to bring users to these new viewing points. The eastern route will follow an historic watercourse through the marshes and will be designated as a footpath. There will be two permissive paths linking these primary north-south paths. The proposed WCH routes are considered to provide valuable improvements to the existing PRoW network and helping Thurrock with its aspirations to improve public access. There may be an opportunity in the future for the eastern footway through Tilbury Fields to be upgraded to bridleway/cycle route by the same third parties as the eastern works to Two Forts Way, in order to create a complete loop from Coalhouse Fort but it is not considered appropriate to prejudice those proposals or incorporate them as part of the Project. In response to 10.12.26 this matter is addressed by SoCG [**APP-130**] item 2.1.103, summarised below. All walking, cycling and equestrian routes will be designed in accordance with the latest standards and guidance with a surface appropriate for its intended use. Design Principle DP PEO.03 requires that surfacing needs to balance design quality and practicality, within the context of the local environment. Further details of surfacing materials will be developed at detailed design.

LIR Reference	Local Impact Report Extract / Applicant's Response
	Configurations of the WCH routes are also a matter for detailed design. At this stage, the Applicant has provided an appropriate framework of design principles for the detailed design to be based on. Design Principle DP PEO.04 list out the WCH detailed design standards. The current wording of PEO.01 states: '*All ProWs crossing the Project route shall have a detailed design that is safe and considers the convenience of the users and appropriateness to the context of the adjacent landscape character, with changes in level minimised where appropriate.*' A further discussion on this matter was held on 14 July 2023 and the Council is in agreement with the Applicant's approach. In response to 10.12.27-28, this matter is addressed by SoCG [**APP-130**] item 2.1.242, summarised below. Changes to the configuration of Baker Street promoted by Thurrock Council in this area do not provide mitigation for an adverse impact of the Project, and as a consequence it would not be appropriate to seek the powers through the Project DCO. The proposals do not meet the criteria for designated funds, due to the limited size of the community benefitting from the improvements and the relatively short section of improvements reduces the amount that could be invested.
Page 166-168	**10.13 Human Health, Equalities & Wellbeing** **Introduction** 10.13.1 LTC has multiple, complex human health, equalities and wellbeing impacts across the entire scheme, but particularly in Thurrock where the majority of construction and operation is planned. In order to meet one of its scheme objectives the DCO must demonstrate it can 'minimise adverse impacts on health and the environment'. The applicant has produced a standalone Health and Equalities Impact Assessment (HEqIA) (**APP–143**), which directly informs the human health portion of the ES Chapter 13 - Population and Human Health (**APP-151**) and therefore, both will be discussed here, as well as their supporting appendices and related documents. Further detail is also provided by ward within the Community Impact Report (**APP-549**) and there a nine wards within Thurrock covered in this document, although impacts and mitigation is only dealt with at a broad level but using ES topics to structure its content. 10.13.2 The HEqIA (**APP–143)** identifies two significant negative human health impacts (mental health and wellbeing during operation for the general population and sensitive communities and noise and vibration during construction for both general populations and sensitive communities) and six significant positive human health impacts. Alongside this, eleven topic assessments note differential or disproportionate impacts on specific protected characteristic or sensitive population groups within the assessment table, with one being noted as significant adverse (noise and vibration during construction). Given the nature of the scheme and the scale of construction the confidence in these outcomes being reflective of the human health and equalities impacts on Thurrock's residents is limited due to the methodological limitations of the HEqIA and that Chapter of the ES, alongside specific local concerns, which have not been addressed in the HEQIA due to the aggregation of impacts across the scheme.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.13.3 It should be noted that the HEqIA uses the term 'health outcomes' to define positive, negative, uncertain and neutral outcomes. The term 'outcomes' has been used below to describe broader matters, whereas the term 'impacts' has been used for specific local impacts. 10.13.4 Table 10.10 below outlines the key issues that remain, these are drawn from issue references within the Statement of Common Ground (SoCG). Table 10.10: Summary of Key Issues Human Health, Equalities and Wellbeing *Independent Review of the HEQIA (SoCG issue 2.1.208)*: twenty recommendations were raised in the 2021 Independent Review of the HEQIA. Most of these recommendations have been carried over into the SoCG and are discussed here, demonstrating that these recommendations have not been fully met. **Appendix E** contains the response to NH written response to the recommendations after the submission of DCO on the 8 June 2023. *Integration of local health policies into assessment (SoCG issue 2.1.209):* It is not clear what weight local policy objectives and JSNA priorities have had in the assessment how that they have been included under each topic assessment. Specific topic assessments which have omitted reference to Thurrock policies or objectives are outlined below. *Information provided regarding construction phasing (SoCG issue 2.1.209 and now merged with Issue 2.1.220):* it is noted that description of construction phases is now included in the HEqIA. An issue remains regarding clarity on how construction phases have been considered alongside ward sensitivity within the cumulative assessment of intra-project effects, especially for those communities closest to the scheme, of which Thurrock has the majority and how mitigation addresses the potential health inequalities associated with these cumulative impacts. *Information regarding scoping of HEQIA (SoCG issue 2.1.211):* further information should be provided regarding what potential health topic assessments had been discussed with the Community Impacts and Public Health Advisory Group (CIPHAG) and been scoped out and why, and clear justification for scoping out equalities groups (specifically sex and faith and belief). *Further information regarding how consultation has informed the assessment (SoCG Issue 2.1.212)*: Information should be provided regarding how consultation has fed into the design and mitigation. Each topic assessment contains a section regarding consultation where issues regarding the topic during consultation are raised, however multiple topics do not clearly lay out how these concerns have been addressed (these are outlined below) or how these concerns relate to engagement with protected characteristic groups or the Hard to Reach Focus Groups (Table 5.1). There is a risk that due regard under the Equalities Act 2010 has not been demonstrated through the HEqIA and its appendices. Justification of how criteria set out in paragraph 3.6.13 within the HEqIA has been applied to justify significance and how this interacts with aggregation of the baseline (SoCG Issues 2.1.213, 2.1.214 and 2.1.215): these issues relate to the overarching

LIR Reference	Local Impact Report Extract / Applicant's Response
	limitations of the HEqIA (SoCG Issue 2.1.208), where it is unclear from the methodology how considerations outlined in paragraph 3.6.13 of the HEqIA (criteria to determine significance) have been used systematically to determine whether or not an effect is significant. Specific topic assessments that need clarification are outlined below. Specific topic assessments where negative effects on sensitive groups or specific ward sensitivities are identified within the assessment, but the overall effect has been deemed neutral or non-significant and therefore clarification is needed on how these outcomes have been justified are also outlined below. *Information regarding further technical information (SoCG issues 2.217 and 2.1.237):* concerns regarding specific technical assessments are raised under the Local Impacts section below. It is important to note that the HEqIA relies on multiple technical assessments. There are specific concerns in Thurrock regarding the air quality and noise and vibration modelling, if any changes or fundamental queries are raised regarding these assessments a clear update or caveat will need to be reported regarding the HEqIA. It is recognised that findings from the Distributional Impact Assessment are reflected qualitatively in the HEqIA, but clarification is needed as to why only income and children/schools are considered in the air quality assessment and not prevalence of long-term health conditions as a relevant characteristic. Further information on the effectiveness of mitigation (SoCG issues 2.1.218, 2.1.230, 2.1.232 and *2.1.236):* specific concerns regarding topic assessments and mitigations are raised under the further work or mitigations required section. Overall, it is not clear what evidence has been used to justify the residual health outcomes assigned to each topic assessment after mitigation. Specific topic assessments where this is the case and examples of further clarification needed regarding mitigation for specific topic assessments is outlined below. *Specific issues regarding the granularity of the EqIA and meeting the Public Sector Equality Duty (SoCG Issue 2.1.222):* the issues regarding the EqIA are explored below. There is still uncertainty that the HEqIA fully demonstrates the due regard shown to equalities characteristics comprehensively. *Impacts on the traveller community (SoCG issue 2.1.229):* impacts on traveller communities within Thurrock, specifically Gammonfields way have not been fully explored within the HEqIA and further clarification is needed to ensure that negative health impacts are not expected to occur, this is further outlined in the Local Impacts section below. *Specific impacts regarding noise impacts on Whitecroft Care Home (SoCG Issue 2.1.231):* paragraph 7.9.21 of the HEqIA identifies that noise impacts on the Whitecroft Care Home would not constitute a significant effect in construction once mitigation measures (specifically acoustic screening) is applied that is secured through the Register of Environmental Actions and Commitments (REAC) (**APP-336).** This is disputed and further outlined in the Local Impacts section. Specific impacts/mitigation regarding areas of common land and private facilities (SoCG Issue

LIR Reference	Local Impact Report Extract / Applicant's Response
	2.1.238): there is still uncertainty regarding mitigation secured for loss of land, particularly Wild Thyme Outdoors. Additionally, as well as issues raised regarding the impact of land take outlined planning statement regarding temporary land take within Thurrock and demonstrating sufficient mitigation. Specific impacts regarding health impacts on residential areas at the A13/ A1089 Junction and Orsett *Cock (SoCG Issue 2.1.240): w*ithin the REAC **(APP-336)**. There are no specific mitigations outlined regarding these areas and the issues raised within the relevant representation regarding light pollution and VISSIM modelling. This is outlined further below. *Information regarding enhancing vehicular travel (SoCG Issue 2.1.259): I*t is recognized that in Table 4.1 Design Principles are laid out (PE-1 – PEO13) that ensure standards for WCH which impact safety for NMU's. However, there is no detail provided above and beyond the building of new cycle paths to help ensure a move away from vehicular travel. *Further clarification regarding the Workers Accommodation Report WAR (SoCG Issue 2.1.233, 2.1.234 and 2.1.235)*: further clarification is needed regarding how mitigation laid out to reduce the effect of worker accommodation needed in the Thurrock housing market will reduce impacts on access to safe, secure and affordable housing for low-income residents in Thurrock. This matter is still to be discussed further with the applicant but is currently unresolved. *Specific impacts regarding proposed construction traffic routes, long term effects of road closures and how this impacts access to hospitals (SoCG Issue 2.1.194): I*t is not clear that the detail provided in the HEqIA **(APP–143)** and the ES Population and Human Health Chapter 13 **(APP-151)** demonstrates that congestion and impacts on construction routes have been fully mitigated against, particularly in regard to access to hospitals, this needs to be seen in conjunction with the Transport Assessment **(APP-529)** and Cumulative Impacts Assessment **(APP-154)**.
Applicant's Response	This matter is a summary and addressed in detail in the response to Pages 168-176. In response to Whitecroft Care Home - This matter is addressed by SoCG [**APP-130**] item 2.1.231, summarised below. Health has been considered in reporting what mitigation is required to support and protect the health and wellbeing of local residents. Mitigation proposed in relation to a number of topic areas is considered to be effective in reducing health inequalities. A further discussion on this matter was held on 5 July 2023 and the Applicant clarified that engagement with Whitecroft Care Home is ongoing and the Applicant is continuing to discuss impacts with the owners. Thurrock Council expressed concern over the outdoor environment of the care home and committed to supplying the Applicant with potential additional commitments over and above the existing commitments in the DCO documentation.

LIR Reference	Local Impact Report Extract / Applicant's Response
	Further information relating to noise assessment and the Whitecroft Care Home has been provided as part of the Applicant's Response to pages 130-132 above.
Page 168-169	**Local Impacts Identified by Thurrock Council** 10.13.5 As most of the scheme is to be built in Thurrock there are likely to be a majority of impacts on Thurrock residents. Thurrock populations are already at risk of poor health conditions and higher levels of deprivation, for example, the baseline Health and Equalities Impact Assessment Appendix C Baseline (APP- 542) Plates 5.1 to 5.8 demonstrates multiple areas within Thurrock which are within the top 20% most deprived areas in England. Specific local impacts in Thurrock are discussed below. Information regarding further technical information (SoCG Issue 2.217 and 2.1.237) 10.13.6 ***Air Quality***: the assessment currently identifies a neutral health impact in both construction and operation for the scheme regarding air quality, which is disputed given the wards affected, length of impact and amount of people affected, alongside the mitigations proposed. The assessment that, at a ward level the following Thurrock Wards, are the more sensitive to air quality changes, Tilbury St Chads, Aveley and Uplands, Belhus and West Thurrock and South Stifford. However, no further information is provided in the HEqIA on how these areas would be affected by the LTC and a key issue is that the HEqIA does not deal with the detail of specific air quality effects on specific areas. Additionally, it is noted that communities close to construction, or construction traffic routes should be considered be highly sensitive. These impacts are said to be mitigated by measures in the REAC and the CoCP, so would result in no physical health impacts, although no additional mitigation is highlighted in the HEqIA for sensitive wards. 10.13.7 Thurrock has raised concerns regarding the adequacy of the air quality assessment and technical data used during the assessment, most recently within the Council's Relevant Representation (Principal Issue VIII) (**PDA-009**). This is in particular regarding the increase in the number of people affected by air pollution and increase in traffic on local roads, even if under the permissible standards outlined by Air Quality Standard (AQS), as health effects can be felt below these standards. This is in alignment with the UK Health Security Agency's Relevant Representation (**RR-1116**) *'the UKHSA would welcome further assessment and clear presentation on the summary of impacts on human receptors where there is a change in air quality, where the AQS is not exceeded'*. Further detail of these concerns can be found in Section 10.2 above. It is unclear from the DCO documentation if the concerns raised by the Council regarding the level air quality have been acknowledged in DCO. A neutral outcome is assigned for both construction and operation through applying mitigation to reduce mental health impacts of environmental changes, alongside controls during construction. However, it is disputed that the current mitigation (just establishment of the Community Liaison Groups) is adequate. Upon review of the CoCP (**APP-336)** it is unclear document how many Community Liaison Groups will be formed and there is limited fixed detail on how they

LIR Reference	Local Impact Report Extract / Applicant's Response
	will function and what remit these groups will have. It is recognised that findings from the DIA are reflected qualitatively in the HEqIA, but clarification is needed as to why only income and children/schools are considered in the air quality assessment and not prevalence of long-term health conditions as a relevant characteristic. 10.13.8 ***Noise:*** a similar concern is raised to air quality regarding noise, significant concern was raised in the Council's Relevant Representation (Principal Issue VIII) (**PDA-009**) regarding the adequacy of the noise assessments and modelling and analysis submitted to NH from the Council in 2022 demonstrated that the scheme will significantly increase noise disturbance and tranquillity of public space – further detail of these concerns can be found in Section 10.3 above. It is not clear what changes, if any, have been made in this assessment in light of this information, although negative significant impacts are noted for construction and both positive and negative impacts are noted for operation. Second, NH responded to SoCG issue 2.1.232 to provide a qualitative assessment of noise impacts on PRoWs and WCH routes, but this has not been included in the DCO submission, this was in particular reference to the shared path in the A13/A1089 area proposed for walkers, cyclists and horse riders between Green Lane and Stifford Clays Road that is now proposed slightly closer to LTC to avoid impacting farmland. It is noted that the noise assessment in the HEqIA outlines specific effects on wards, including years that they are affected, which is welcomed.
Applicant's Response	10.13.6 This matter is addressed by SoCG [**APP-130**], item 2.1.217, summarised below. The Health and Equalities Impact Assessment (HEqIA) [**APP-539**] uses the findings of each of the topic-specific assessments within the ES and relies on the technical data sources developed for those assessments. Construction phase good practice measures for air quality are outlined in the ES Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**] which includes measures to reduce the air quality effects associated with construction dust as well as emissions from non-road mobile machinery and construction vehicles. Many of these mitigation measures respond to comments raised during consultation. No significant air quality effects are anticipated from construction dust or from construction road traffic and traffic management. A further discussion on this matter was held on 5 July 2023. Both parties agreed that this is a matter unlikely to be agreed due to both parties' positions remaining unchanged, but the Council committed to supplying specific concerns with examples for the Applicant's consideration in the LIR, which would now be considered further by the Applicant. 10.13.7–- ES Chapter 5–- Air Quality [**APP-143**] concluded that the Project is not expected to lead to a significant air quality effect on human health. The air quality assessment has been undertaken in line with DMRB LA 105 (Highways England, 2019). The LA 105 standard requires the Applicant to assess whether the impacts of the Project on human health are significant or not significant based on the approach described in paragraphs 2.89 to 2.96 of the standard. This is required to determine compliance with Paragraph 5.12 of the NPSNN (DfT, 2014).

LIR Reference	Local Impact Report Extract / Applicant's Response
	The health assessment in relation to air quality is presented within Section 7.8 of the Health and Equalities Impact Assessment [**APP-539**]. This describes the positive and negative impacts reported in ES Chapter 5 - Air Quality [**APP-143**] and concludes a neutral health outcome in relation to construction and operation phases. The sensitivity of particular populations to deteriorations or improvements in air quality (for example children, older people and people with existing respiratory conditions) has been taken into account in the assessment. The ES was appropriately scoped with all regulatory authorities and statutory consultees, and included an appropriate air quality assessment (ES Chapter 5 – Air Quality [**APP-143**]). This considered sensitive receptors, existing air quality and was assessed to the relevant air quality thresholds in the assessment years (Air Quality Objectives and Limit Values, which are inherently protective of the environment and health). Whilst sufficient to determine compliance with NPSNN (DfT, 2014), residual concerns were noted through wider engagement, and additional clarity was deemed of value to set potential risk of changes in pollutants into context. This was deemed useful to respond to concerns from stakeholders in relation to non-threshold pollutants, and the perceived potential health risk from any changes in air quality as a result of the Project, regardless of meeting the legal air quality thresholds for protective of health. The voluntary Air Quality Quantitative Health Impact Assessment (AQQHIA) was therefore carried out, applying the approach and supporting evidence base collated by the Department of Health's Committee on the Medical Effects of Air Pollutants (COMEAP) and the Clean Air for Europe IE) programme. The methodology includes the use of robust concentration response functions recommended for quantification by COMEAP, and applies a consistently precautionary approach, for example overly pessimistic $PM_{2.5}$ concentrations using modelled road PM_{10} component added to $PM_{2.5}$ backgrounds. The AQQHIA has no lower threshold to the assessment, so changes of all magnitudes (no matter how small) both above and below the threshold objectives have been considered. The quantitative exposure response assessment as part of the AQQHIA demonstrates that the impact of changes in air pollution as a result of the operation of the Project is not significant, with no measurable change in public health. This conclusion further reinforces the findings of the submitted air quality assessment, that the impacts on Human Health receptors are not significant. On the above basis, the Applicant maintains it has followed the most appropriate guidance to determine whether the Project complies with the NPSNN (DfT, 2014). Engagement with stakeholders identified residual health concerns. The voluntary AQQHIA was commissioned to respond to such concerns, it concludes that the relative change in air quality within the area studied is neither at a concentration or exposure sufficient to quantify any measurable change in public health.

LIR Reference	Local Impact Report Extract / Applicant's Response
	A technical note will be produced which will provide the detail underpinning this conclusion, this will be provided in deadline 3. 10.3.8 - Paragraph 7.4.23 of the HEqIA [**APP-539**] notes that indirect impacts on areas of green and open space are associated with the quality of user experience, for example in relation to noise (tranquillity) and landscape amenity. The changes in these factors may be such that people choose not to access areas of green space or outdoor recreation facilities during the construction phase.
Page 169	**Impacts on the Traveller Community (SoCG Issue 2.1.229)** 10.13.9 Currently, the traveller community are only considered within the Human Health portion of the assessment under housing and services within Environmental Statement Chapter 13 - Population and Human Health (**APP-151**) (this is despite Table 13.5 identifying traveller communities as a sensitive population within the topics of mental health and wellbeing) and within noise within Health and Equalities Impact Assessment (APP–143). However, specific reference to traveller communities are not carried over into the ES chapter regarding consideration of noise impacts. The Council seeks assurances that the health of the traveller community will not be adversely impacted and will not suffer worse health outcomes as a result of proposed relocation at Gammonsfield Way. For example, it must be ensured that, once the relocation site is operational noise levels are monitored in line with standards outline in the REAC (in particular NV001 and NV009 if agreed as appropriate). Within the HEqIA and the ES Human Health Chapter there is no mention of specific air quality assessments regarding traveller sites, in Thurrock or elsewhere. Specific assessment of the potential noise impacts undertaken on all traveller sites (including Gammonfields Way) is referenced in paragraph 7.9.41 of the HEqIA and after mitigation no significant effects are found. However, details of this assessment cannot be found in the HEqIA, therefore this will need to be shared with the Council in order to understand any impacts and if further mitigation is required.
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item 2.1.229, summarised below. The Traveller community are identified as a vulnerable population in the Health and Equalities Impact Assessment [**APP-539**]. Further assessment work has been undertaken in relation to impacts on the Gammonfields Way Travellers Site as a result of the new road layout. The HEqIA incorporates a summary of this information, including the findings of further consideration of environmental impacts on the site and mitigation measures where appropriate. Engagement with the Traveller Community at Gammonfields Way has been ongoing as part of discussions on the revised site layout. Further detail of the noise assessment undertaken for the construction and operational phases of the Project as they affect the Gammonfields Way Travellers Site is provided in detail as part of the response to Pages 130-132 of this report and is not repeated here. The conclusions of the assessment show that with best practice measures (BPM) and other construction phase mitigation implemented through the controls inherent within ES Appendix 2.2 – Code of Construction Practice, First

LIR Reference	Local Impact Report Extract / Applicant's Response
	Iteration of Environmental Management Plan [REP1-157], construction noise would be suitably controlled to a level where it would not constitute a significant effect; during the operational phase of the Project there is a beneficial effect on the travellers site in relation to noise. During operation, the air quality assessment provided in Section 7.8 of the HEqIA [APP-539] notes that, across the study area for air quality, there are locations predicted to experience both improvements and deteriorations in air quality. The majority of changes in air quality are forecast to be imperceptible or small at human receptors. Whilst there is a deterioration in air quality at receptors next to the Project route, no exceedances of the annual mean AQS objective are predicted at receptors along the route corridor. Table 7.27 of the HEqIA provides a summary of the findings of the air quality assessment by area, with the findings for the 'A13 and surrounding roads' section highlighting that the forecast changes in annual mean NO2 on roads surrounding the A13 are generally less than 0.4µg/m³, with the largest changes in annual mean NO2 forecast around new links at the A13/A1089/A122 Lower Thames Crossing junction. The largest increase in annual mean NO2 predicted here is 1.7µg/m3, however this is at a receptor located to the east of the Project route and at some distance from the Gammonfields Way Travellers Site. The travellers site is being relocated to a new site further to the west and as such, will be at a further distance from the A13/A1089 than it is currently. A further discussion on this matter was held on 5 July 2023 and the Council stated that progressing this issue is dependent on the air quality and noise assessments. Suitable signposts were provided for where the DCO documentation responds to all these concerns. This matter remains under discussion.
Page 169-170	Specific impacts regarding health impacts on residential areas at the A13/ A1089 Junction and Orsett Cock (SoCG Issue 2.1.240) 10.13.10 It is unclear how mitigation outlined in Health and Equalities Impact Assessment (APP– 143) and the Environmental Statement Chapter 13 – Population and Human Health (APP-151) address specific concerns raised in the Council's Relevant Representation (Principal Issue VIII) PDA-009) regarding the A13 Junction 2 and the link between Orsett Cock Roundabout and the A1089. These are regarding the effects on health of light pollution and VISSIM modelling these impacts are not referenced. Whilst the ES Chapter considers health impacts along the Project route as a whole, there is no specific mitigation outlined demonstrating reduction of human health impacts in these areas. Further clarification is needed.
Applicant's Response	This matter is addressed by SoCG [APP-130] item 2.1.240, summarised below. The health impacts of the Project are set out in the Health and Equalities Impact Assessment [APP-539] and ES Chapter 13: Population and Human Health [APP-151]. Relevant mitigation measures for the whole route (including Orsett Ward) are set out in the ES Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan and the Register of Environmental Actions and Commitments [REP1-157].

LIR Reference	Local Impact Report Extract / Applicant's Response
	Thurrock Council's Relevant Representation (Principal Issue VIII) relates to changes to elements of the Project in the vicinity of the Orsett Cock junction which have the potential to increase light pollution. The Council *'has concerns about consequential lighting impacts to understand how areas of the Borough will be affected by LTC'*. Light pollution, as a topic with the potential to affect people's health and well-being, was considered in the Health and Equalities Impact Assessment [**APP-539**] for both construction and operational phases of the Project following stakeholder discussions via the CIPHAG. The assessment references relevant controls and mitigation in relation to lighting during the construction and operational phases, including: • Temporary lighting during construction would be designed, positioned and directed to prevent or minimise light disturbance, as set out in Section 6.8 of ES Appendix 2.2: Code of Construction Practice [**REP1-157**]. • The use of operational lighting as part of the Project would be minimised where safe to do so, and operational lighting would be '*controllable, directional and as low- level as is practicable and safe*', as stated in clauses LST.02 and LST.03 of the Design Principles [**APP-516**]. • Area-specific measures include Design Principle S11.03 (which relates to the White Croft/Orsett Heath Urban Fringe and Orsett Lowland Farmland Local Landscape Character Areas (LLCAs)) whereby *'the design of the lighting on the elevated slip roads shall seek to minimise light pollution, subject to relevant standards'*. • The establishment of mitigation planting in areas potentially affected by a perceived change in the night-time environment, which includes the White Croft/Orsett Heath Urban Fringe LLCA would to some extent help reduce the effects of new lighting on the night-time environment between the opening and design year. Details of mitigation planting are set out in ES Chapter 7: Landscape and Visual [**APP-145**]. There would be a perceived change in the night-time environment due to new road lighting (LED luminaires) and vehicle lights within an increased area of the White Croft / Orsett Heath Urban Fringe LLCA and Orsett Lowland Farmland LLCA. This lighting would mostly be perceived in the context of existing lighting along the A13 and surrounding settlement edges. Additional light sources would also be present on the elevated structures within the A13/A1089/A122 Lower Thames Crossing junction. In addition, the replacement of existing lighting on the A13 would be more evident due to the removal of existing vegetation. The establishment of mitigation planting would, to some extent, help reduce the effects of new lighting on the night-time environment between opening and design years. Please also refer to ES Appendix 7.9: Schedule of Landscape Effects [**APP-384**] and ES Appendix 7.10: Schedule of Visual Effects [**APP-385**]. Taking the above into account, the Health and Equalities Impact Assessment [**APP-539**] concludes in Tables 7.50 (construction) and 7.51 (operation) that the health outcome for both general and sensitive populations/communities as a result of changes in light pollution is considered to be neutral.

LIR Reference	Local Impact Report Extract / Applicant's Response
	A further discussion on this matter was held on 5 July and Thurrock Council are concerned about the overall health impacts of the Project. Both parties agreed that this is a matter unlikely to be agreed due to both properties' position remaining unchanged.
Page 170	**Further clarification regarding the Workers Accommodation Report WAR (SoCG Issue 2.1.233, 2.1.234 and 2.1.235)** 10.13.11 The ES Chapter 13 - Population and Human Health (APP-151) and the Workers Accommodation Report (APP-551) currently does not demonstrate that potential uptake of private rented accommodation will not have an impact on the ability of Thurrock residents to secure accommodation or not impact. The baseline data is from the Census 2011 (more recent ONS population predictions could have supplemented this data) and it is unclear how a designation of negative but not significant has been arrived at in the human health assessment. This is given the highly sensitive communities and vulnerable (including older people, low income households, families with children and rural communities) described in the assessment and the potential vulnerable groups affected by knock on impacts of a lack of available accommodation (particularly those at risk of homelessness given reference to use of visitor accommodation). The mitigation outlined does not detail how anxiety or access to homes will be managed for these groups. The relevant chapter does not include information regarding how workers will use the accommodation across the timescale of the project and if this affects the health or equalities outcome. Further details of the Council's concerns on this important matter are set out in Section 13.5 below.
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item by 2.1.233 – 2.1.235, summarised below. The Applicant has provided information on the workers accommodation strategy to the Council and discussed this in previous engagement meetings. Documents such as the Worker Accommodation Report (WAR) were shared at DCO submission. The Applicant is awaiting further discussions with Thurrock Council once they have completed a review of these documents. • The original analysis by the Applicant was not based on the assumption that people would share rooms, and the available capacity (bed spaces) can also be read as (bedrooms). An element of the workforce, particularly those with specialist skill sets, will be non-home-based (i.e. require temporary accommodation in the area). The Applicant is keen to reduce this element of the workforce by implementing a Skills, Employment and Education Strategy (SEE Strategy), but recognise that some of the skill sets required for the Project (particularly tunnelling) are very limited in the UK. • The figures for onsite accommodation for tunnel workers (provision being made for up to 400 'normal' condition workers and up to 80 hyperbaric workers) is based on the specialist needs for the tunnelling labour and is provided within the construction compound. This is based on the Applicant's professional judgement and experience of construction schemes and predicted on the scale of the tunnelling operation to be undertaken.

LIR Reference	Local Impact Report Extract / Applicant's Response
	• The WAR includes several key assumptions on the proportion of the workforce that is likely to need accommodation, and the types of accommodation they may seek. A conservative estimate of 75% (workers seeking temporary accommodation) had previously been used and formed part of the example shared with local authorities in 2019. Since then, the Applicant has developed its understanding of the construction workforce, using other projects as benchmarks, and developed measures within the SEE Strategy to enhance local recruitment As such, the Applicant now considers that 35% is a more realistic assumption; however, this percentage figure is conservative and likely to be exceeded. The Applicant would welcome further information regarding the housing demand and pressures. Technical meetings with housing officers from authorities likely to host temporary construction workers have been undertaken to help the Applicant understand the scale of local authorities' use of private sector accommodation for emergency provision. The Applicant has provided information on the workers accommodation strategy to the Council and discussed this in engagement meetings. The likely effects of the Project on private property and housing in relation to demolition and land-take (temporary and permanent) are assessed in ES Chapter 13, Section 13.6. Mitigation measures comprise financial compensation; however, it is acknowledged that there are wider implications for local residents associated with the loss of private property (for example in relation to anxiety, or loss of community) and these issues are considered in more detail in the HEqIA. The likely effects of the Project on development land are also assessed in ES Chapter 13, and no significant effects are ascertained. Since April 2017, the owners of properties that are within the development boundary have been able to ask the Applicant to buy their property by serving a blight notice. A property is considered blighted when its value is reduced as a result of the Project and the owners are unable to sell the property at the value the property would have expected without the blight. The Applicant purchases blighted properties at their unaffected market value; this is the amount the property would be worth if the Project did not exist, not the blighted (lower) value. Within the Framework Construction Travel Plan [**APP-546**], the Applicant is committed to the creation and use of an accommodation database that would monitor the accommodation being used by the workforce in terms of type and location. In addition, a Workforce Accommodation Working Group would also be established which would include representatives from the Applicant, contractors and local authorities. This group would receive monthly workforce accommodation monitoring reports from the helpdesk and regular updates and information from the Project including a 'look ahead' for potential workforce implications over a 12-month period. The findings would be considered alongside other information such as other monitoring secured by the Applicant (e.g., via the FCTP and SEE strategy) and the information provided by the authorities on market conditions and other developments in the local area. The Applicant is also committed to an Accommodation Helpdesk. The early creation of an effective Accommodation Helpdesk will not only identify and direct workers to appropriate accommodation but will be a key mechanism, together with the workforce

LIR Reference	Local Impact Report Extract / Applicant's Response
	surveys, to monitor impacts on the local accommodation market. It is also likely to act as a means to signpost potential landlords and businesses to assist and encourage bringing forward of latent beds to the market. The Applicant has discussed the principles of this helpdesk at CIPHAG (7 July 2022) and a further discussion with the housing officers at Thurrock was completed on 18 August 2022. Baseline data was taken from the 2011 Census because that was considered to be the most recent, reliable data source available at the time of submission of the DCO application. • ES Chapter 13: Population and Human Health [**APP-151**] notes that, taking into account the various measures referenced above, the impact on housing (as a community asset) is considered to be negligible overall, resulting in a slight adverse significance of effect. The impacts on health and wellbeing have been presented in the HEqIA [**APP-539**], where it is noted that some communities and populations may be more sensitive to changes in the local housing market; however, given that this change has been identified as negligible, no negative outcome has been identified (hence the 'neutral' health outcome set out in Table 7.41 of the HEqIA, with no further mitigation required.
Page 170-171	**Specific impacts regarding proposed construction traffic routes, long term effects of road closures and how this impacts access to hospitals (SoCG Issue 2.1.194)** 10.13.12 Appendix 4.4 of the Environmental Statement – Transport and Traffic (APP-343) is intended to signpost where within the DCO documents the environmental assessment of traffic and transport are considered in the absence of a dedicated ES Chapter, where the following topics are claimed to be covered: severance, driver delay, pedestrian amenity, fear and intimidation, accidents and safety and driver stress. The Council requires a clear and concise summary table of the transport and traffic environmental impacts, including the significance of impacts and mitigation of any residual significant impacts. It is not considered reasonable for the Council to attempt to piece together the transport environmental assessment from a vast array of DCO documents and determine what are the project impacts. **The Council reserves its judgement on the transport environmental impacts until this is provided**. 10.13.13 There is no one singular place within the ES where these impacts and their mitigations are outlined. It is disputed that these are fully covered within the assessment as no geographic locations are noted or sensitive groups are considered that would be particularly vulnerable to driver stress or fear and intimidation related to transport. Severance, driver delay and accidents and safety are covered in more detail, however, as noted under paragraph 10.14.6 the outcomes are disputed given the potential negative impacts identified. This comment should be seen in conjunction with the LIR's responses to the ES Cumulative Assessment Chapter 16 as set out in Section 10.16 below. 10.13.14 Appendix 4.4 of the ES (APP-343) refers to the Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (1993) and seeks to demonstrate compliance with it. No

LIR Reference	Local Impact Report Extract / Applicant's Response
	consideration has been given to pedestrian delay, which is required to be assessed within the IEMA guidance. Likewise, the screening rules set out in IEMA guidance (Rules 1 and 2) have not been applied to determine the study area for transport environmental impacts. 10.13.15 The ES Population and Human Health Chapter 13 (APP-151) concludes that there are no hospital facilities to consider within the 500m buffer or the Order Limits. However, it suggests that wider community asset receptors have been considered within the assessment in Table 13.16, but it is unclear how these have been included in the outcome assessment. There is currently no evidence of consideration of impacts on access to hospitals outside of the buffer area or order limits within the HEqIA or Transport Assessment. Whilst the oTMPfC **(**APP-547**)** suggests that access to facilities will be maintained, it is not signposted in the HEqIA how specifically this will be achieved, especially if no assessment has been made on the impacts regarding local hospitals used by Thurrock residents, such as Basildon and Thurrock University Hospital and Queen's Hospital, Romford.
Applicant's Response	Responses to Paragraphs 10.13.12-14 are provided in the cumulative section under Pages 184-187. This matter is addressed by SoCG [**APP-130**] item by 2.1.194, summarised below. Paragraph 10.13.15 refers to impacts on access to hospitals. ES Chapter 13: Population and Human Health [**APP-151**] includes an assessment of impacts on community assets, which includes healthcare facilities and the resultant effects arising from changes in accessibility / severance. The study area for community assets is 500m from the Order Limits, although assets within a wider study area have been considered on a case by case basis. Two hospitals have been identified within the baseline of Chapter 13: Population and Human Health to the north of the River Thames, notably Orsett National Health Service Hospital (located 125m from the Order Limits) and Thurrock Community Hospital (located 525m from the Order Limits). Paragraphs 13.6.70 and 13.6.71 of Chapter 13: Population and Human Health note that, although direct access to individual community assets (which include healthcare facilities) would be maintained during the construction phase, likely effects are related to changes in accessibility (journey time) as a result of construction activities involving temporary road closures. Mitigation measures have been identified relating to construction traffic management and community engagement and these are set out in the oTMPfC [**REP1-174**] and ES Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**] respectively. The oTMPfC [**REP1-174**] provides an overview of the approach that will be followed when undertaking temporary traffic management for the safe construction of the Project. It also discusses construction access routes and explains management measures available to the Applicant's Contractors to reduce the impact on the local community (including journey time reliability, access, and safety). Healthcare facilities, local surgeries and hospitals are identified as a particular stakeholder group for consideration within the oTMPfC, for which key requirements are related to access/egress of patients, emergency

LIR Reference	Local Impact Report Extract / Applicant's Response
	service access, postal deliveries and waste collection. The oTMPfC will be used to inform the update of a Traffic Management Plan for Construction (TMP), a requirement of the draft DCO [**REP1-042**], which will be produced by the Contractors post DCO grant. It should be noted that local authorities would be consultees to the production of this document. The oTMPfC states that the TMP must address as a minimum the following areas – that access and egress to healthcare facilities, including hospitals, is to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works; and that communications are required to update relevant facilities regarding any closures and diversion routes. This is of relevance to those healthcare facilities identified within the ES, but would also be of relevance to those outside of the 500m study area used by for assessment, for example those hospitals used by Thurrock residents such as Basildon and Thurrock University Hospital and Queen's Hospital, Romford. The potential traffic impacts arising from construction are assessed within the Transport Assessment [**APP-529**], including changes in vehicle flows and journey times. Section 7.2 of the Health and Equalities Impact Assessment [**APP-539**] reports on accessibility impacts during construction and operation. During construction the HEqIA concludes that whilst access to jobs, services and community infrastructure may be impacted as a result of increased journey times during construction, this would be managed through measures set out in the TMP and appropriate communication with local residents and affected communities. The TMP would also address emergency services access, including the identification of a process and procedure for allowing emergency services through the works/haul roads, sufficient notification of road closures and early engagement with the Emergency Services themselves. A further discussion on this matter was held on 11 July and additional signposts were provided by the Applicant to Table 2.3 of the oTMPfC [**REP1-174**] which outlines how access to hospitals and potential closures would be addressed during the construction phase. The Council committed to providing any additional potential commitments for Table 2.3 for the Applicant's consideration. The Applicant will provide additional signposts on how effects of road closures on access to community infrastructure, including to healthcare facilities such as hospitals is covered in the ES. The Council also queried any specific environmental mitigation related to construction traffic in general. This matter remains under discussion. During the operational phase of the Project, Section 7.2 of the Health and Equalities Impact Assessment [**APP-539**] notes that there are improvements in accessibility to different destination categories, including to healthcare services. The change in access to opportunity for healthcare destinations is illustrated in Plate 7.3, showing moderate and large improvements for Thurrock residents.
Page 171-172	**Policy Compliance and Local Impacts**

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.13.16 The NPSNN covers the suggested principles for understanding health impacts for nationally significant infrastructure projects. Paragraphs 4.79 to 4.82 of the NSPNN do not define a specific approach or methodology to assess health impacts and note that projects considered under the NPSNN can have direct and indirect impacts on health. 10.13.17 Health is referenced under guidance for multiple technical assessments (including air quality, waste management, land instability and noise and vibration). Any implications relating to the robustness of these other technical assessments in relation to the NPSNN raised in this LIR, and this has implications for the validity of the conclusions within these HEqIA and ES Chapter 13 technical assessments, should then need to be reflected in the Health and Equalities Impact Assessment (**APP–143**) and the Environmental Statement Chapter 13 - Population and Human Health (**APP-151**), but currently are not adequately covered. 10.13.18 Whilst there is no specific guidance or methodology outlined in the NPSNN regarding considering health impacts, paragraph 4.81 suggests that significance needs to be considered during the assessment. It is noted that the primary source for the methodology used in the Population and Human Health Chapter is the LA 112, the DMRB Population and Human Health Guidance. This guidance does provide a methodology assessment which assigns significance for the land access use portion of the assessment, but it does not require consideration of significance regarding human health determinants. Both the ES Chapter and the underlying HEqIA refer to further guidance (from IEMA, the IAIA, WHIASU and the Mental Health and Wellbeing Impact Assessment Toolkit) used in the assessment to assign significance to health outcomes. Then paragraph 13.3.3 of the Population and Human Health ES Chapter 13 outlines that 'where no specific guidance is available to determine impacts and significance of effects, professional judgement has been used'. However, it is unclear how these guidance documents have been integrated into the health outcome assessments (positive, negative, neutral and uncertain) and what thresholds are needed to result in a significant effect identified (whilst recognising that some level of professional judgement is needed) resulting in a lack of confidence in the replicability of the outcomes assigned. There are eight health outcomes within the assessment that have been designated as significant, however, no specific limits for thresholds for significance have been determined in the assessment methodology. Therefore, both the Population and Human Health ES Chapter 13 and the standalone HEqIA that informs it, are limited in terms of identifying significant adverse health impacts (in particular for topics where other technical chapters may not provide information specifically regarding impacts on human health). 10.13.19 As mentioned, the NPSNN does not provide detail on applying the duties under the Equalities Act within this guidance. The equalities duties mean that public authorities need to have due regard to achieving the objective set out under S149 of the Equality Act 2010 to: (a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Equality Act 2010; (b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it; and, (c) foster good relations between persons who share a

LIR Reference	Local Impact Report Extract / Applicant's Response
	relevant protected characteristic and persons who do not share it. To demonstrate this due regard the public authority must demonstrate that due regard has been shown towards protected characteristic groups, the section below outlines that there is doubt that the current HEqIA demonstrates this consistently across the screening tool and HEqIA.
Applicant's Response	Compliance with the Equalities Act is addressed in detail in the response to Page 173-174.
Page 172	**Health and Equalities Impact Assessment** 10.13.20 Engagement regarding health, equalities and wellbeing has been pursued over many years, including via the Community Impacts and Public Health Advisory Group (CIPHAG), as well as an Independent Review of the HEqIA in June 2021, which was followed by initial responses to the 20 recommendations from NH in July 2021 and until very recently NH has made no further responses to those recommendations. Unfortunately, many of the issues raised with regard to the robustness of the assessment within the HEqIA have not been addressed (a full breakdown of the 20 recommendations made and adequacy of responses to them can be found in **Appendix E** (the latest response from NH is dated 8 June 2023), most of these points are covered within discussion of SoCG matters in this LIR. Independent Review of the HEqIA (SoCG Issue 2.1.208) 10.13.21 The overarching criticism of the HEqIA is that it is not clear how or by what thresholds significance criteria has been consistently applied throughout the assessment, resulting in a lack of confidence in the health outcomes identified. Specific issues regarding these concerns are raised within discussion of below.
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item 2.1.208, summarised below. The comments regarding the Independent Review of the HEqIA are noted. The Applicant has responded to these comments by ensuring that matters raised in the review are processed and discussed with the respective local authority and in the CIPHAG forum. In December 2021 the Applicant shared the approach to sharing further environmental information with external stakeholders, which has included at the monthly CIPHAG meetings. The Applicant has held monthly meetings with external stakeholders including Thurrock Council to go through the HEqIA. The Applicant provided a line-by-line response on how it would respond to the content of the independent review at the CIPHAG on 22 July 2021. In addition, a presentation was given to the Thurrock Task Force in July 2021. To continue this engagement, briefings on these topics were organised in September 2022. Most recently, the Applicant has provided an updated response to the recommendations made by the Independent Review and how these have been addressed / taken forward in the submission documents. Section 3 of the HEqIA [**APP-539**] sets out the methodology used to assess health outcomes, including significance. Paragraphs 3.6.12 and 3.6.13 list guidance used to help inform the approach to significance, and the sources of information

LIR Reference	Local Impact Report Extract / Applicant's Response
	which have been taken into account when assessing population health effects respectively. These sources (referenced a to h in paragraph 3.6.13) form part of the considerations set out in each of the assessment tables in Section 7 of the HEqIA. The Council's comment at paragraph 10.13.21 states that it is not clear how or by what thresholds significance criteria have been consistently applied throughout the assessment. The IEMA guidance referenced in paragraph 3.6.12 of the HEqIA notes that the setting of thresholds should be supported by scientific evidence /literature and is likely to be of most relevance to topics such as air quality and noise. The HEqIA has been informed by the findings of ES Chapter 5: Air Quality [**APP-143**] and ES Chapter 12: Noise and Vibration [**APP-150**]. For other topics assessed within Section 7 of the HEqIA quantifiable thresholds have not been provided and the assessment has been made by professional judgement taking into account the range of factors as set out in paragraph 3.6.13.
Page 172	**Integration of local health policies into assessment (SoCG Issue 2.1.209)** 10.13.22 Whilst each assessment box for each health topic notes that local policies highlight the importance of the issue, further clarification is needed regarding what weight local policy objectives and JSNA priorities have had in concluding significance in the assessment. Additionally, specific topic assessments that have omitted reference and discussion of Thurrock specific policies or JSNA priorities highlighted in Health and Equalities Impact Assessment Appendix A Local Policy and Strategy Context (APP-540) are: • Accessibility (Thurrock Whole Systems Obesity Strategy 2018-2021, Thurrock Council, 2018d); • Affordability, Work and Training (JSNA 2017 – Children and Young People, Thurrock Council, 2017); • Housing and Community Services Training (JSNA 2017 – Children and Young People, Thurrock Council, 2017); and • The Thurrock Health and Wellbeing Strategy (2022) is only considered within the Active Travel and Work and Training domains and should be integrated across the assessment. 10.13.23 It is important to note here that it is not sufficient to just reference the policies, but as a key criteria used to help determine significance (as outlined in the methodology), further clarification is needed regarding how policy considerations have been used to inform the health outcomes identified. Additionally, there is no consideration of if mitigations or enhancements help meet specific policy objectives.
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item 2.1.209, summarised below. Local health and equalities priorities have been set out within Appendix A of the HEqIA. (Appendix A was updated between the 2020 and 2022 versions of the HEqIA) in line with updated priority and strategy documents produced by individual local authorities and following suggestions made in the Independent Review.

LIR Reference	Local Impact Report Extract / Applicant's Response
	A new section has been included within each of the assessment topics of the HEqIA itself, setting out which of the local health and equalities priorities are of particular relevance for that topic, together with findings from consultation and from baseline data. No weight has been attributed to individual policies or strategies; their inclusion within topic sections has been as a further piece of evidence designed to help inform the health outcome. This is clearly described in paragraph 3.6.13 of the Methodology section of the HEqIA, which sets out what has been taken into account when assessing population health effects, namely 'the relationship with the health policy context and/or local health priorities'. Where there may be a particularly strong relationship, for example between reducing health inequalities as a strategic priority and assessing health outcomes associated with work and training (as is the case in Section 7.10 of the HEqIA) this has been described within the assessment table (for example Table 7.39 states that *'local health and wellbeing strategies reference the importance of work and training as one of the wider social determinants of health. The proposals are in line with the UK Government's Levelling Up plans to unlock economic growth through job creation, new work for businesses and higher skilled workers. This aligns with tackling health inequality which is a priority for local authorities'*). It should be noted that there are a number of local authority strategies, policies and priorities included within Appendix A of the HEqIA [**APP-540**]**.** The purpose of Appendix A is to evidence the wide range of documents that have been used to inform the assessment (which includes those listed in Thurrock Council's comment above); many of these relate to similar areas of health (for example obesity or health inequality) and have therefore not been individually referenced within the main body of the HEqIA. This does not mean that they have not been taken into consideration as part of the wider context as specified in paragraph 3.6.13. A further discussion on this matter was held on 5 July 2023 and the Council stated that there are some areas where the links between local health priorities and the assessment could be strengthened, especially around local policy (including topics of accessibility, obesity and other health equalities). The Applicant requested a particularised list of concerns and clarified that these details would not affect the HEQIA conclusions. This matter remains under discussion.
Page 172-173	Justification of how criteria set out in paragraph 3.6.13 within the HEqIA has been used to determine significance and how this interacts with aggregation of the baseline. 10.13.24 It is unclear what criteria the assessments have met to be considered significant. The following topic assessments have been noted as having a significant impact, however, further clarification is needed regarding what threshold these have met to be considered significant: Noise and Vibration (construction); Working and Training (construction); Accessibility (operation); Access to green space and outdoor space (operation); Active Travel (operation); Work and training (operation); and, Mental health and wellbeing (operation).

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.13.25 The approach of aggregation has resulted in a disconnect between the description of negative outcomes for sensitive populations described in the health outcome sections and summary tables and the outcome assigned, as well as a lack of clarity on how ward sensitivities have been incorporated into the assessment (and how wards identified as sensitive and sensitive populations have been integrated). There is inconsistency in regards to sensitive wards identified being considered across the assessment, for example Tilbury St Chads and Tilbury Riverside and Thurrock Park are high sensitivity wards, but it is not clear how they have been considered within the health outcome identified as part of the traffic severance assessment for operation (neutral), despite there being an unmitigated severance issue for older people at Brennan Road. Additionally. Tilbury St Chads is not considered within traffic related severance for construction, despite it being affected by severance issues on St Chads Road. Furthermore, no specific highly sensitive wards are referenced within the light pollution assessment. This issue is also covered under SoCG Issue 2.1.194, as the human health assessment within the Population and Human Health Chapter 13 solely relies on the HEqIA, the same issue occurs across both documents. The following are specific topic assessments where negative effects on sensitive groups or specific wards are identified, but it is not clear how potential negative effects outlined in the assessment summaries have been integrated within the final health impact identified. This approach to aggregation is disputed. Further clarification is needed to justify why the following effects are not considered negative or significant: accessibility (construction); traffic related severance (construction); traffic related severance (operation); road safety (construction); air quality (construction and operation); and, impacts on housing and community service (construction and operation).
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item 2.1.214, summarised below. As referred to in the Applicant's previous response, Section 3 of the HEqIA [**APP-539**] sets out the methodology used to assess health outcomes, including significance. Paragraphs 3.6.12 and 3.6.13 list guidance used to help inform the approach to significance, and the sources of information which have been taken into account when assessing population health effects respectively. These sources (referenced a to h in paragraph 3.6.13) form part of the considerations set out in each of the assessment tables in Section 7 of the HEqIA. The Council's comment at paragraph 10.1.24 states that it is not clear how or by what thresholds significance criteria have been consistently applied throughout the assessment. The IEMA guidance referenced in paragraph 3.6.12 of the HEqIA notes that the setting of thresholds should be supported by scientific evidence /literature and is likely to be of most relevance to topics such as air quality and noise. The HEqIA has been informed by the findings of ES Chapter 5: Air Quality [**APP-143**] and ES Chapter 12: Noise and Vibration [**APP-150**]. For other topics assessed within Section 7 of the HEqIA quantifiable thresholds have not been provided and the assessment has been made by professional judgement taking into account the range of factors as set out in paragraph 3.6.13.

LIR Reference	Local Impact Report Extract / Applicant's Response
	The Assumptions and Limitations section of the HEqIA set out in paragraph 3.6.18 clearly states that for all topics, the assessment has been aggregated to ward level unless otherwise specified. Where possible / relevant, more information about impacts at detailed geographies has been provided (for example where noise impacts relate to specific communities or where active travel impacts relate to routes affecting particular residential areas). However a separate health outcome has not been provided at these levels as it would not be consistent across topic areas and would not be robust. Where a separate health outcome has been considered likely to be different for sensitive populations as opposed to the general population, this has been identified within the individual topic assessment tables. Sensitive populations by assessment topic have been clearly identified in Table 3.5 of the HEqIA, which has again been the subject of discussions with the CIPHAG group. The sensitivity of individual wards has also been shared and discussed with the CIPHAG group as set out in Table 5.2 of the HEqIA. Thurrock Council's comments include reference to the consistency of how the assessment of sensitivity has been applied across topics. Where particularly relevant to a topic (for example for the topic of work and training, the presence of areas of multiple deprivation may be considered to be of particular relevance to the assessment and thus may have a bearing on the conclusions of the assessment) the sensitivity of wards has been noted. Comments refer to an unmitigated severance issue for older people at Brennan Road; the Applicant wishes to draw Thurrock's attention to paragraph 7.3.29 of the HEqIA which specifically identifies Brennan Road as an area where residents aged 70 years and older may experience a greater disbenefit as a result of increased severance; to Table 7.10 of the HEqIA which provides further narrative context at Brennan Road and the lack of pedestrian refuges at this location; and to the Section 106 Agreements Heads of Terms [**APP-505**] which identifies a number of locations (of which Brennan Road is one) for further investigation at identified locations to discuss the need for, and provision of, pedestrian crossing infrastructure. Comments state that no specific highly sensitive wards are referenced within the light pollution assessment; for this topic it is more relevant to identify specific sensitive populations rather than a whole ward and these are set out in paragraph 7.14.10 (construction) and 7.14.18 (operation). In each case, the scale of data that can be presented is informed by the approach to baseline data availability, monitoring data, modelling, and assessment of significant effects in-line with each relevant chapter of the ES. The location, scale and sensitivity of sensitive receptors and concentration of effects in spatial and temporal terms has been considered, along with the health metrics. Where appropriate, mapping has been used to present baseline and assessment information. Where impacts have been aggregated at Ward level, justification has been provided. More detailed geographic assessments have been included where appropriate. A further discussion on this matter was held on 5 July and the Council expressed residual concerns around the Applicant's approach, methodology of aggregation and consideration of specific groups in the aggregation. Both parties agreed that this

LIR Reference	Local Impact Report Extract / Applicant's Response
	is a matter unlikely to be agreed due to both parties' position being unchanged, but the Council committed to supplying specific concerns and examples for the Applicant's consideration as part of its LIR. A range of criteria are used to reach a conclusion on the significance of health effects, rather than assessing in relation to any single threshold.
Page 173	**Information provided regarding construction phasing (SoCG Issue 2.1.209 and now merged with Issue 2.1.220)** 10.13.26 It is noted that description of construction phases is now included in the HEqIA. An issue remains regarding clarity on how construction phases and ward sensitivities are considered in the cumulative assessment of intra-project effects, especially for those communities closest to the scheme, i.e. those within 1km of the scheme and host authorities where potential negative effects have been identified in the assessment. It is currently unclear where NH view these effects happening (given the majority of environmental topics health been designated a neutral health impact during construction) and how mitigation addresses the potential health inequalities associated with these impacts.
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item 2.1.210 and 2.1.220, summarised below. The reference to SoCG issue 2.1.209 is an error. For the intra-project effects assessment within the HEqIA, the same spatial groupings have been used as for the ES in order to ensure a consistent approach, i.e. communities in close proximity, communities within 1km of the Project route, communities within host local authority areas and finally, the wider area. Table 7.55 of the HEqIA provides information relating to the duration of effect and acknowledges that different communities at different locations along the route may experience different impacts at different times due to the construction phasing. Mitigation for construction activities (for example in relation to noise, to air quality, to landscape and visual impacts) is set out in relevant ES chapters; where relevant this is summarised in the HEqIA in relation to individual topics. No additional mitigation has been proposed in relation to addressing potential health inequalities over and above that which has been set out in the HEqIA and relevant ES chapters. A further discussion on this matter was held on 5 July 2023 and the Council expressed concerns on how cumulative effects could have a potential impact on health inequalities. The Applicant clarified that this is covered under matter 2.1.110 of the SoCG. Both parties agreed that this is a matter unlikely to be agreed due to both parties' position remaining unchanged.
Page 173	**Information regarding scoping of HEqIA (SoCG Issue 2.1.211)** 10.13.27 Further information should be provided regarding what topics had been discussed with CIPHAG and been scoped out and why and clear justification for scoping out equalities groups (specifically sex and faith and belief).

LIR Reference	Local Impact Report Extract / Applicant's Response
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item 2.1.211, summarised below. Further commentary and evidence around outcomes of discussions with CIPHAG concerning the scope of the HEqIA has been included within the Health and Equalities Impact Assessment [**APP-539**]. Section 3.4 of the HEqIA covers screening and scoping. Table 3.1 summarises scoping discussions held as part of CIPHAG meetings between 2018 and 2021. Table 3.2 of the HEqIA details the initial list of topics proposed for inclusion within the HEqIA (together with justification for inclusion), which was presented to CIPHAG members in November 2019. The findings from the Independent Review and subsequent discussions with CIPHAG stakeholders included further information relating to the scoping and assessment of individual topics within the HEqIA. Paragraph 3.4.5 of the HEqIA includes a summary of the changes made to the original scope of the HEqIA as a result of subsequent discussions with stakeholders. Table 5.2 of the HEqIA details the CIPHAG meetings which have taken place between 2018 and 2022 (of which there were more than 20) and summarises the matters discussed at each meeting and outcomes of those discussions where relevant. A further discussion on this matter was held on 5 July and the Council expressed concerns around the level of detail presented in the tables signposted above. The Applicant was requested to provide a list of topics that have been scoped out of the HEqIA. Topics that were scoped out of the assessment are, summarised below. • Effects on the food environment. The assessments of accessibility and traffic-related severance have considered impacts arising from access to food shops as one of many different types of destination; however no assessment has been undertaken within the HEqIA specifically in relation to effects on the food environment as a result of impacts on agricultural land. An assessment of the impacts of the Project on agricultural landholdings is included within ES Chapter 13: Population and Human Health [**APP-151**]. No assessment has been undertaken in relation to the sterilisation of land caused by the Project, for example in relation to air quality and noise effects, as suggested by the Independent Review in 2021. This was scoped out from the HEqIA on the grounds that it was not considered relevant to the assessment. • The Independent Review recommended that community cohesion was included as a separate assessment topic for the HEqIA. Upon consideration by the Applicant, this topic was felt to be most appropriately located within Section 7.11 of the HEqIA 'Housing and Community Services Impacts', which considers the impacts of factors such as land acquisition, the presence of a construction workforce and impacts relating to displacement on local communities.

LIR Reference	Local Impact Report Extract / Applicant's Response
	Other recommendations made by the Independent Review regarding scope of the HEqIA were incorporated as appropriate, and this is set out clearly in paragraph 3.4.5 of the HEqIA [**APP-539**]. This matter remains under discussion.
Page 173-174	**Meeting the Equalities Duty (SoCG Issue 2.1.222)** 10.13.28 There is concern with the HEqIA that there is a lack of evidence that the equalities duty has been met. The Equalities Act 2010 requires public authorities to demonstrate due regard to eliminating discrimination, advance equality of opportunity and fostering good relations. This is typically demonstrated through a process of engagement and incorporation of equalities considerations, and cannot rely on the production of a desk-top EqIA as evidence alone. Each topic assessment contains a section regarding consultation where issues regarding the topic during consultation are raised. However, the following topics do not clearly lay out how these concerns have been addressed or how these concerns relate to engagement with protected characteristic groups or the Hard to Reach Focus Groups (Table 5.1): accessibility, traffic-related severance, affordability, noise and vibration, mental health, light pollution and climate change. Additionally, a Hard to Reach Strategy was agreed to be supplied as part of the DCO, but this has not been referenced or included. 10.13.29 Additionally the following points require clarification: • There is no definition of what criteria would need to be met to have a disproportionate or differential equalities impact and how this relates to the baseline characteristics of the impact area, as well as limited integration of intersectional characteristics within the HEqIA; • Additionally, clarification is requested regarding providing rationale for gender and religion and belief being excluded from assessment; and, • There is no discussion of how mitigation will help meet the Public Sector Equality Duty or of having due regard to eliminating discrimination, advancing equality, and fostering good relations under the Equalities Act.
Applicant's Response	This matter is addressed by SoCG [**APP-130**] item 2.1.222 and 2.1.212, summarised below. The Health and Equalities Impact Assessment – Appendix B – National Highways EqIA Screening Template [**APP-541**] has been expanded to respond to the concerns raised and to be specific about the rationale behind decisions when evidencing that they meet the requirements of the Equality Act 2010 and the Public Sector Equality Duty. The EqIA has been prepared in line with the Applicant's approach and utilising the standard reporting template used by the Applicant for this purpose. A thorough review of the document was undertaken between DCO 1.0 and the submission in 2022. Further detail was incorporated into the EqIA to ensure that in the Applicant's view, the requirements of the Equality Act 2010 and the Public

LIR Reference	Local Impact Report Extract / Applicant's Response
	Sector Equality Duty were met. A further discussion on this matter was held on 5 July and Thurrock Council committed to providing examples of where specificity could be tightened in the LIR, which are now being considered by the Applicant. This matter remains under discussion. Section 5.4 of the HEqIA sets out the Applicant's approach to consultation and engagement with hard-to-reach groups (more favourably referred to as under-represented groups). At a CIPHAG meeting held in June 2021, the Applicant's approach to engagement with under-represented groups was discussed with stakeholders; this included research undertaken by the Applicant into the presence of under-represented communities along the route of the Project, which typically include older people, those with disabilities, those who may not be able to read, and those for whom English is not their first language. The findings from this meeting helped to inform the approach to engagement during the Community Impacts Consultation. This formed the Applicant's internal strategy in relation to engaging with under-represented groups; it was not intended that this would be submitted as a DCO document. The criteria by which a disproportionate or differential equalities impact has been identified are set out in paragraph 3.6.16 of the HEqIA; professional judgement is used to identify where these impacts may occur, taking into account factors including the baseline characteristics of an area as well as the evidence from literature and research. Areas where there may be intersectional effects have been identified within Appendix B of the HEqIA and include older women and older people with disabilities. Appendix B states that no additional mitigation or intervention is considered necessary in relation to intersectional effects than that already proposed. The table contained in Appendix B of the HEqIA relating to equality group, nature of impact, and summary of evidence supporting the conclusions, scopes out religion or belief; sexual orientation; gender reassignment; and marriage and civil partnership from the assessment. These are scoped out on the basis that no likely positive or negative effect (disproportionate or differential) is likely to occur as a result of the development of the Project. It should be noted that places of worship are included as 'community assets' as part of the assessment of environmental effects in ES Chapter 13: Population and Human Health [**APP-151**], with facilities included within a 500m study area of the Order Limits as set out by standard DMRB LA 112 Population and Human Health (Highways England, 2020). Contrary to Thurrock's comments, sex is scoped *in* to the assessment, noting that 'women are more likely to be users of public transport than men and may be affected by temporary changes in bus travel during the construction period, although it is noted that changes in journey times are small'. Mitigation for adverse environmental effects in addition to other measures have been included which will help meet the Public Sector Equality Duty. For example community engagement proposals set out in ES Appendix 2.2 – Code of Construction Practice, First iteration of Environmental Management Plan [**REP1-157**] will help encourage participation and meet the needs

LIR Reference	Local Impact Report Extract / Applicant's Response
	of various groups. A variety of measures accommodating the needs of different road user groups have been considered as part of accessibility provision during the operational phase of the Project (these are described in more detail in Appendix B of the HEqIA.
Page 174-176	**Further Work or Mitigation Required** 10.13.30 The Health and Equalities Impact Assessment (APP–143) and the Environmental Statement Chapter 13 - Population and Human Health (APP- 151) and its appendices contain extensive information, yet, within the assessment it is difficult to discern how specific impacts on health will be mitigated. The mitigation summarised in the HEqIA is not explicitly linked to reducing health inequalities or addressing impacts on sensitive or protected characteristic groups identified or often tied to specific wards, making it difficult to assess how the mitigation is considered within outcomes provided. There is also no mention of how health impacts are suggested to be monitored during construction. This severely limits the HEqIA as a standalone assessment.
Applicant's Response	This matter is addressed by SoCG [**APP-130**], item by 2.1.219, summarised below. For each assessment topic, relevant mitigation has been identified. In the majority of cases, this is not health-specific mitigation, rather it is mitigation to reduce or remove specific environmental impacts. This is consistent with the approach to a health impact assessment, whereby many of the health impacts have their origins in environmental change (for example changes in noise levels or in air quality). As such, mitigation is not explicitly linked to reducing health inequalities. Where mitigation may be of particular relevance to specific wards, communities or populations, this has been identified. For example the identification of four locations where further feasibility work has been committed to in order to identify opportunities for new pedestrian crossing infrastructure; this are location-specific and relevant sensitive populations who may benefit from such measures (e.g. children or older people) have been identified. Monitoring has been an area of specific interest to stakeholders and discussed at a number of CIPHAG meetings over the course of Project development (for example, an exceedance framework and various potential approaches to health monitoring were discussed at the CIPHAG meeting in May 2021, as referenced within the HEqIA [**APP-539**]). Further, more detailed information on monitoring has been included where relevant in the HEqIA, including in relation to both construction and operational phases of the Project. For construction: • Air quality and baseline dust monitoring during construction – Contractors shall determine the level of any dust and particulate monitoring carried out on Project construction sites by means of a risk-based approach. If required, further commitments are included in the REAC in relation to actions that would be taken in cases of air quality monitoring exceedances.

LIR Reference	Local Impact Report Extract / Applicant's Response
	• Noise monitoring at agreed sensitive receptors (to be defined through development of the CoCP and Noise and Vibration Management Plan) to ensure that the mitigation measures suggested are working effectively. Monitoring would be undertaken at locations identified in consultation with the relevant Environmental Health Officers before works start. The REAC includes measures relating to noise and vibration monitoring during the construction phase (REAC Ref. NV009), including the identification of a framework should noise exceedances occur (REAC Ref. NV015). • In relation to workforce accommodation, a monitoring framework is proposed to be established (and is secured by the FCTP).
Page 174-176	10.13.31 Specific examples of where mitigation is viewed as inadequate or needs clarification are: • **SoCG Issue 2.1.236** – mitigation regarding workforce construction and healthcare services and mental health outcomes is addressed through a secured commitment whereby the Contractor will provide an appropriate range of medical and occupational healthcare services to meet the physical and mental health needs of the construction workforce. However, this is vague and details of requirements are not outlined and will rely on later negotiation as to what is appropriate. This is not sufficient at this stage as there is no outlined definition of what is considered appropriate by NH, if this is tied to financial viability and how the engagement with the local Integrated Care Partnerships will be pursued and implemented. • **SoCG Issue 2.1.238** – some areas of common land and private recreational facilities will be requisitioned (temporarily or permanently) resulting in changes to the availability of open space. Where effects are anticipated, such as effects to the operation of the Wild Thyme Outdoors centre (should it recommence operations), discussions are ongoing, but no secured mitigation is noted. Additionally, there is no mitigation proposed for the temporary land take at Linford Allotments, Walton Common and the common land at Parsonage, despite being within the Order Limits. This is in addition to the adverse impacts identified at Tilbury Fort and Coalhouse Fort regarding amenity during construction (with no mitigation referenced within Table 13.58 within the ES Chapter Population and Human Health), as well as the slight adverse impact assigned regarding the permanent acquisition of land at Tilbury Green (replacement land is noted in operation but there is a six year disruption stage). A slight adverse impact has been put forward within the ES Chapter Population and Human Health Chapter 13 regarding access to community assets, which is disputed based on the above. The HEqIA identifies a negative health outcome during construction regarding access to green space and recreation (although further clarification is required regarding why this is not considered significant and why further mitigation has

LIR Reference	Local Impact Report Extract / Applicant's Response
	not been considered). This also needs to be seen in conjunction with issues raised regarding temporary land take in the Section 14 below and the potential loss of open space for up to six years without re-provision or compensation. • **SoCG Issue 2.1.259** – there is no description of specific enhancement measures to encourage use of the active travel routes by members of the public. Given the positive, significant health benefits ascribed to use of the WCH routes this is lacking. Specific Community Liaison Groups (CLG) could be specified to be created to promote and monitor this **outcome.** • **SoCG Issue 2.1.240** – concerns raised regarding design and mitigation outlined addresses health concerns about impacts on the residential areas surrounding the A13 junction link between Orsett Cock roundabout and the A1089 regarding traffic and congestion modelling have not been addressed. It is noted that NH has replied in the SoCG that no further **mitigation is suggested.** • **SoCG Issue 2.1.233 and 2.1.234** – the assessment of the health impacts from the construction workforce on accommodation is considered neutral after mitigation. It is unclear which specific mitigations would enable it to be considered a neutral impact on residents on a low income. • **SoCG Issue 2.1.218 and 2.1.230** – mitigation mentioned in the report regarding providing funding or support to the affected Boroughs, namely the Community Fund and S106 agreements are noted, but there is a lack of detail tied to how these will reduce or address specific health outcomes in specific areas and the mechanisms by which they will be delivered and monitored. Consequently, it is unclear if the mitigation described within the relevant HEqIA or ES Chapter will effectively prevent the negative impacts identified within the assessment, particularly in areas where it is noted will experience greater adverse effects than others. The detail provided in the CoCP regarding CLG's does not specify how many will be supported in each affected authority, what the likely terms of reference will be, including what remit these groups will have and any additional funding that will be supplied to support these groups, particularly if any capacity building is needed.
Applicant's Response	• **SoCG Issue 2.1.236** A further discussion on this matter was held on 5 July 2023 and the Council expressed concerns around the word 'appropriate' in PH002 of the Register of Environmental Actions and Commitments contained within ES Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**] and enquired about the process in case the integrated care partnerships (and its constituents) cannot agree the scope of these services post consent. The Applicant clarified that all the relevant stakeholders would be consulted as outlined in PH002 and would develop the range of health facilities considered appropriate to all. The wider issue of consultation when discharging Requirements and the associated process is outlined in Schedule 2 of the draft DCO and covered by 2.1.2 in the SoCG (matter not agreed).

LIR Reference	Local Impact Report Extract / Applicant's Response
	• **SoCG Issue 2.1.238** As noted in the comment, the Project will require temporary and permanent land take from areas including common land and private recreational facilities. The Applicant's design team has worked with stakeholders to ensure that effects are for limited durations where possible in order to reduce impacts on users of these areas and facilities. These impacts, together with proposed mitigation, are reported in ES Chapter 13 as well as in HEqIA Chapter 7 (under the heading of Access to Green Space and Outdoor Recreation). The response references particular assets, for example Linford allotments; ES Chapter 13: Population and Human Health [**APP-151**] notes in Table 13.58 that the site may be affected as a result of temporary construction impacts related to utilities diversions which may include temporary restrictions in use, although access would be maintained at all times. As such no mitigation is considered necessary, beyond effective engagement with local residents / users of the allotments (and this type of activity would be included in the Communication and Engagement Plan as set out in the ES Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**]. Similarly, impacts at Walton Common during construction are assessed in ES Chapter 13: Population and Human Health as having a neutral significance of effect. Temporary adverse impacts relating to amenity of users have been identified for Tilbury and Coalhouse Forts in Table 13.58 of ES Chapter 13: Population and Human Health. Amenity is governed by various factors including air quality, visual impact and noise; mitigation for these areas is covered in the relevant ES Chapters for the construction phase, notably ES Chapter 5: Air Quality [**APP-143**], ES Chapter 7: Landscape and Visual [**APP-145**] and ES Chapter 12: Noise and Vibration [**APP-150**]. The response also notes potential effects on the operation of the Wild Thyme Outdoors Centre which operates from The Wilderness (an area of private woodland, part of which will be lost to permanent land take). Impacts on private recreational facilities, which are not special category land, are considered in detail in Appendix G of the Planning Statement. A further discussion on this matter was held on 5 July. Both parties agreed that this is a matter unlikely to be agreed due to both parties' position remaining unchanged. • **SoCG Issue 2.1.259** The Applicant has taken a precautionary and responsible approach to the wider WCH network in order to maintain and enhance the social and health benefits of good accessibility across WCH links. Where new public open space will be provided as part of the Project, it has been considered in the context of how local communities will access it. The Applicant recognises the importance of a coherent network of links that contribute to health and wellbeing and go beyond a simple 'identify and fix' approach to affected locations, and the changes to the network have been assessed in this way through ES Chapter 13: Population and Human Health [**APP-151**], and through local level assessments within the HEqIA [**APP-539**]). The benefits of an uplift in access to active travel is a key component of the HEqIA. A further discussion on this matter was held on 5 July 2023 and the Applicant provided some additional signposts to the Design Principles regarding WCH routes (Table 4.1 and PEO.01-PEO.13) for the Council to read and confirm their updated position. The Council's comment in relation to the creation of specific Community Liaison Groups

LIR Reference	Local Impact Report Extract / Applicant's Response
	(CLG) to be created to promote and monitor use of new active travel routes is noted. This matter remains under discussion. • **SoCG Issue 2.2.240** Relevant mitigation measures for the whole route (including Orsett Ward) are set out in the CoCP and REAC. The Applicant has reviewed the cumulative assessment as part of the HEqIA and additional mitigation has been included in the REAC where necessary. A further discussion on this matter was held on 5 July and Thurrock Council are concerned about the overall health impacts of the Project. Both parties agreed that this is a matter unlikely to be agreed due to both parties' position being unchanged. No specific additional potential mitigation measures have been offered by the Council for consideration. • **SoCG Issue 2.1.233 and 2.1.234** Please refer to paragraph 5.4.13 of the FCTP [**APP-546**]. • **SoCG Issue 2.1.218 and 2.1.230** A further discussion on this matter was held on 5 July 2023 and the Council expressed residual concerns around the Community Fund (2.1.177 of the SoCG), its apportionment (2.1.178 of the SoCG), capacity building (2.1.181 of the SoCG) and SEE strategy (2.1.171 of the SoCG). The Applicant clarified that these matters are considered elsewhere in the SoCG and considered broader than these matters. Both parties agreed that this is a matter unlikely to be agreed due to both parties' position being unchanged. • The CoCP outlines the Applicant's approach to community engagement during the construction phase. The Applicant has committed to an Engagement and Communications Plan (ECP), which will be developed with the local authorities, post consent, including Thurrock Council. It would cover communications, reporting metrics, programme of activities and communicating with target audiences/ hard to reach groups. The ECP will provide a detailed programme of community engagement, setting out how relevant planning authorities, communities, stakeholders and affected parties will be engaged with throughout the construction period. ECP will also include additional details regarding the CLGs. the Applicant will establish and maintain Community Liaison Groups (CLGs) in those communities likely to be most impacted by construction activities. The ECP will identify in which communities it will be appropriate to establish a CLG, in advance of construction commencing. The ECP will set out the process by which CLGs will be established and administered together with an initial schedule of planned meetings according to key work stages. CLGs will meet regularly before and during the construction period. The detailed information sought by the council will be developed as part of preparation of the ECP. The CLGSs will be funded by the Project.
Page 174-176	10.13.32 Further information requests include: • NH were to provide access to a 'Hard to Reach Engagement Strategy' within the DCO application to demonstrate adequate engagement with these groups;

LIR Reference	Local Impact Report Extract / Applicant's Response
	• Clarification on what mitigation is proposed for sensitive wards outlined within the air quality assessment and how a neutral impact has been justified; • Information needs to be provided regarding noise assessment baselines for Traveller sites; • Further clarification if there has been consideration of noise and vibration impacts on NMUs during construction; • Further clarification on numbers of CLG's proposed, where these might be and a list of topics/themes that these will cover and if any additional funding will be provided for them. Clarification is needed on if the Council and other stakeholders will have input into the ECP to inform the development of the CLGs; • Rationale to be provided for consideration of affordability within visitors' accommodation; • Further information provided on scoping process for the HIA with CIPHAG and what topic assessments and equalities groups were scoped out and why; • Clarification on further modelling undertaken regarding noise and air quality impacts post 2022 assessment provided by the Council, referenced in the Council's Relevant Representation (Principal Issue VIII) (PDA-009); • Further clarification is needed regarding intra-cumulative effects, including the phasing of these effects, where they will be felt and what mitigation measures will be in place regarding cumulative impacts, including in reference to the transport assessment regarding severance, pedestrian delay, amenity and fear and intimidation; • Further clarification is needed regarding intra-cumulative effects, including the phasing of these effects, where they will be felt and what mitigation measures will be in place regarding cumulative impacts; • Further information provided regarding what enhancement measures are in place to encourage a move away from vehicular travel in operation to achieve a positive significant effect; and, • How the term 'appropriate' is defined within mitigation regarding healthcare facilities should be defined.
Applicant's Response	• This matter is a summary and addressed in detail in the response to Page 173-174 above. • This matter is a summary and addressed in detail in the response to Page 168-169 above. • This matter is a summary and addressed in detail in the response to Page 169 above. • This matter is a summary and addressed in detail in the response to Page 168-169 above. • This matter is a summary and addressed in detail in the response to Page 174-176 above. • This matter is a summary and addressed in detail in the response to Page 170 above.

LIR Reference	Local Impact Report Extract / Applicant's Response
	• This matter is a summary and addressed in detail in the response to Page 173 above. • This matter is addressed in response to Page 126 (10.2.11). However, it should be noted that the Applicant considers the data and the assessment presented in the ES, included as part of the DCO submission to be the most recent. Thurrock Council have confirmed in this LIR that this modelling provided by Thurrock is based on an older set of traffic data. • This matter is a summary and addressed in detail in the response to Page 170-171 above. • Partial comment, repeat of I above. • This matter is a summary and addressed in detail in the response to Page 174-176 above. • This matter is a summary and addressed in detail in the response to Page 174-176 above.
Page 177-179	**10.14 Climate and Decarbonisation** **Introduction** 10.14.1 The boundaries that define climate change impact are complex. The boundaries through which greenhouse gas emissions (referred to here in as 'carbon emissions) are emitted will be greater than just the tail pipe emissions. The supply chain for the construction of LTC and the manufacturing of the additional vehicles that will be enabled by its presence is both national and international. The impact from climate change is already being felt in the Borough, the United Kingdom and across the world. 10.14.2 The local to international boundaries set by climate change requires transparency and integrity in the approach taken to analyse the effects of Nationally Significant Infrastructure Projects. By the very nature of the importance defined to Nationally Significance Infrastructure afforded through the Development Consent Order (DCO) process, the requirement for transparency and integrity in the approach taken to assessing climate change should reflect the significance of scale and importance of climate change globally. 10.14.3 Article 4 of the Paris Agreement (Paris Agreement, IPCC November 25), paragraph 13 page 3 states: 'Parties shall account for their nationally determined contributions. In accounting for anthropogenic emissions and removals corresponding to their nationally determined contributions, Parties shall promote environmental integrity, transparency, accuracy, completeness, comparability and consistency, and ensure the avoidance of double counting, in accordance with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.' 10.14.4 To determine a Nationally Significant Infrastructure Project as having nationally significant economic benefits, but no significant climate change impact, does not afford LTC the transparency of assessment on climate change that it requires.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.14.5 The UK Government ratified its signatory to the Paris Agreement in 2016, as the legally binding international treaty on climate change. This treaty includes a range of articles requiring signatories to deliver action, including Article 4, which requires countries to ensure transparency in emission reporting to ensure environmental integrity, transparency, accuracy, completeness, comparability, and consistency across a broad range of issues. 10.14.6 The assessment of climate change (Chapter 15 of the Environmental Statement (APP-153) fails to meet the basic principles of ensuring environmental integrity, transparency, accuracy, completeness, comparability, and consistency across a broad range of issues. Table 10.11: Summary of Key Issues Climate and Carbon The project does not allow Government to meet their requirements of the Paris Agreement Article 4 for transparency in emission reporting. The lack of transparency (as defined in Article 4) in measuring, reporting and verification relates to the: • Comparative emission boundaries set within the project carbon assessment in comparison against the total national emission boundaries; • The difference in greenhouse gas calculation methodologies between the project emissions and those developed for national emissions budgets, the national atmospheric emissions inventory and the climate change committees carbon budgets. The approach holds no consistency, completeness, comparability or accuracy between the calculated project emissions and national emission budgets in order to form an opinion of significance of impact. The lack of transparency in the approach to reporting and comparing carbon emissions results in the project not meeting the tests defined in NPSNN for significance of impact against the Government's ability to meet their net zero target. There is no consistency between claims of the benefits from the reduction in traffic from DfT's future transport scenarios taken into consideration in the carbon emissions calculations and the subsequent economic disbenefit to the project with the same reduced road transport numbers. Whilst the benefits of reduced traffic numbers from the future decarbonisation in transport is highlighted as a benefit, these same traffic number reductions are not accounted for in the economic benefits of LTC. If there is less traffic on the road due to transport decarbonisation, the DCO has not assessed the financial justification of the scheme. With a reduction In vehicle use and as per the Planning Act S104(7) balance the potential costs of the scheme could outweigh its benefits. This has not been tested. Chapter 15 of the ES has not considered the impacts on Thurrock meeting its own net zero transition, in particular, how LTC responds to the DfT's upcoming Local Transport Plan requirements for district level emission measuring, reporting and verification to net zero carbon by 2050.

LIR Reference	Local Impact Report Extract / Applicant's Response
	The DCO application does not provide evidence of how the investment into LTC will accelerate the Climate Change Committee Sixth Annual Carbon Budget (Chapter 3, Section 1 page 36), recommendations for decarbonisation of transport especially within the host community of Thurrock. No carbon mitigations targets have been set that will allow verification of progress in decarbonisation during construction. The verification of carbon reduction is not secured through the DCO during construction and therefore not guaranteed. The lack of meaningful targets is further evidenced in its reference in the low commitments made to the independent verification processes BREEAM Infrastructure and Carbon Literacy, not representative of the 'pathfinder' status the scheme wishes to brand itself with. No local benefit has been identified for investing in decarbonisation to offset project emissions against the claim of carbon neutral status being defined (ES Chapter 15, Paragraph 15.6.3, page 67). The project has explicitly disregarded best practice guidance Assessing Greenhouse Gas Emissions and Evaluating their Significance' (IEMA, 2022) and not followed the internationally recognised methodology for appraising carbon emissions Greenhouse Gas Protocol (GHG Protocol for Project Accounting, World Resources Institute 2003), especially relating to setting boundaries for assessment and the use of industry specific guidance for greenhouse gas reporting. ES Chapter 15 states (paragraph 15.6.5, page 67) states the project is compatible with the budgeted science-based 1.5^{o}C trajectory. There is no scientific explanation or justification for this statement. The detailed calculation workbooks have not been submitted with the DCO application. It is therefore not possible to audit verify the emission calculations undertaken. The raw data has been subject to numerous requests since December 2022 and forms part of the unresolved issues within the Statement of Common Ground between the Council and NH. The impact of decarbonisations measures identified in the Carbon and Energy Management Plan have not been tested within the Environmental Impact Assessment. For example, no environmental risk appraisal or impact assessment within the ES Chapter 15 has been undertaken for the use of hydrogen during construction, the impact of utility impact on the decarbonisation plans of the Council and maximum electrical demand for the full 'electrification' of construction activities. No consideration of the local power capacity impact from LTC power demand on the host communities uptake of electric led decarbonisation technology, e.g. heat pumps, eVs, solar etc. Within the ES Chapter 15 there is no assessment of adaptation benefit on how LTC can improve the Council's resilience to climate impacts to address the environment benefits of the scheme.

LIR Reference	Local Impact Report Extract / Applicant's Response
	The Applicant has adopted its own Net Zero goals and this suggests that NH and the traffic on their networks makes them a sufficiently significant agency to demonstrate that the budget for the SRN itself is a matter of significance (and not just their own activities). 10.14.7 Please note Chapter 7 of this report assesses the lack of evidence in how the economic benefits of LTC failed to take into consideration Government's position that emissions reductions will be delivered through a system of give year carbon budgets to 2050, which include a reduction in vehicle use, as described in paragraph 5.16 page 49 of NPSNN.
Applicant's Response	This matter is a summary and addressed in detail in the response to pages 179 – 181 below.
Page 179	**Local Impacts Identified by Thurrock Council** 10.14.8 The impact of LTC on Thurrock's carbon emissions and approach to managing climate risk are significant and weight should be applied to the role of LTC on Thurrock meeting its own climate targets. If Thurrock were to propose a development that would have a material impact on the performance of NH's SRN network then it is most likely that NH would refuse that development or ask for mitigation measures. The principle is the same for the impact of NH on the Council. 10.14.9 In 2018 the carbon emissions within the Council's area have been estimated to be 892,000 tonnes (all emission segmentations), with transport accounting for 372,852 tonnes (UK Road Transport Energy Consumption at Regional and Local Authority Level 2005- 2020, BEIS 2020). The emissions presented within Chapter 15 of the ES present a major increase in local emissions over such a pre-construction local baseline. Such emission data is known and is important and relevant for the purposes of S104(2)(d) of the 2008 Planning Act, especially when determining significance within the environmental impact assessment. 10.14.10 The following local impacts have been identified by the Council that have not been addressed within the DCO: • The assessment of transport emissions has not considered local impact on Thurrock's carbon budgets; • The EIA has not tested the local impact of construction decarbonisation measures, such as electrification of construction vehicles or the use of hydrogen fuels. Without securing the parameters for use of such available technology their use will not be available to NH; • No strategy or assessment has been provided of how the 'pathfinder status' of the scheme will contribute to the local green skills agenda to leave a zero carbon economic legacy in Thurrock;

LIR Reference	Local Impact Report Extract / Applicant's Response
	• No strategy or assessment has been provided of how legacy infrastructure developed during construction can be provided to support clean and inclusive growth of Thurrock, such as renewable supply, power capacity, hydrogen infrastructure, etc.; • The limited commitments to verification of performance, such as BREEAM (targeting contractors to achieve very good, two tiers below the highest rating of Outstanding) and Carbon Literacy Project (targeting silver standard two tiers below the highest rating of Platinum) offer no meaningful advancement from business as usual. In turn no enhanced benefits to the local economy in supporting green skills will be achieved through these commitments; and, No assessment, strategy or action has been developed on how the investment into LTC can reduce the host community's climate vulnerability (see **Appendix K** of this document).
Applicant's Response	In response to 10.14.8, National Highways has a statutory role in the planning system in accordance with its licence and as set out in DfT Circular 01/2022. This explains how the Applicant will engage with the planning system and fulfil its remit to be a delivery partner for sustainable economic growth whilst maintaining, managing and operating a safe and efficient strategic road network. The Applicant acts in accordance with the circular in performing this role. More generally in response to the representation related to the omission of an assessment at a local level including impacts on local authority carbon budgets in 10.14.8, 10.14.9 and 10.14.10a, the Application has presented a policy compliant assessment which meets the requirements set out in the National Policy Statement for National Networks (NPSNN). The Applicant has considered the impact of the Project against the UK carbon budgets to enable the decision maker to determine whether the Project's GHG emissions would have a material impact on the Government's ability to meet its carbon reduction targets (which are set out in the national carbon budgets under the Climate Change Act 2008). The Climate Change Act 2008 (Amended 2019) states "*It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline*". The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and NPSNN represent current legislation and policy and do not specify a requirement for local and regional carbon assessments. There are currently no net zero statutory targets on local authorities or communities and there is no requirement in national legislation or policy for an assessment against local or regional carbon budgets. For a development the size of the Project, the Applicant considers the national carbon budgets to be the appropriate comparison for the measure of significance. Recent planning decisions provide useful precedents in this regard, including the Bristol Airport extension case (Bristol Airport Action Network Co-ordinating Committee v Secretary of State for Levelling Up, Housing and Communities [2023] EWHC 171 (Admin)), Mr Justice Lane confirmed that "… *I am in no doubt that the Panel did not act irrationally in giving the issue of local carbon budgets no weight, on the ground that such budgets have no basis in law or in policy*". While that case

LIR Reference	Local Impact Report Extract / Applicant's Response
	is related to a local planning application, it nevertheless clarifies the status of local carbon budgets in the planning system. For the Lower Thames Crossing Project, as a Nationally Significant Infrastructure Project, the relevant policy is the NPSNN. The NPSNN refers only to the national budgets made under the Climate Change Act (CCA) 2008. An assessment of the Project's GHG emissions is presented in Section 15.6 of ES Chapter 15 – Climate [**APP-153**]. This is not limited to an assessment against the national budgets, but also includes a contextualisation in terms of alignment with the net zero trajectory as per the Institute of Environmental Management & Assessment (IEMA) guidance 'Assessing greenhouse gas emissions and evaluating their significance' (IEMA, 2022). Page 29 of the IEMA guidance acknowledges the advantages and limitations of using local and regional carbon budgets and states on page 27: "*It is down to the practitioner's professional judgement on how best to contextualise a project's GHG impact*." The IEMA document does not state that it is best practice to contextualise against sectoral, regional and local budgets, but rather states on page 28 that these three budgets are "*further sources of contextual information against which the GHG emissions and reduction actions of project can be evaluated*". Further, the IEMA document states that practitioners should choose the most appropriate context setting, not that each of the possible contexts should be assessed, as suggested in the representation. It goes on to point out the limitations of local budgets (which might be of some use in local decision making), stating that a geographic budget (below a national budget defined based on negotiated NDCs to commitments to a global budget agreed through the UNFCCC) is not very meaningful. Given the size of the Project, it is considered that comparison to the national budgets is appropriate and consistent with up to date policy. In response to 10.14.10 b which the Applicant understands to be a concern that the design concept for construction is limited and could restrict the use of innovative technologies. The Environmental Impact Assessment has set out a reasonable worst case scenario for the construction phase onsite facilities to support construction which has established an envelope for the Contractors to work within. This is in line with the scenario presented in ES Chapter 2: Project Description [**APP-140**]. This approach provides the Contractor with parameters to work within and gives an element of flexibility in how the site can be operated which will support the introduction of innovations such as hydrogen fuelled or electric powered fleet and machinery. The Project has been designated as a pathfinder project and as stated, the Applicant's document Net Zero Highways: Our 2030, 2040 and 2050 plan, the Project "*will be used as a key project to test low carbon innovation and approaches*". The Carbon and Energy Management Plan [**APP-552**] sets a framework to incentivise innovations in low carbon construction, which may include low / zero emission plant and vehicles. These are secured through carbon commitment CBN11 and CBN12 in Table E.1 of the Carbon and Energy Management Plan.

LIR Reference	Local Impact Report Extract / Applicant's Response
	In response to 10.14.10 c, d and e, as part of the DCO submission, the Applicant has committed to a Carbon and Energy Management Plan [**APP-552**] which outlines a series of secured commitments, 22 in total (see Appendix E of the plan), that put in place processes and mechanisms that would ensure the greatest likelihood of low carbon design, low carbon construction processes and low carbon material selection. The Contractors are incentivised to create a range of options to deliver low carbon solutions across the entire Project. The Project has put in place ground breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15 – Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phases. These mechanisms would facilitate the Applicant's ambitions to deliver an industry leading carbon position, to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This represents a genuine opportunity to accelerate the UK construction industry's transition to a low-emissions future which would also provide benefits to the local supply chain in the Lower Thames Estuary. Infrastructure needed for the construction phase has not been specified yet, as it is the task of the Contractors to prepare construction methodologies and identify and implement renewable electricity supply options and hydrogen infrastructure. At that stage (detailed design stage) it would be evaluated whether these temporary utilities could, in principle, be converted into permanent infrastructure available for use by the local community. An example of the Applicant's commitment to innovate and test low carbon approaches to construction includes the recent announcement of a tender issued for the purchase of significant volumes of low carbon hydrogen as a construction fuel. This is expected to kick-start the hydrogen ecosystem in the Thames Estuary giving the supply chain confidence to invest in hydrogen skills and technologies. The Benefits and Outcomes Document [**APP-553**] provides information on benefits secured through the DCO application as well as the wider activities that are being delivered by the Applicant outside the framework of the DCO for the A122 Lower Thames Crossing (the Project). It provides details on the Applicant's role in helping to support surface transport's transition to net zero. The Section 106 Agreements – Heads of Terms [**APP-505**] set out obligations that would deliver benefits to the local community and includes a Skills, Education and Employment Strategy. This sets out targets for the local workforce and places emphasis in supporting developing skills and qualifications needed to deliver a greener economy. This would result in a legacy of green skills in Thurrock and the Lower Thames Estuary. The Applicant has achieved PAS2080 certification which commits the Project to ongoing verification of performance. The C&EMP provides a clear commitment to investing in innovation in low carbon advancements via the Contractors. It is expected that the Contractors would exceed the minimum standard of 'very good' in the BREEAM assessment.

LIR Reference	Local Impact Report Extract / Applicant's Response
	The Applicant has carried out a climate resilience risk assessment in line with DMRB LA 114 which is presented in ES Appendix 15.3 - Climate Resilience Impacts and Effects [**APP-482**]. This has informed ES Chapter 15 - Climate [**APP-153**] which concludes that with the implementation of embedded design measures and best practice and essential mitigation, the Project's vulnerability to climate change is not significant.
Page 180-181	**Policy Compliance and Local Impacts** 10.14.11 At the time of the December 2014 NPSNN, the Climate Change Act was legislating for an 80% reduction in emissions and the pathway out to the period in which the construction of projects, such as LTC were not established by the CCC and endorsed by Parliament. There was no framework other than the national emission targets against which the significance of projects could be assessed at that point in time. Indeed, the presence of a 20% budget, which would not be reduced meant that Government argued that there was no need to establish indicative sectoral budgets, because this would lead to distortion of sectoral actions. 10.14.12 As of 2020 the Climate Change Act was amended such that there is a commitment to 100% emission reductions (net Zero) now by 2050. In December 2020 the CCC published its 6th carbon budget assessment for the period 2033-2037 and in 2021 the Government responded with the Net Zero Strategy (NZS), which included indicative sectoral budgets which were identified as a range of emission reduction pathways. These are both important and relevant data sets that should be considered as part of the assessment, as defined by S104(2)(d) of the Planning Act 2008. 10.14.13 The pathway range for transport in the NZS was a subset of those identified in the Transport Decarbonisation Plan and considerably narrower. It is important to note that the indicative sectoral budgets have no statutory status, but like the annual carbon emission totals defined within the National Atmospheric Emissions Inventory, which are broken down geographically and within sectors, they exist to be able to support comparison to ensure consistency between project level emission reporting and national reporting of emissions. 10.14.14 As of March 2023, the Net Zero Strategy was reviewed and the Carbon Budget Delivery Plan was produced. This provided a single indicative pathway for transport, rather than a range. Again, this signals a national government perspective that it is now in a position to define a pathway for transport emissions. 10.14.15 Compliance with NPSNN centres around the interpretation of the December 2014 NPSNN, i.e. pre Paris Agreement, tests for defining significance. It should be noted that in paragraph 4.37 of the new draft NPSNN states that *'Should a revised set of UK Climate Projections or associated* research be applicable after the preparation of the environmental assessment, the Examining Authority should consider whether they need to request further information from the applicant.'

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.14.16 The December 2014 NPSNN describes in pages 49 to 50, the approach to assessing carbon emissions. In paragraph 5.17, page 50, the document notes carbon budgets should be compared to National Carbon Budgets (last three words paragraph 5.17 page 50 of the NPSNN). 10.14.17 The test defined within the NPSNN is determine whether a nationally significant transport project defined by the NPSNN affects the ability of the Government to meet its national budget for transport. 10.14.18 ES Chapter 15 only compares predicted emissions against the total National Budget. It fails to consider temporal and sectoral budgets set by Government, the sector budgets set by the Government's Climate Change Committee and the UK's total emissions reported to the UNFCCC through the UK's National Atmospheric Emissions Inventory. Again these long term data sources and benchmarks are important and relevant to consideration of significance of impact. 10.14.19 In determining significance (Chapter 15, Section 15.9, Page 59) NH have only used the total National Budget for comparing the project emissions budget (Table 15.17 page 65d). This total National Budget includes all sectoral emissions, including manufacturing, housing, energy, agriculture and other non-road transport. The boundaries of the National Budget are significantly broader than those established for the Project budgets and therefore not comparable. 10.14.20 As noted above in paragraph 10.15.3 of this LIR the Paris Agreement Article 4 (Paris Agreement, IPCC November 2015) requires transparency in measuring, reporting and verification of carbon emissions. It is critical therefore that any net increase in national emissions can be scrutinised against national (i.e. Paris Agreement), sub- national (i.e. Net Zero), and sectoral (i.e. sector emission budgets and pathway) commitments to qualify whether the scheme would materially impact on the ability of Government to meet its carbon reduction targets (which is the test for significance established within ES Chapter 15 (**APP-153**). 10.14.21 Without any consistency or comparability in assessing the project emissions against the national budget it is not possible to conclude GHG emissions from the project would not have a material impact on the ability of the Government to meet its carbon reduction targets (Chapter 15, paragraph 15.6.6, page 68). The assessment therefore does not provide the appropriate evidence for decision making purposes defined in paragraph 5.18, page 50 of the NPSNN. 10.14.22 In its 2023 Report to Parliament the Climate Change Commission (2023 Progress Report to Parliament, CCC 2023) reported that the transport sector was not on a satisfactory trajectory to meet its carbon targets and drew particular attention to the essential need for changes to the treatment of carbon in the appraisal of road schemes. On page 128 it specified the inclusion of: • 'Measures to reduce car demand'; • ''Support for local transport authorities in refreshing their local transport plans', especially on carbon;

LIR Reference	Local Impact Report Extract / Applicant's Response
	• 'All scheme appraisals (including road building decisions) must explicitly consider the National Road Transport Plan Decarbonisation scenarios;' • 'At the UK level, various road-building projects have recently been pushed back due to fiscal headwinds. The Government should launch a more strategic review (similar to the Welsh roads review) to assess whether these projects are consistent with its environmental goals; and,' • And on page 426: that its proposed roads review should include 'current and future road-- building projects' and 'permit schemes to be taken forward only if they meaningfully support cost-effective delivery of net zero and climate adaptation.' 10.14.23 It is understood that this report was published on 28 June 2023, subsequent to NH submission of the DCO. However, the document now should be treated as one of the most important 'successor documents' provided for in the NPSNN and its implications are so great that work to implement it would clearly be proportionate to the scale of the project, the largest in the programme.
Applicant's Response	The Applicant's response to 10.14.8, 10.14.9 and 10.14.10a (above) has set out the policy position in relation to an assessment beyond the national level, including sectoral and local carbon budgets. Where required, the Applicant has provided further context to specific points raised by the interested party below. The Applicant disagrees that the Net Zero Strategy provides "*indicative sectoral budgets*". In fact the Net Zero Strategy clarifies the following on page 77 with regards to the indicative sector pathways: '*These pathways are therefore not predictions or targets…*'. The subsequent Carbon Budget Delivery Plan does not redefine the UK Government's position on the indicative pathways as stated in the NZS (e.g. they are not predictions or pathways). S104(2)(d) of the Planning Act 2008 requires the Secretary of State, in deciding the application, to have regard to *'any other matter which the Secretary of State thinks are both important and relevant to the Secretary of State's decision'*. Given the clear position of the UK Government on the status of the indicative sector pathways (not predictions or targets) it is considered that the Secretary of State would not think that an assessment against these pathways is important and relevant. ES Chapter 15 - Climate [**APP-153**] quantifies the net end-user carbon emissions that the implementation of the Project would generate, and it remains within the Government's remit to absorb these within the current transport indicative pathway or in other sectors. An assessment against the national budget is therefore considered most appropriate. In response to 10.14.15, the Secretary of State has decided that for any application accepted for examination before designation of the 2023 amendments, the 2014 NPSNN should have effect. In line with paragraph 4.42 of the 2014 NPSNN, the Applicant has carried out a risk assessment of the potential climate change impacts on the resilience of the Project which is presented in ES Appendix 15.3 [**APP-482**]. The Applicant's Climate resilience risk assessment has used the latest UKCP18 projections. The Climate Resilience Baseline using UKCP18 is set

LIR Reference	Local Impact Report Extract / Applicant's Response
	out in ES Appendix 15.2 [**APP-481**] and confirms the Applicant has complied with the specific provision of the National Policy Statement raised by the council. In response to 10.14.17, the Applicant disagrees with this interpretation of paragraph 5.17 of the 2014 NPSNN. The NPSNN refers only to the national budgets made under the Climate Change Act (CCA) 2008. Table 15.17 of ES Chapter 15: Climate [**APP-153**] presents a comparison of the Project emissions against the national carbon budgets to enable the decision maker to determine whether the Project's GHG emissions would have a material impact on the Government's ability to meet its carbon reduction targets (which are set out in the national carbon budgets under the Climate Change Act 2008). In response to 10.14.18 and 10.14.19, 10.14.20, 10.14.21 the Applicant would reiterate that the UK Government has not set any statutory net zero carbon budgets for the sectors identified by the Climate Change Committee (CCC) and there is no evidence that this has been recommended by the CCC. The basis for assessment of the Project emissions remains the UK national carbon budgets as these represent the UK's statutory commitment to the Paris Agreement. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and NPSNN represent current legislation and policy and do not specify a requirement for sub-national (sectoral or local) assessments. Table 15.17 of ES Chapter 15: Climate [**APP-153**] presents a comparison of the Project emissions against the national carbon budgets. Given the size of the Project, it is considered that comparison to the national budgets is appropriate and also follows current policy. Further, the assessment presented in Section 15.6 of ES Chapter 15 [**APP-153**] is not limited to an assessment against the national budgets, but also includes a contextualisation in terms of alignment with the net zero trajectory as per the Institute of Environmental Management & Assessment (IEMA) guidance 'Assessing greenhouse gas emissions and evaluating their significance' (IEMA, 2022). In response to 10.14.22, the Applicant awaits the UK Government's response to the recommendations set out in the Climate Change Committee's progress report to Parliament, published on 28 June 2023 and will continue to support the DfT in decarbonising the transport sector. The Applicant has set out its own pathway to supporting the DfT's decarbonisation of the surface transport sector through the publication of the 2021 plan '*Net Zero highways: Our 2030, 2040 and 2050 plan'* (National Highways, 2021). Specifically for the Lower Thames Crossing, the Project has set out an industry leading position in terms of driving out carbon in the preliminary design and setting a framework to continue to reduce its carbon impact through the commitments made in the Carbon and Energy Management Plan, which is one of three documents addressing carbon reduction in the DCO Application: • ES Chapter 15: Climate [**APP-153**] • Planning Statement Appendix I: Carbon Strategy and Policy Alignment [**APP-504**]

LIR Reference	Local Impact Report Extract / Applicant's Response
	• Carbon and Energy Management Plan [APP-552]. ES Chapter 15 [APP-153] and Planning Statement Appendix I [APP-504] explain that carbon impacts associated with construction of the Project have been calculated as being no more than 0.058% of the UK's fourth carbon budget and that ground-breaking approaches to procurement and construction have been devised for the Project. It also explains that the DfT's Decarbonising Transport: A Better, Greener Britain (DfT, 2021) is expected to lead to significant reductions in road-user emissions over the lifetime of the Project.
Page 181-182	Further Work or Mitigation Required 10.14.24 The following work would be needed to appropriately consider local impacts and compliance with NPSNN: • Assessment of local impact on carbon emissions is required; • Consistency in boundaries and calculation methodologies are required between project emission reporting and national budgets; • The impact of Government's decarbonisation pathways on the economic benefits of LTC requires assessment; • Legacy benefits from infrastructure investment during construction should be established and planned for; • Host community climate vulnerability assessment is required in line with international best practice; and, • Inclusion of tests recommended by the CCC in relation to the effects of demand reduction and explicit consideration of the NRTP decarbonisation scenarios, and its proposed test for taking schemes forward. 10.14.25 National Highways should provide all calculations and workbooks used in developing emission assessments and sensitivity analysis for stakeholder review. Until such time as the calculations are independently verified, NH cannot determine the project as not affecting Government's ability to achieve their net zero target.
Applicant's Response	The Applicant has set out its position in relation to points 10.14.24 a, b, d, and e within its responses above. In relation to 10.14.24 c and f the Applicant's transport model, assessment and appraisal has been undertaken in line with the DfT's Transport Analysis Guidance.
Page 183	**10.15 Cumulative Impacts** **Introduction** 10.15.1 This sub section considered the ES Chapter 16: Cumulative Effects Assessment (APP-154) and its related Figures and Appendices (APP-329 – APP-331 and APP-483 – APP-485).

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.15.2 In summary, the Council consider that the combination impacts reveal that the projects when taken together, would have a significant adverse impact on the receiving landscape, ecology, heritage and local residents. There is insufficient commitment within the submission to secure minimisation of the scale and impacts of the scheme. The mitigation proposals presented to date do not satisfactorily address the Council's concerns. There is also considered to be insufficient information in relation to the long-term monitoring of impacts. Table 10.12: Cumulative ES Chapter – Summary of Key Issues The Zone of Influence for the cumulative effects on Population and Human Health is limited to 500m from the Order Limits, but there are likely to be impacts on Population and Human Health beyond this study area, due to the changes in traffic flows as a result of LTC. There is a lack of and incorrect reporting of effects in the ES Cumulative Chapter, just a few examples are listed below: **For Noise:** • Tilbury Riverside and Thurrock Park ward – effects concluded as moderate rather than large despite significant adverse impacts relating to construction traffic. • Chadwell St. Mary ward – effects concluded as large rather than very large despite significant adverse impacts at receptors relating to operational traffic which are permanent effects. • Inter-project effects for both construction and operation relating to Tilbury Link Road have not been quantified and therefore there is no evidence to conclude that impacts are not significant. **For Air Quality:** • Table 16.9 Chadwell St. Mary ward – effects concluded as being not significant as the DMRB LA105 methodology does not consider the effect of substantial increases in pollutant concentrations at levels below the legal thresholds. • Inter-project effects for emissions from the Thurrock Flexible Generation Plant have not been quantified and therefore there is no evidence to conclude that cumulative impacts would not be significant. For Population and Human Health: • The assessment does not included the assessment of severance, driver delay, pedestrian amenity, pedestrian delay, fear and intimidation, road safety and driver stress.
Applicant's Response	This matter is a summary and addressed in detail in the response to Pages 183- 187 below.

LIR Reference	Local Impact Report Extract / Applicant's Response
Page 183	**Lack of and Incorrect Reporting of Effects** 10.15.3 There is a lack of reporting of effects as well as incorrect reporting of effects in the Cumulative ES Chapter 16 (**APP-154**). Further detail on a few noise, air quality and population and human health examples are provided below.
Applicant's Response	The Applicant believes this is a repeat and addressed in the response to Pages 183- 187 below.
Page 183-184	**Incorrect Reporting of Noise Effects** 10.15.4 Within Table 16.8, for Tilbury Riverside and Thurrock Park ward, significant adverse noise effects are specified in association with construction traffic. However, given that no further noise mitigation measures are applied and these construction traffic noise impacts remain as well as having impacts relating to air quality and visual impacts, it is questioned why only a moderate adverse effect has been concluded instead of a large adverse effect. 10.15.5 Within Table 16.9 for Chadwell St Mary ward, significant adverse road traffic noise effects are predicted for receptors on the north-eastern edge of Chadwell St. Mary. These receptors are likely to exceed the significant observed adverse effect levels as defined in DMRB and therefore not comply with NPSNN. It is expected given the impact and with no further mitigation being applied by NH to these receptors the resulting impact should be 'very large' adverse. It is currently being concluded as being no worse than large adverse effects. 10.15.6 Paragraph 16.5.50 concludes that inter-project effects are not likely to be significant for construction traffic. However, there is no evidence or assessment undertaken to provide justification for this conclusion. Construction activity associated with Tilbury Link Road could provide a potential significant impact. 10.15.7 Similarly, paragraph 16.5.51 concludes that inter-project operational traffic noise effects are unlikely to be significant. However, there is no evidence that cumulative impacts associated with developments including Tilbury Link Road are unlikely to lead to significant effects.
Applicant's Response	The cumulative effects presented in Table 16.8 and 16.9 have been identified by applying the methodology set out within section 16.3 of ES Chapter 16 – Cumulative Effects Assessment [**APP-154**] including the consideration for significance of intra-project effects set out in paragraphs 16.3.90 to 16.3.91 of that document. The conclusion of moderate adverse intra-project effects for Tilbury Riverside and Thurrock Park ward is considered to be appropriate. This conclusion was based on professional judgement taking into account the short-term significant construction traffic effects during the first year of construction, which decreases to become not significant later in the construction period.

LIR Reference	Local Impact Report Extract / Applicant's Response
	The conclusion of large adverse intra-project effects for receptors on the north-eastern edge of Chadwell St. Mary is considered to be appropriate based on professional judgement and reflecting the significance criteria set out in Table 16.7 of ES Chapter 16 [**APP-154**]. Text in paragraphs 16.5.50 and 16.5.51 provide a summary of the conclusions presented for each development in ES Appendix 16.2 – Short List of Developments [**APP-484**]. As set out in methodology within section 16.3 of 6.1 ES Chapter 16 [**APP-154**], these are qualitative conclusions related to noise and vibration effects during construction and operation using professional judgement based on available information for each development. For early stage developments such as Tilbury Link Road, *'limited information on the development proposals, associated timescales and any resulting potential for environmental effects has been reflected in the inter-project effects assessment'* as stated in the 'Inter-project effects assumptions and limitations' section of ES Chapter 16 [**APP-154**].
Page 184	Air Quality Issues 10.15.8 Paragraph 16.5.14 concludes that inter-project effects are unlikely to be significant. Confirmation is required that consideration of emissions from industrial sources, such as the Thurrock Flexible Generation Plant have been considered within the cumulative assessment. 10.15.9 Similarly, Table 16.12 determines that inter project cumulative effects are unlikely to be significant, as the DMRB LA105 methodology does not consider the effect of substantial increases in pollutant concentrations at levels below the legal thresholds.
Applicant's Response	The Applicant confirms that Thurrock Flexible Generation Plant is covered in the cumulative effects chapter of the ES. The air quality assessment has been undertaken as a means of meeting the decision-making requirements of the NPSNN (paragraphs 5.12 and 5.13). DMRB LA 105 provides the framework of determining whether there is a significant air quality effect on sensitive receptors in line with the requirements of the NPSNN. This is consistent with all other highways schemes that have been through the DCO process. The significance assessment in relation to EIA within the NPSNN is focused on compliance with legal air quality thresholds.
Page 184-185	**Lack of Reporting of Transport and Traffic Effects** 10.15.10 In the Memo 'Traffic and Transport Assessment in DCO 2.0' issued by National Highways to stakeholders on 22 April 2022 (refer to **Appendix J**), it stated at Table 4.1 that the assessment of severance, driver delay, pedestrian amenity, fear and intimidation, road safety and driver stress would be included in Chapter 13 Population and Human Health. The assessment of these transport effects is not included in Chapter 16 of the ES on Cumulative Effects with regards to Population and Human Health (**APP-154**). IEMA Guidance also requires the assessment of pedestrian delay, which is not included within the ES assessment.

LIR Reference	Local Impact Report Extract / Applicant's Response
	10.15.11 Appendix 4.4 of the ES on Traffic and Transport (**APP-343**) is intended to explain and sign post to where the environmental assessment of traffic and transport impacts are covered within the application documents. The assessment of transport environmental effects (e.g. pedestrian amenity, fear and intimidation, etc.) is claimed to be covered across a number of application documents, but this makes it extremely difficult for the Council to determine what the adverse effects of LTC are from those documents. The Council requires the ES to include a summary table setting out the adverse impacts on all transport effects, with signposting to the exact location of the evidence base of the ES assessment. 10.15.12 Table 16.11 of Chapter 16 on Cumulative Effects (**APP-154)** summarises the intra-project effects on people during the construction and operational phases. No evidence is provided to support the cumulative effects on population and public health and it is therefore not possible for the Council to determine if the assessment is acceptable or not. 10.15.13 The only significant adverse effects on the population are those where there would be adverse effects on access and adverse construction phase dust and emissions, noise, visual and human health effects would combine. Table 16.11 of Chapter 16 on Cumulative Effects (**APP-154**) does not identify any significant adverse impact on driver delay or stress during the construction phase, despite there being a need for significant traffic management and road closures during the construction phase. 10.15.14 No population effects are reported to occur during the operational phase as set out in Table 16.11 of Chapter 16 on Cumulative Effects (**APP-154)** . This is not considered to be reasonable given the increase in traffic forecast on the local road network during the operational phase as a result of LTC. 10.15.15 Table 16.12 summarises the Inter-project effects during the construction and operational phases. No evidence is provided within the chapter to support the conclusions reached. For example, it is stated that there will be potential positive inter -project effects arising from the potential to crease new green infrastructure for walking and cycling opportunities. Commitments to improvements to walking and cycling infrastructure are not secured in the DCO, which would provide a positive environmental effect.
Applicant's Response	The Health and Equalities Impact Assessment (HEqIA) [**APP-539**] includes a cumulative assessment of effects at Section 7.15. ES Chapter 16 – Cumulative Effects Assessment [**APP-154**] explains the methodology for assessment in section 16.3. Paragraph 16.3.48 identifies ten receptor groups, based on the receptors identified in the topic assessments presented in the various ES chapters. The assessment of the various elements identified in Thurrock's comments, namely severance, driver delay, pedestrian amenity, fear and intimidation, road safety and driver stress are covered in various places within ES Chapter 13 – Population and Human Health [**APP-151**]. While the assessments of severance and road safety have separate sections of their own within the Human Health sub-heading (and within the HEqIA), the topics of driver delay, pedestrian amenity, fear and

LIR Reference	Local Impact Report Extract / Applicant's Response
	intimidation and driver stress are covered more indirectly as part of other topics (for example driver delay is essentially an element of the 'accessibility' assessment, and driver stress is referred to within the road safety assessment). As such they are not named topics for obvious inclusion within a cumulative assessment. Assessment of pedestrian delay similarly forms part of the traffic-related severance topic. As referred to previously, DMRB Standard LA 112 Population and Human Health (National Highways, 2020) does not require specific assessments of these topic areas. ES Appendix 4.4 – Traffic and Transport [**APP-343**] provides a simple summary of where the various traffic and transport assessments referred to by the Council are located. Table 16.11 of ES Chapter 16: Cumulative Effects [**APP-154**] is intended to be a simple summary by location and environmental topic as to the nature of intra-project effects, with further detail provided in paragraphs 16.5.53 to 16.5.58. It is noted that Table 16.11 of Chapter 16 does not identify any significant adverse impact on driver delay or stress during the construction phase, despite there being a need for significant traffic management and road closures. The assessment of driver delay forms part of the accessibility assessment undertaken in Section 7.2 of the HEqIA. The assessment of driver stress forms part of the road safety assessment undertaken in Section 7.7 of the HEqIA. Population effects are reported for a number of wards in Table 16.11 of ES Chapter 16: Cumulative Effects [**APP-154**]. These are also set out in paragraph 16.5.56. As noted in Thurrock Council's response, there will be positive inter-project effects arising from the potential to create new green infrastructure for walking and cycling opportunities. Walking and cycling opportunities form part of the Project design and are committed to in the Design Principles document [**APP-516**]. Paragraph 1.1.3 of Design Principles states that the document contains commitments that will be secured through the Development Consent Order (DCO) and that are certified in Schedule 16.
Page 185-186	**Local Impacts Identified by Thurrock Council** **Comments on LTC 6.2 Environmental Statement Figure 16.1 – Cumulative Zones of Influence** (APP-329) 10.15.16 The scale of the plans in (APP-329) makes it difficult to focus on specific areas in any detail and consequently it makes the plan overly confusing and difficult to comment on. The Thurrock area is very complex and the Thurrock section (Page 3) should be provided in a format that is easier to view and scrutinise. 10.15.17 The Zone of Influence (ZoI) for the population and human health cumulative impact assessment has been taken as '500m from the Order Limits for both construction and operation effects on private property and housing; community land and assets; development land and businesses; agricultural land holdings; and effects on WCH' (Table 16.3 of APP-154). The

LIR Reference	Local Impact Report Extract / Applicant's Response
	Council is concerned that the ZoI excludes roads and communities that are likely to be adversely impacted by LTC as a result of the increase in traffic. 10.15.18 Design Manual for Roads and Bridges (DMRB) 'LA112 Population and Human Health' (National Highways 2020b), states that 'Where likely effects are identified outside the 500m area surrounding the project boundary, the study area should be extended accordingly.' As such, the Council considers that the ZoI should be expanded. 10.15.19 In the Memo 'Traffic and Transport Assessment in DCO 2.0' issued by NH to stakeholders on 22 April 2022, it states in Table 4.1 that the traffic and transport assessment in the ES would be based on DMRB LA112 and 'Guidelines for the Environmental Assessment of Road Traffic' published by the Institute of Environmental Assessment in 1993 (now Institute of Environmental Management and Assessment (IEMA)). 10.15.20 Within the IEMA guidance, two broad rules are suggested that can be used as a screening process to define the scale and extent of the study area and assessment: • Rule 1: include highway links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%); and, • Rule 2: include any other specifically sensitive areas (where sensitivity is defined as high) where traffic flows have increased by 10% or more. LTAM identifies that there are increases in traffic on the local road network in Thurrock of greater than 10% and 30%. It is not considered that the IEMA screening approach has been undertaken to establish the study area for the assessment. 10.15.21 The traffic modelling summarised in the Transport Assessment and its supporting Appendices (APP- 529 and APP-530 – APP-538) identifies that there are increases in traffic on the local road network in Thurrock of greater than 10%, beyond the 500m study area applied by NH to the cumulative impact assessment on Population and Human Health. The Council considers that the ZoI should be based on Rules 1 and 2 of the IEMA guidance. 10.15.22 Certain roads have been omitted from the Zone of Influence (ZoI) and the following should be included: • Fobbing High Road; • Lampitts Hill; • B1007 South Hill and Lower Dunton Road (being the link between A127 and A13) – this is because of the impact at Manorway interchange being severe that rat running will likely occur at Five Bells interchange and onto these routes; • Rectory Rd / Prince Charles Ave / Conways Rd – Orsett; • Orsett Road – Horndon On The Hill; and, B186 Pilgrims Lane / South Rd – Ockendon

LIR Reference	Local Impact Report Extract / Applicant's Response
Applicant's Response	As detailed in Table 16.3 of ES Chapter 16 - Cumulative Effects Assessment) [**APP-154**], the study area for Population and Human Health varies by sub-topic. For a number of sub-topics this is 500m as referenced, but for Human Health it extends to a much wider area (for example aligning to the study area for Air Quality and Noise topics). More detail of this is provided in Table 13.2 of ES Chapter 13 - Population and Human Health [**APP-151**]. The study area defined is based on the relevant standard. For this Project, DMRB LA 112 is considered appropriate.
Page 186-187	Comments on LTC ES Figure 16.2 - Developments in the Cumulative Shortlist (APP-330) 10.15.23 This document is dated October 2022 and will therefore exclude a number of recent planning applications, which may influence cumulative environmental effects. For example, the following applications have been submitted since October 2022: • 22/01370/FUL Mardyke application – demolition of existing buildings / structures and provision of employment hub comprising of 44,463 sqm of general industrial (Use Class B2) / logistics floorspace (Use Class B8) on land adjacent to Watts Wood including Mardyke Farm Ship Lane and Broomhill Arterial Road; • 22/01606/FUL Titan application – demolition of existing buildings and the redevelopment of the site to provide 38,026 sqm of flexible Use Class E(g)(iii), B2 and B8 at Titan Works, Titan Road in Grays; and, • 23/00033/FUL Weston Avenue application – demolition of existing retail units (Units 1-9) at part of Thurrock Shopping Park to enable the redevelopment of the Site for a multi-level logistics building to provide 61,893 sqm of flexible Use Class E(g)(iii), B2 and B8. 10.15.24 **Appendix F**, to the LIR, lists all Thurrock Major, Minor and Pre-Application sites from 1 October 2022 to 14 June 2023. All Major or determined applications will need to be included when updating the DCO. Consideration should be given to the effect these developments may have on the cumulative environmental effects set out in Chapter 16 on Cumulative Effects (APP-154) 10.15.25 Furthermore, the Plan (APP-330) is very difficult to read and so the following questions/queries have been highlighted below: • East Tilbury indicates Local Plan projection but there is a live planning application 16/01232/OUT; • There are two live quarry applications at Orsett Quarry and the Dansand Quarry 19/1709/FUL and 21/00754/MIN respectively; • Other applications that may need to be considered: – 19/01373/OUT - Land Adjacent to Wood View and Chadwell Road, Residential Development of up 75 Dwellings;

LIR Reference	Local Impact Report Extract / Applicant's Response
	– 21/02110/FUL - Land Adjacent 39 And 41 And To The South Of St Johns Road Chadwell St Mary Essex; – 20/00242/FUL - Tilbury Football Club, Residential Development For 112 Dwellings; and, – 17/00403/FUL - Land to Rear of Caldwell Road Kingsman Road and Adjacent to A1013 Stanford Road Stanford Le Hope Essex (this may be nearly completed). • It is unclear if Purfleet Port is included or if it needs to be; • It is unclear if Purfleet New Town scheme is included or if it needs to be; • It is unclear if Arena Essex site is included, which will severely impact at M25 J30; and, • The Thurrock Airfield is a live application 19/01556/OUT, but it has only referred to the scoping application.
Applicant's Response	Proposed developments included for the assessment of inter-project cumulative environmental effects must by necessity reflect a point in time. The cumulative effects short list was appropriate at the time of DCO application submission and details were provided to explain the criteria for the inclusion of developments and the assessment cut of date of 31 May 2022. The Applicant has since provided an update of the cumulative inter-project effects assessment which is reported in Appendix B to the ES Addendum [**REP1-181**] submitted at Deadline 1 on 18 July 2023. This update was prepared to reflect relevant developments that have met the criteria for inclusion since the assessment was undertaken for the DCO application. It should be noted that the shortlist of potential developments was shared three times with Thurrock Council in March 2020, July 2021 and July 2022 for inputs and comments. In regard to developments identified in paragraph 10.15.23 the Applicant can confirm that these developments, together with Land off Muckingford Road, Linford (16/01232/OUT) identified in paragraph 10.15.25 have been included within the cumulative inter-project effects assessment updated submitted as Appendix B to ES Addendum [**REP1-181**]. Regarding the developments identified in paragraph 10.15.25 and in Appendix F to the LIR, the Applicant thanks Thurrock Council for the information and the implications of these developments for the cumulative inter-project effects assessment will be considered by the Applicant.

LIR Reference	Local Impact Report Extract / Applicant's Response
Page 187	**Further Work or Mitigation Required** 10.15.26 The Zone of Influence should be updated in line with the IEMA Rules 1 and 2 to ensure that the environmental effects on transport are properly assessed. 10.15.27 A summary table of all transport related cumulative environmental effects should be provided as part of Chapter 16 on Cumulative Effects (**APP- 154**) (i.e. severance, pedestrian delay, pedestrian amenity, fear and intimidation, driver delay, road safety). 10.15.28 Notwithstanding that the Council considers that the assessment of cumulative impacts is incomplete within Chapter 16 on Cumulative Effects (**APP-154**), the assessment identifies significant adverse effects on population and human health with have not been mitigated
Applicant's Response	This matter is a summary and addressed in detail in the response to pages 183-187 above.

If you need help accessing this or any other National Highways information, please call **0300 123 5000** and we will help you.

If you have any enquiries about this publication email **info@nationalhighways.co.uk** or call **0300 123 5000***.

*Calls to 03 numbers cost no more than a national rate call to an 01 or 02 number and must count towards any inclusive minutes in the same way as 01 and 02 calls.

These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Calls may be recorded or monitored.

Printed on paper from well-managed forests and other controlled sources when issued directly by National Highways.

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

National Highways Limited registered in England and Wales number 09346363