

Lower Thames Crossing

9.89 Responses to the Examining Authority's ExQ1 Appendix B – 4. Traffic & Transportation

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Appendix B – 4. Traffic & Transportation

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1 Introduction

1.1 Introduction

- 1.1.1 This document has been prepared by the Applicant to set out its responses to the Examining Authority's (ExA's) first round of written questions [[PD-029](#)]
- 1.1.2 These can be found in Tables set out under the following headings:
- a. Climate Change and carbon emissions (found in Appendix A)
 - b. Consideration of alternatives (Found in Appendix A)
 - c. Traffic and transportation (Found in Appendix B)
 - d. Air quality (Found in Appendix C)
 - e. Geology and soils (Found in Appendix D)
 - f. Waste and materials (Found in Appendix D)
 - g. Noise and vibration (Found in Appendix E)
 - h. Road Drainage, water environment and flooding (Found in Appendix F)
 - i. Biodiversity (Found in Appendix G)
 - j. Physical effects of development and operation (Found in Appendix H)
 - k. Social, economic and land-use considerations (Found in Appendix I)
 - l. Draft Development Consent Order, planning obligations, agreements and adequacy of security (Found in Appendix J)
 - m. The acquisition and temporary possession of land and rights (Found in Appendix J)
 - n. General overarching questions (Found in Appendix J)

2 Responses to the Examining Authority's ExQ1 4

PINS ID	External Stakeholder (where applicable)	Question / Response
ExQ1_Q4.1.1	N/A	<p>Modelled Traffic Effects: Dartford Crossing</p> <p>In terms of the first scheme objective, does the Applicant accept that free-flowing traffic conditions at the Dartford Crossing (i.e. above 85% V/C) will not be achieved in most 2037 modelled scenarios? If yes, does it therefore follow that the scheme would not provide “free-flowing” capacity at Dartford?</p> <p>Response:</p> <p>The Need for the Project [APP-494] sets out the Scheme Objectives and the extent to which the Applicant considers they would be met by the Project (which is that the Applicant considers the Project meets all of the Scheme Objectives).</p> <p>There are three ‘Transport’ scheme objectives, together with community and economic objectives that flow from the intended transport benefits of the Project. The Transport objectives are:</p> <ul style="list-style-type: none"> • <i>To relieve the congested Dartford Crossing and approach roads and improve their performance by providing free-flowing north-south capacity.</i> • <i>To improve the resilience of the Thames crossings and the major road network</i> • <i>To improve safety</i> <p>Section 3.3 of the Need for the Project [APP-494] sets out the authoritative, comprehensive and scheme specific national policy support for the Project for this and other reasons and the principle of constructing the Project to achieve that relief. The Applicant considers, as set out in the Need for the Project that the Project meets the Scheme Objectives. As also set out in Chapter 3 of the Need for the Project, there is policy support for significant road infrastructure development (including the Project) at a national, regional and local level. The principle of providing relief to the Dartford Crossing in this way should not be in dispute.</p> <p>Whether the Project consistently or permanently provides free flowing conditions at the Dartford Crossing is a question of interest raised by Interested Parties but it cannot go to the heart of the case for the Project. Where the scale of demand for crossing the Thames at this location is such that free flowing conditions are not consistently achieved, the Applicant considers that the case for the Project is enhanced, rather than reduced. There is a critical need for the new crossing to respond to the long term build up of demand which has not been responded to by</p>

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		<p>investment in cross river capacity. As such, it is the Applicant's position that the argument that demand is so great that total relief cannot be achieved, cannot logically be used to resist the relief proposed by the Project.</p> <p>The question, of course, also needs to take into account what the crossing experience at the Dartford Crossing would be in 2037, or any other year without the Project. Existing conditions are described in section 4 of the Need for the Project – no party suggests they are acceptable or anything other than a blight on the region with severe consequences for national economic connectivity at a key point in the strategic road network. Current conditions divide economies that should be joined, harm the everyday experience of communities and impose severe inconvenience on the c.150,000 journeys that use the Dartford Crossing on a typical average day (paragraph 4.2.2) – and the many more that don't. The demand for crossing is forecast to increase by 21% in the period 2016-2030 (paragraph. 4.2.33).</p> <p>Of relevance to the first Scheme Objective, the Project would provide relief to the Dartford Crossing, as demonstrated by flows at the Dartford Crossing forecast to be lower in each of the modelled time periods and forecast years than if the Project was not built (see below for more information).</p> <p>The analysis also shows, however, that free flow, north-south capacity would be achieved by the Project. The volume to capacity ratios for the Lower Thames Crossing links are forecast to remain beneath 0.85 in both directions in each of the modelled time periods and forecast years (see below for more information).</p> <p>The Project would provide relief to the Dartford Crossing and its approach roads, as shown in detail by vehicle type within the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522], alongside the forecast volume to capacity ratio for each link. This information is presented for each forecast year:</p> <ul style="list-style-type: none"> • 2030: Table 8.11 and Table 8.12 • 2037: Table 8.32 and Table 8.33 • 2045: Table 8.53 and Table 8.54 • 2051: Table 8.74 and Table 8.75 <p>Over time, traffic at the Dartford Crossing is forecast to increase as a result of background traffic growth, as reflected in the traffic growth factors for future years produced by the Department for Transport. This forecast increase in traffic flows at the Dartford Crossing reflects inherent demand within the region, including an element of suppressed demand (particularly local cross river trips), the release of which would be enabled by the Project.</p>

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		<p>The Applicant agrees that the forecasts of volume to capacity at the Dartford Crossing would be above 85% in most 2037 modelled scenarios. However, this does not undermine the Scheme Objective of providing free flowing north-south capacity by the new A122, and whilst traffic flows are forecast to increase, the Project would continue to provide forecast improvement to journey times at the Dartford Crossing for 2037 and beyond.</p> <p>Annex C of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package Annexes [APP-523] provides detailed link journey time and speed comparisons for links on the approach to and on the Dartford Crossing. This shows that the Project would result in faster journeys in both directions, in each modelled time period, for each forecast year (2030, 2037, 2045 and 2051) at the Dartford Crossing than if the Project was not built (the Do-Minimum scenario).</p>
ExQ1_Q4.1.2	N/A	<p>Modelled Traffic Effects: Covid</p> <p>Concerns have been raised that the Lower Thames Area Model (LTAM) used to assess the impacts of the LTC is based on out-of-date data which takes no account of a reduction in traffic flows since the Covid-19 pandemic and reflected in the latest National Trip End Model (NTEM) forecasts (v8.0). In light of the foregoing, does the Applicant consider that LTAM remains reflective of current network conditions and is any further sensitivity testing proposed to deal with the latest NTEM datasets?</p> <p>Response:</p> <p>The Applicant considers that the Lower Thames Area Model (LTAM) represents a robust representation of travel patterns in the area.</p> <p>The Applicant does not agree that the age of the baseline data would reduce the reliability of the model. The Applicant notes that the last 'pre-COVID-19' year is 2019, which is only three years after the LTAM base year. Traffic levels have returned after COVID-19, and the pattern of travel on the highway network in the area remains similar to that observed in 2016.</p> <p>The Applicant has procured datasets from TomTom for 2019 and 2023, which provide observed data from vehicles fitted with GPS units. This data covers a cordon of 15km within the Dartford Crossing. Using that data, the Applicant has checked that the pattern of trips using the Dartford Crossing is similar to the pattern shown in 2016 baseline data used in the development of the LTAM. The Applicant is satisfied that it shows that traffic patterns were the same in 2023 as in 2019, and in 2019 they were the same as in the Applicant's 2016 base model.</p>

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		<p>The Applicant has provided updated modelling information to reflect the release of NTEM 8 within NTEM 8 and Common Analytical Scenarios [REP3-145]. The Applicant would note that the NTEM 8 growth factors do not include the effects of the COVID-19 pandemic, as noted within paragraph B.2.5 of TAG Unit M4¹. The Applicant is therefore firmly of the view that further modelling using the LTAM is not required.</p>
ExQ1_Q4.1.3	N/A	<p>Modelled Traffic Effects: Transport Analysis Guidance Unit M4</p> <p>What are the implications of the recently published Transport Analysis Guidance (TAG) “TAG Unit M4 - Forecasting and Uncertainty” for the modelling work already undertaken and does the Applicant intend to carry out any further work in response to the guidance, for example it is noted the ‘p’ value has been revised from 2.5 to 4 %? Please identify any other areas where the new guidance could potentially affect the Applicant’s modelling work.</p> <p>Response:</p> <p>At Deadline 3, the Applicant submitted NTEM 8 and Common Analytical Scenarios [REP3-145] which set out four areas of change:</p> <ul style="list-style-type: none"> • Published traffic growth factors known as NTEM 8, and commonly referred to as TEMPro 8², definitively released by the Department of Transport (DfT) in November 2022. • Release of the traffic growth forecasts for each of the Common Analytical Scenarios (CAS) published by DfT in November 2022³ which enabled traffic forecasts for these to be produced using the Lower Thames Area Model (LTAM). • National Road Traffic Projections 2022⁴ published DfT which provided revised traffic forecasts for goods vehicles in December 2022.

¹ Department for Transport (2023). Transport Analysis Guidance Unit M4: Forecasting and Uncertainty. Accessed September 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1161977/tag-unit-m4-forecasting-and-uncertainty.pdf.

² Department for Transport (2022). Trip End Model Presentation Program (TEMPro). Version 8. Accessed August 2023. <https://www.gov.uk/government/publications/tempo-downloads>

³ Department for Transport (2023). Transport Analysis Guidance Uncertainty Toolkit. Accessed August 2023. <https://www.gov.uk/government/publications/tag-uncertainty-toolkit>

⁴ Department for Transport (2022). National Road Traffic Projections 2022. Accessed August 2023. <https://www.gov.uk/government/publications/national-road-traffic-projections>

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		<ul style="list-style-type: none"> • Effect of the Written Ministerial Statement in March 2023⁵ which announced a rephrasing of construction by two years, with a revised opening date of 2032. The LTAM was used to produce traffic forecasts for a 2032 opening date. <p>That document provides an update to the Applicant’s modelling, reflecting the majority of the changes within the updated version of TAG Unit M4⁶ (see below for analysis on the revision of the ‘p’ value).</p> <p>The report concluded the following:</p> <ul style="list-style-type: none"> • The comparisons of the CAS presented show that the variation from the core scenario presented within the Development Consent Order (DCO) application would be small. • For both the opening and design years, in each modelled time period and for each CAS, the Project would provide relief to the Dartford Crossing. • Therefore, overall, it is considered that the need for the Project (as set out in Need for the Project [APP-494]) remains valid as the Project would provide relief to the Dartford Crossing in every scenario. <p>The Applicant does not consider that further modelling work is required as a result of the update to TAG Unit M4, given the analysis presented in NTEM 8 and Common Analytical Scenarios [REP3-145].</p> <p><u>Revision to ‘p’ value</u></p> <p>In December 2022, DfT also published revised ‘p’ values, increasing the highway ‘p’ values from 2.5 to 4.0. This increase was to reflect the range in the number of trips in trip matrices from the various CAS. The high growth scenario (which is different from the high economy scenario) uses trip matrices where a proportion of the base year demand is added to the trip matrices from the core scenario. The proportion of base year demand to be added is ‘p’ times the square root of the number of years between the base year and the model year. With the LTAM modelled years of 2016 and 2045 (the design year), the factor applied is 4 times the square root of 29 (2045-2016). The Applicant notes that the ‘p’ value tests are intended to be used where the full set of CAS are no run.</p> <p>The results of the high and low growth scenarios are as shown in Annex A.</p>

⁵ UK Parliament (2023). Transport Update: Statement made on 9 March 2023, Statement UIN HCWS625. Accessed August 2023. <https://questions-statements.parliament.uk/written-statements/detail/2023-03-09/hcws625>

⁶ Department for Transport (2023). Transport Analysis Guidance Unit M4: Forecasting and Uncertainty. Accessed September 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1161977/tag-unit-m4-forecasting-and-uncertainty.pdf

PINS ID	External Stakeholder (where applicable)	Question / Response
ExQ1_Q4.1.4	N/A	<p>Modelled Traffic Effects: TAG Unit M4 Scenario-based Assessments</p> <p>Various parties have queried the Applicant's use of low and growth scenarios instead of a scenario-based assessments as advocated in the latest Department for Transport (DfT) guidance of modelling uncertainty. How does the Applicant respond to those criticisms and is it proposing to undertake any additional modelling to take account of the latest guidance?</p> <p>Response:</p> <p>The Applicant undertook its modelling using the version of TAG Unit M4⁷ that was extant at the time of undertaking the analysis, and at submission of the DCO application in October 2022. This version included guidance relating to the low and high growth sensitivity tests that the Applicant has undertaken (these are reported on in Section 8.6 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522]).</p> <p>TAG Unit M4⁸, which included the Common Analytical Scenarios, was not released until November 2022, after the Applicant submitted the DCO application.</p> <p>At Deadline 3, the Applicant submitted NTEM 8⁹ and Common Analytical Scenarios [REP3-145] which presented modelling outputs as a result of four areas of change:</p> <ul style="list-style-type: none"> • Published traffic growth factors known as NTEM 8, and commonly referred to as TEMPro 8, definitively released by the Department of Transport (DfT) in November 2022. • Release of the Transport Analysis Guidance (TAG) Uncertainty Toolkit¹⁰ by DfT in November 2022 which included Common Analytical Scenarios which enabled traffic forecasts for these to be produced using the Lower Thames Area Model (LTAM).

⁷ Department for Transport (2019). TAG Unit M4 forecasting and uncertainty. <https://webarchive.nationalarchives.gov.uk/ukgwa/20220507072020/https://www.gov.uk/government/publications/tag-unit-m4-forecasting-and-uncertainty>

⁸ Department for Transport (2023). TAG Unit M4 forecasting and uncertainty. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1161977/tag-unit-m4-forecasting-and-uncertainty.pdf

⁹ Department for Transport (2023). National Trip End Model (NTEM). <https://www.data.gov.uk/dataset/11bc7aaf-ddf6-4133-a91d-84e6f20a663e/national-trip-end-model-ntem>

¹⁰ Department for Transport (2022). TAG Uncertainty Toolkit. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1164846/tag-uncertainty-toolkit.pdf

PINS ID	External Stakeholder (where applicable)	Question / Response
		<ul style="list-style-type: none"> • Published DfT revised traffic forecasts for goods vehicles in December 2022¹¹. • Effect of the Written Ministerial Statement in March 2023¹² which announced a rephasing of construction by two years, with an opening date of 2032. The LTAM was used to produce traffic forecasts for a 2032 opening date (and a design year of 2047). <p>The report presented:</p> <ul style="list-style-type: none"> • Forecast cross-river traffic forecasts • Comparison of cross-river traffic forecasts (in both the opening and design years) between the flows contained within the core scenario presented in the DCO application (TEMPro 7.2) and those forecast using TEMPro 8 • Comparison of the variation in cross-river traffic forecasts for each of the Common Analytical Scenarios (CAS). <p>Details of each of the CAS are set out in Table 2.1 of NTEM 8 and Common Analytical Scenarios [REP3-145]. In all time periods and for all of the CAS, the change in flows at the Dartford Crossing, with the Project, is less than 9.5%. The greatest reduction is in the behavioural change scenario where flows reduce by 9.1% in the 2047 average inter-peak and evening peak hour. The greatest increase is in the high economy scenario where traffic flows increase by 8.1% in the 2047 average inter-peak hour.</p> <p>The percentage change in traffic flows at the Lower Thames Crossing with each of the CAS compared to the TEMPro 8 core scenario is also less than 9% for all but three modelled hours in two scenarios. The three largest impacts are for the behavioural change scenario in the 2047 average inter-peak hour where flows reduce by 12.6% and the mode-balanced decarbonisation scenario reduces by 9%. In the high economy scenario in the 2047 average inter-peak hour, the traffic flows increase by 10.2%.</p> <p>The report concluded the following:</p> <ul style="list-style-type: none"> • The comparisons of the CAS presented show that the variation from the core scenario presented within the DCO application would be small. • For both the opening and design years, in each modelled time period, and for each CAS, the Project would provide relief to the Dartford Crossing.

¹¹ Department for Transport (2022), National Road Traffic Projections, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1123542/national-road-traffic-projections-2022.pdf

¹² UK Parliament (2023). Transport Update: Statement made on 9 March 2023, Statement UIN HCWS625. Accessed August 2023. <https://questions-statements.parliament.uk/written-statements/detail/2023-03-09/hcws625>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<ul style="list-style-type: none"> Overall therefore, it is considered that the need for the Project (as set out in Need for the Project [APP-494]) is unaffected as the Project would provide relief to the Dartford Crossing in every scenario. The Applicant considers that the additional modelling reported within NTEM 8 and Common Analytical Scenarios [REP3-145] takes sufficient account of the latest guidance and is not proposing to undertake further modelling within the Project's transport model.
ExQ1_Q4.1.5	N/A	<p>Modelled Traffic Effects: Large and Heavy Goods Vehicles</p> <p>Has the Applicant considered the latest forecasts for large (LGVs) and heavy (HGVs) goods vehicles contained in the National Road Traffic Projections (NRTP2022)? Do these latest projections materially affect the Applicant's traffic assessments.</p> <p>Response:</p> <p>The Applicant undertook the assessment as presented in the application using the Road Traffic Forecasts¹³ which were the latest projections available at the time of submission (October 2022), as set out in Section 5.2 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522]. The National Road Traffic Projections 2022 (NRTP22) was published by the Department for Transport (DfT) in December 2022¹⁴.</p> <p>At Deadline 3, the Applicant submitted NTEM 8 and Common Analytical Scenarios [REP3-145] which sets out a series of different model run outputs that that have been prepared using the Lower Thames Area Model (LTAM) incorporating updates and reflecting different scenarios published by the DfT in November 2022. It is intended to demonstrate the sensitivity of the model to the updated guidance published since the preparation of the traffic forecasts reported in the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522]. It records the model runs undertaken using the revised traffic growth factors, known as TEMPro 8, definitively released by the DfT in November 2022¹⁵.</p> <p>The report details outputs for four areas of change:</p>

¹³ Department for Transport (2018). Road Traffic Forecasts 2018. Accessed August 2023. <https://www.gov.uk/government/publications/road-traffic-forecasts-2018>

¹⁴ Department for Transport (2022). National Road Traffic Projections 2022. Accessed August 2023. <https://www.gov.uk/government/publications/national-road-traffic-projections>

¹⁵ Department for Transport (2022). Trip End Model Presentation Program (TEMPro). Version 8. Accessed August 2023.

<https://www.gov.uk/government/publications/tempro-downloads>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<ul style="list-style-type: none"> • Published traffic growth factors known as NTEM 8, and commonly referred to as TEMPro 8, definitively released by the DfT in November 2022. • Release of the Transport Analysis Guidance (TAG) Uncertainty Toolkit by DfT in November 2022¹⁶ which included Common Analytical Scenarios (CAS) which enabled traffic forecasts for these to be produced using the LTAM. • Published DfT revised traffic forecasts for goods vehicles (NRTP22) in December 2022. • Effect of the Written Ministerial Statement in March 2023¹⁷ which announced a rephrasing of construction by two years, with a revised opening date of 2032. The LTAM was used to produce traffic forecasts for a 2032 opening date. <p>The report presented:</p> <ul style="list-style-type: none"> • the forecast cross-river traffic forecasts • a comparison of cross-river traffic forecasts (in both the opening and design years) between the flows contained within the core scenario presented in the DCO application (TEMPro 7.2) and those forecast using TEMPro 8 • a comparison of the variation in cross river traffic forecasts for each of the CAS <p>The report concluded that the change from an opening year of 2030 and TEMPro 7.2 to an opening year of 2032 and TEMPro 8 (which included NRTP22) results in a variance in PCU flows at both the Dartford Crossing and Lower Thames Crossing of less than 4%</p> <p>On the basis of the assessment undertaken in NTEM 8 and Common Analytical Scenarios [REP3-145] the Applicant's consideration is that the update to the National Road Traffic Projections as contained in NRTP22 do not have a material effect on the traffic assessments as presented in the DCO application.</p>
ExQ1_Q4.1.6	N/A	<p>Modelled Traffic Effects: Accuracy of the Lower Thames Area Model</p> <p>It has been suggested that the accuracy of the LTAM could have been improved by validating the model against turning counts at key junctions. Was this approach considered by the Applicant and is there a requirement within TAG for such checks?</p>

¹⁶ Department for Transport (2023). Transport Analysis Guidance Uncertainty Toolkit. Accessed August 2023. <https://www.gov.uk/government/publications/tag-uncertainty-toolkit>

¹⁷ UK Parliament (2023). Transport Update: Statement made on 9 March 2023, Statement UIN HCWS625. Accessed August 2023. <https://questions-statements.parliament.uk/written-statements/detail/2023-03-09/hcws625>

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		<p>Response:</p> <p>The approach adopted to using turning count data in the development of the LTAM is in line with the guidelines set out in Transport Analysis Guidance (TAG) Unit M3.1¹⁸. The data has primarily been used to diagnose if there were significant problems at key junctions.</p> <p>The overall comparison statistics show that, for cars and all vehicles combined, the LTAM performs well in the AM and PM peaks and better in the inter-peak. The TAG criteria are not achieved in all of the time periods, but this is in line with the expectations in TAG that turning movement flow validation will be much more difficult to achieve than link flow validation.</p> <p>The Combined Modelling and Appraisal Report Appendix B: Transport Model Package [APP-520] sets out how the Applicant has built, calibrated and validated the Lower Thames Area Model (LTAM) for use in assessing the Project.</p> <p>TAG Unit M3.1 – Highway Assignment Modelling</p> <p>This provides guidance in a number of paragraphs on how Turning Movement Counts should be used during model development. These are repeated below for ease of reference.</p> <p><u>Paragraph 3.3.11</u></p> <p><i>The validation criteria and guidelines for link flows and turning movements are defined in Table 1.</i></p> <p>Table 1 Link Flow and Turning Movement Validation Criteria and Guidelines</p> <table border="1" data-bbox="595 970 2069 1264"> <thead> <tr> <th data-bbox="595 970 745 1031">Criteria</th> <th data-bbox="745 970 1832 1031">Description of Criteria</th> <th data-bbox="1832 970 2069 1031">Guideline</th> </tr> </thead> <tbody> <tr> <td data-bbox="595 1031 745 1209">1</td> <td data-bbox="745 1031 1832 1209"> <i>Individual flows within 100 veh/hr of counts for flows less than 700 veh/hr</i> <i>Individual flows within 15% of counts for flows from 700 to 2,700 veh/hr</i> <i>Individual flows within 400 veh/hr of counts for flows more than 2,700 veh/hr</i> </td> <td data-bbox="1832 1031 2069 1209"><i>> 85% of cases</i></td> </tr> <tr> <td data-bbox="595 1209 745 1264">2</td> <td data-bbox="745 1209 1832 1264"><i>GEH < 5 for individual flows</i></td> <td data-bbox="1832 1209 2069 1264"><i>> 85% of cases</i></td> </tr> </tbody> </table>	Criteria	Description of Criteria	Guideline	1	<i>Individual flows within 100 veh/hr of counts for flows less than 700 veh/hr</i> <i>Individual flows within 15% of counts for flows from 700 to 2,700 veh/hr</i> <i>Individual flows within 400 veh/hr of counts for flows more than 2,700 veh/hr</i>	<i>> 85% of cases</i>	2	<i>GEH < 5 for individual flows</i>	<i>> 85% of cases</i>
Criteria	Description of Criteria	Guideline									
1	<i>Individual flows within 100 veh/hr of counts for flows less than 700 veh/hr</i> <i>Individual flows within 15% of counts for flows from 700 to 2,700 veh/hr</i> <i>Individual flows within 400 veh/hr of counts for flows more than 2,700 veh/hr</i>	<i>> 85% of cases</i>									
2	<i>GEH < 5 for individual flows</i>	<i>> 85% of cases</i>									

¹⁸ Department for Transport (2020b). TAG Unit M3.1 Highway Assignment Modelling. Accessed August 2023. <https://www.gov.uk/government/publications/webtag-tag-unit-m3-1-highway-assignment-modelling>

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		<p><u>Paragraph 3.3.12</u></p> <p><i>‘With regard to flow validation, the following should be noted:</i></p> <ul style="list-style-type: none"> <i>• the above criteria should be applied to both link flows and turning movements</i> <i>• the guideline may be difficult to achieve for turning movements</i> <i>• the comparisons should be presented for cars and all vehicles but not for light and other goods vehicles unless sufficiently accurate counts have been obtained</i> <i>• the comparisons should be presented separately for each modelled period</i> <i>• it is recommended that comparisons using both measures are reported in the model validation report’</i> <p><u>Paragraph 4.2.5</u></p> <p><i>‘Turning movement counts should only be used as constraints in matrix estimation if they have been derived from both MCCs [Manual Classified Counts] and ATCs. In the absence of ATCs [Automatic Traffic Counts], turning movement counts should be used mainly as a diagnostic during model calibration. Alternatively, ANPR [Automatic Number Plate Recognition] and video counts should provide sufficient accuracy.’</i></p> <p><u>Paragraph 9.3.2</u></p> <p><i>‘Turning movements at key junctions should also be validated by time period. However, it is rare that turning movements will have been counted using automatic methods over a number of days; most likely, the available or affordable counts will be single day MCCs. For this reason alone, turning movements may not validate to the standards achieved for link flows. Given the 95% confidence intervals usually associated with LGV and HGV counts, it is unlikely that it will be sensible to validate turning movements by vehicle type. Nevertheless, modelled turning flows and counts should be compared by time period and assessed using the link flow criteria and guidelines given in Table 2.’</i></p> <p>Approach taken by the Applicant</p> <p>For the development of the LTAM, a series of one-day Manual Classified Counts (MCCs) were collected at key junctions. The primary use of this count data was to inform microsimulation model development at those junctions. However, the MCCs were also used in the development of the LTAM. In total, there were 38 MCCs used in the development of the LTAM and these had in total 317 individual turns.</p>

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		<p>In absence of two-week ATC data at the MCC locations, the data was primarily used as a diagnostic check on the model outputs. This is in line with TAG as stated above under paragraph 4.2.5. The one-day count data was processed to produce observed flows for all turning movements at each individual junction. Modelled turning movement flows were extracted from the LTAM and these were compared with the observed count data. The criteria set out in Table 2 above were then used to assess the performance of the LTAM.</p> <p>Any major discrepancies were then used as part of an iterative process to check the coding of the junction in the LTAM to ascertain if there were errors which were resulting in the discrepancy. Any issues identified in the LTAM were rectified, and updated model outputs were produced which were again compared against the observed count data.</p> <p>The table below presents high-level summary statistics from the Base Year Model (N108R1).</p> <p style="text-align: center;">Table 2 High-level summary statistics from the Base Year Model (N108R1)</p> <table border="1" data-bbox="598 735 2069 1391"> <thead> <tr> <th data-bbox="598 735 799 815">Time period</th> <th data-bbox="806 735 1039 815">Vehicle type</th> <th data-bbox="1046 735 1229 815">Number of turns</th> <th data-bbox="1236 735 1653 815">Number of turns that achieve criteria</th> <th data-bbox="1659 735 2069 815">Percentage of turns that achieve criteria</th> </tr> </thead> <tbody> <tr> <td data-bbox="598 820 799 1007" rowspan="4">AM peak</td> <td data-bbox="806 820 1039 863">Car</td> <td data-bbox="1046 820 1229 863">317</td> <td data-bbox="1236 820 1653 863">235</td> <td data-bbox="1659 820 2069 863">74%</td> </tr> <tr> <td data-bbox="806 868 1039 911">LGV</td> <td data-bbox="1046 868 1229 911">317</td> <td data-bbox="1236 868 1653 911">310</td> <td data-bbox="1659 868 2069 911">98%</td> </tr> <tr> <td data-bbox="806 916 1039 959">HGV</td> <td data-bbox="1046 916 1229 959">317</td> <td data-bbox="1236 916 1653 959">315</td> <td data-bbox="1659 916 2069 959">99%</td> </tr> <tr> <td data-bbox="806 963 1039 1007">All vehicles</td> <td data-bbox="1046 963 1229 1007">317</td> <td data-bbox="1236 963 1653 1007">207</td> <td data-bbox="1659 963 2069 1007">65%</td> </tr> <tr> <td data-bbox="598 1011 799 1198" rowspan="4">Inter peak</td> <td data-bbox="806 1011 1039 1054">Car</td> <td data-bbox="1046 1011 1229 1054">317</td> <td data-bbox="1236 1011 1653 1054">281</td> <td data-bbox="1659 1011 2069 1054">89%</td> </tr> <tr> <td data-bbox="806 1059 1039 1102">LGV</td> <td data-bbox="1046 1059 1229 1102">317</td> <td data-bbox="1236 1059 1653 1102">315</td> <td data-bbox="1659 1059 2069 1102">99%</td> </tr> <tr> <td data-bbox="806 1107 1039 1150">HGV</td> <td data-bbox="1046 1107 1229 1150">317</td> <td data-bbox="1236 1107 1653 1150">315</td> <td data-bbox="1659 1107 2069 1150">99%</td> </tr> <tr> <td data-bbox="806 1155 1039 1198">All vehicles</td> <td data-bbox="1046 1155 1229 1198">317</td> <td data-bbox="1236 1155 1653 1198">265</td> <td data-bbox="1659 1155 2069 1198">84%</td> </tr> <tr> <td data-bbox="598 1203 799 1391" rowspan="4">PM peak</td> <td data-bbox="806 1203 1039 1246">Car</td> <td data-bbox="1046 1203 1229 1246">317</td> <td data-bbox="1236 1203 1653 1246">231</td> <td data-bbox="1659 1203 2069 1246">73%</td> </tr> <tr> <td data-bbox="806 1251 1039 1294">LGV</td> <td data-bbox="1046 1251 1229 1294">317</td> <td data-bbox="1236 1251 1653 1294">312</td> <td data-bbox="1659 1251 2069 1294">98%</td> </tr> <tr> <td data-bbox="806 1299 1039 1342">HGV</td> <td data-bbox="1046 1299 1229 1342">317</td> <td data-bbox="1236 1299 1653 1342">316</td> <td data-bbox="1659 1299 2069 1342">100%</td> </tr> <tr> <td data-bbox="806 1347 1039 1391">All vehicles</td> <td data-bbox="1046 1347 1229 1391">317</td> <td data-bbox="1236 1347 1653 1391">219</td> <td data-bbox="1659 1347 2069 1391">69%</td> </tr> </tbody> </table>	Time period	Vehicle type	Number of turns	Number of turns that achieve criteria	Percentage of turns that achieve criteria	AM peak	Car	317	235	74%	LGV	317	310	98%	HGV	317	315	99%	All vehicles	317	207	65%	Inter peak	Car	317	281	89%	LGV	317	315	99%	HGV	317	315	99%	All vehicles	317	265	84%	PM peak	Car	317	231	73%	LGV	317	312	98%	HGV	317	316	100%	All vehicles	317	219	69%
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ExQ1_Q4.1.7	N/A	<p>Modelled Traffic Effects: Lower Thames Area Model and the Local Road Network</p> <p>It is noted that LTAM uses an AM peak of 0700-0800 whereas the AM peak on the local road network (LRN) is 0800-0900. What are the possible implications of this in terms of the traffic forecasts particularly at those locations where LTC interfaces with the LRN?</p> <p>Response:</p> <p>The Applicant’s approach to how the modelled time periods were selected is set out in Section 3.3 of Combined Modelling and Appraisal Report Appendix B: Transport Model Package [APP-520]. This sets out the analysis of Dart Charge transaction data and TRIS count data (permanent traffic count sites, primarily located on the strategic road network) which identified that the morning hour of 07:00 – 08:00 represented the morning peak hour on the strategic road network. It is important to model the peak hour for cross-river traffic in order to inform the design of the Project.</p> <p>On the local road network, the morning peak hour is 08:00 – 09:00 so there is no single hour that would represent the peak across the fully modelled area of the LTAM.</p> <p>In the evening, the peak hour on the strategic road network and for cross river traffic is 17:00 – 18:00 which is the same hour as the evening peak hour on the local road network.</p> <p>In line with TAG¹⁹, the Applicant has also undertaken forecasts on the network across three forecast years (2030, 2045 and 2051), as well as a high growth sensitivity test. This range of testing has enabled the Applicant to consider the performance of the Project and the suitability of the proposed design in a range of traffic conditions, and its conclusion is that it performs acceptably.</p> <p>As part of the Localised Traffic Modelling [REP3-126], and in particular Appendices B [REP1-188], C [REP1-189], D [REP1-190], E [REP1-191], I [REP3-128], J [REP3-129] and K [REP3-130] relating to local junctions within Thurrock, the Applicant agreed with Thurrock Council, as part of the model development process, that these models would examine the 08:00 – 09:00 hour, but that it was not necessary to undertake this analysis network wide. Appendix K [REP3-130] (which reports on the A13 Five Bells and Pitsea Hall junctions) relates to junctions within Essex.</p> <p>The Applicant provided funding for Kent County Council to undertake an assessment using the cordon of the LTAM provided to the authority to develop an assessment for the 08:00 – 09:00 hour. This analysis did not present materially different conclusions to that presented by the Applicant within the DCO Application.</p>

¹⁹ Department for Transport (2022). Transport Analysis Guidance. <https://www.gov.uk/guidance/transport-analysis-guidance-tag>

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ExQ1_Q4.1.8	N/A	<p>Modelled Traffic Effects: Thames Freeport Can the Applicant explain how it has modelled the impact of the Thames Freeport, the implications for the LTC and also why the results of the work have not been shared with Port of Tilbury London Limited (PoTLL)?</p> <p>Response: <u>Applicant's approach to modelling and data sharing with Port of Tilbury London Limited</u> The Applicant's transport model – the Lower Thames Area Model (LTAM) – has been built following the Department for Transport's Transport Analysis Guidance (TAG)²⁰. In relation to the formulation of the core scenario, the Applicant has specifically followed TAG Unit M4: Forecasting and Uncertainty²¹, as detailed within Chapter 4 of the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522].</p> <p>The growth within the core scenario is capped within the LTAM on a regional basis in line with Department for Transport traffic forecasts, as published via TEMPro 7.2. This growth is then adjusted spatially on a local basis to account for developments within the Project's Uncertainty Log (set out in Annex A of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package Annexes [APP-523]).</p> <p>The Uncertainty Log is compiled using the classification of future inputs set out within Table A2 of TAG Unit M4. This sets out four categories of probability. Only those classified as “near certain” or “more than likely” are included within the core scenario; these are those that are under construction, with a submitted planning application or with planning permission.</p> <p>The Uncertainty Log covers the period from 2016 to 30 September 2021, when it was finalised. At this time, the entirety of the Thames Freeport was not considered as having a sufficient level of certainty to be included within the Uncertainty Log, as it was neither under construction, had been granted planning consent (classed as “near certain”) or was the subject of a planning application or (classed as “more than likely”).</p> <p>While the government confirmed later in 2021 that the Thames Freeport had been given permission to commence operations (meaning that the designated sites had eligibility for certain tax and customs relief), specific details of all elements of the proposals were not in the public domain.</p>

²⁰ Department for Transport (2022). Transport Analysis Guidance (TAG). Accessed August 2023. <https://www.gov.uk/guidance/transport-analysis-guidance-tag>

²¹ Department for Transport (2019). TAG Unit M4 Forecasting and Uncertainty. Accessed August 2023.

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PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>The Thames Freeport is made up of designated tax and custom sites at the following locations, also shown on Plate 1:</p> <ul style="list-style-type: none"> • Ford Dagenham Estate • Port of Tilbury • London Gateway Port <p style="text-align: center;">Plate 1 Location of Thames Freeport Tax and Custom sites²²</p>

²² Data from: <https://www.gov.uk/government/publications/maps-of-thames-freeport-tax-sites> and <https://www.gov.uk/government/publications/map-of-thames-freeport-customs-site> (Accessed August 2023)

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>Within the Uncertainty Log, the Applicant has included applications/consents for development at the Ford Dagenham Estate.</p> <p>The Applicant has set out, from paragraphs 5.2.5 of the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522], its approach to growth at the Port of Tilbury and London Gateway Port.</p> <p>As such, some elements of the Thames Freeport are explicitly included within the Applicant’s transport model. However, as stated above, not all of the specific proposals of the Thames Freeport are in the public domain, and in September 2021 Port of Tilbury London Limited (PoTLL) provided the Applicant with some details of future growth plans. This was not accompanied by details of necessary interventions on the highway network that would be required to make the proposals acceptable. As such, the Applicant informed PoTLL that without details of the necessary highway interventions that PoTLL considered adequate for making the development proposals acceptable, assessment of solely the developments transport demand would not represent a realistic forecast. In addition, the Applicant advised PoTLL that it would not be appropriate for the Applicant to determine the scale and nature of these interventions. The Applicant has not yet received details of the highway interventions that PoTLL would propose to support this proposed development.</p> <p>Notwithstanding the points above, the Applicant prepared a test model run using the information provided by PoTLL on proposed developments in the Tilbury Tax Site, but determined that the outputs did not represent the traffic flows appropriately due to constraints on the capacity of the road network connecting to the sites.</p> <p>The Applicant has subsequently shared model outputs with PoTLL for the test described above. This was not accompanied by reporting as has been issued for other localised traffic modelling undertaken by the Applicant within the appendices to Localised Traffic Modelling [REP3-126].</p> <p><u>Implications for the Project</u></p> <p>The Applicant considers that its approach is in line with TAG and paragraphs 4.6 and 4.7 of the National Policy Statement for National Networks²³. As with any transport forecast, there will always be residual uncertainty as different developments come forward (or do not proceed as planned), and as such the forecast simply represents a consistent basis for an applicant to undertake the necessary assessments to support their application.</p> <p>As developments within the Thames Freeport come forward, these would, as is standard, be accompanied by their own assessments as part of the appropriate decision making processes. The acceptability of these developments</p>

²³ Department for Transport (2014). National Policy Statement for National Networks.

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		and the highway interventions that accompany them will be determined by the relevant decision-making authority in consultation with the local highway authority and National Highways. Further discussion of uncertainty is provided in the Applicant's Post-event submissions, including written submission of oral comments, for ISH4 [Document Reference 9.84].
ExQ1_Q4.1.9	N/A	<p>Modelled Traffic Effects: Traffic Flow Simulation: Orsett Cock</p> <p>Given the use of 'actual' rather than 'demand' flows and also the omission of Freeport traffic from the Vissim modelling, is it fair to say that the Applicant's microsimulation modelling of the Orsett Cock roundabout submitted at Deadline 1 could represent an underestimation of flows through the roundabout?</p> <p>Response:</p> <p>The Applicant does not agree that it is fair to say that the microsimulation modelling of the Orsett Cock junction submitted at Deadline 1 [REP1-188] contains an underestimation of flows.</p> <p>Actual flows are used within the microsimulation model as these represent the flows that are able (from the forecasts undertaken by the Applicant's strategic transport model) to reach the extents of the network within the microsimulation model within the relevant time period. Use of demand flows would reflect an unrealistic level of traffic demand, as in reality this traffic would be held up at other locations on the wider network where there is congestion. This approach is standard practice when extracting flows from a larger strategic transport model for use in a microsimulation model, especially where congestion exists in the wider network in the scenarios and time periods being modelled, and when examining a busy network in the microsimulation model.</p> <p>The Applicant has provided a detailed response in relation to the Thames Freeport in response to ExQ1_Q4.1.8, but the Applicant does not consider that it has made an omission in this regard.</p>
ExQ1_Q4.1.10	N/A	<p>Modelled Traffic Effects: Traffic Flow Simulation: Orsett Cock</p> <p>If the traffic impacts at Orsett Cock roundabout have not been fully understood and/or modelled, what are the wider implications for the Applicant's Transport Assessment?</p> <p>Response:</p> <p>The Applicant considers that the Lower Thames Area Model (LTAM), which has been produced in line with the Department for Transport's Transport Analysis Guidance, provides a robust basis on which to forecast the impacts of the Project on the highway network, including at the Orsett Cock junction.</p>

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		<p>The Applicant is continuing to engage with Thurrock Council and DP World London Gateway with respect to their concerns relating to the modelling that the Applicant has undertaken using the LTAM and using VISSIM. The Applicant's response on the role of different modelling approaches is set out in Localised Traffic Modelling [REP3-126].</p> <p>The Applicant does not consider that there are any wider implications for the Transport Assessment [REP3-112 to REP3-116] as a result of concerns raised by interested parties at this location.</p>
ExQ1_Q4.1.11	N/A	<p>Modelled Traffic Effects: Lower Thames Area Model and Development Plan Proposals</p> <p>A number of local authorities have raised concerns that the LTAM Core Scenario does not take sufficient account of planned future growth set out in existing and emerging development plans, how does the Applicant respond?</p> <p>Response:</p> <p>The Applicant's transport model – the Lower Thames Area Model (LTAM) – has been built following the Department for Transport's Transport Analysis Guidance (TAG)²⁴. In relation to the formulation of the core scenario, the Applicant has specifically followed TAG Unit M4: Forecasting and Uncertainty²⁵, as detailed within Chapter 4 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522].</p> <p>The growth within the core scenario is capped within the LTAM on a regional basis in line with Department for Transport traffic forecasts, as published via TEMPro 7.2. This growth is then adjusted spatially on a local basis to account for developments within the Project's Uncertainty Log (set out in Annex A of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package Annexes [APP-523]).</p> <p>The Uncertainty Log is compiled using the classification of future inputs set out within Table A2 of TAG Unit M4. This sets out four categories of probability. Only those classified as 'near certain' or 'more than likely' are explicitly included within the core scenario – these are those that are under construction, with a submitted planning application or with planning permission.</p> <p>Growth set out within either existing or emergent development plans is classified as 'reasonably foreseeable', and TAG Unit M4 states that this growth should be '<i>excluded from the core scenario</i>'.</p>

²⁴ Department for Transport (2013). Transport Analysis Guidance (TAG). Accessed August 2023. <https://www.gov.uk/guidance/transport-analysis-guidance-tag>

²⁵ Department for Transport (2019). TAG Unit M4 Forecasting and Uncertainty. Accessed August 2023.

<https://webarchive.nationalarchives.gov.uk/ukgwa/20220507072020/https://www.gov.uk/government/publications/tag-unit-m4-forecasting-and-uncertainty>

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		<p>In line with TAG, the Applicant has developed and presented the outputs from both a low and high growth scenario. These have been produced in line with TAG Unit M4 and as set out in Section 8.6 of the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522], with outputs (providing outputs to economic and operational assessments, and a series of flow change plots) set out in Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package Annexes [APP-523]. Given this, as well as both the spatial and temporal extents of the Uncertainty Log, the Applicant considers it has undertaken a robust assessment in line with guidance that states that growth within (existing or emergent) development plans should be excluded from the core scenario.</p> <p>The Applicant has provided consideration of wider growth elsewhere within the Development Consent Order (DCO) application, including:</p> <ul style="list-style-type: none"> • Planning Statement [APP-495], Section 7.11: Development plan policy and Section 7.14: Other major developments • Environmental Statement Chapter 16: Cumulative Effects Assessment [APP-154] • Interrelationship with other Nationally Significant Infrastructure Projects and Major Development Schemes [APP-550]
ExQ1_Q4.1.15	Brentwood Council	<p>Modelled Traffic Effects: Lower Thames Area Model and Future Development Proposals</p> <p>Concerns have been raised regarding future development that has been excluded from LTAM’s core scenario. To what extent are these concerns addressed by the Applicant’s high growth scenario which assumes that travel demand will exceed current government forecasts in TEMPro.</p> <p>Response:</p> <p>The Applicant has responded with regards to concerns that future development has been excluded from the Lower Thames Area Model (LTAM) core scenario in its answer to ExQ1_Q4.1.11.</p> <p>The Applicant has undertaken a high growth sensitivity test as set out in Transport Analysis Guidance (TAG) Unit M4²⁶. This has been developed adding a proportion of the base year traffic to the demand from the core scenario. The calculation is set out in Section 8.6 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522]. Section 8.6 also presents details of how the low growth test has been derived.</p>

²⁶ Department for Transport (2019). TAG Unit M4 Forecasting and Uncertainty. Accessed August 2023.

<https://webarchive.nationalarchives.gov.uk/ukgwa/20220507072020/https://www.gov.uk/government/publications/tag-unit-m4-forecasting-and-uncertainty>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>The high growth sensitivity test has a higher level of growth than set out in National Trip End Model (NTEM) 7.2, but is applied evenly across the regions that the Applicant's transport model is capped at, with no further spatial adjustment of this beyond that undertaken for the core scenario. The increased number of trips in the high growth scenario for each of the forecast years is shown in Table D.4 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package Annexes [APP-523]. As set out in paragraph D.1.1, '<i>The general message is the same as for the core scenario...</i>' (i.e. that the forecast changes in traffic flows as a result of the Project in the high growth sensitivity test are in similar spatial locations and whilst higher are of the same nature to the core scenario).</p> <p>Explicitly including a development could lead to a concentration of an increase in flows in the proximity of the development. In the high growth scenario the flows are higher across the area, though there is some variation in the increase in flows on particular links as the traffic may take different routes through the network in response to the different delays at junctions and speeds as a consequence of the generally higher traffic levels.</p> <p>As set out in the Applicant's answer to ExQ1_Q4.1.11, the 'planned future growth' in question does not carry sufficient level of certainty to be included in the core scenario. This uncertainty – over the scale, nature and location (or a combination thereof) – of the growth, and the necessary highway interventions to support it, clearly illustrates the degree of uncertainty there can be about the specificity of planned future growth.</p>
ExQ1_Q4.2.1	N/A	<p>Draft National Policy Statement National Networks (NPSNN): Policy Approach to Mitigation</p> <p>Para 5.280 of the draft NPSNN contains a significant strengthening of policy around the issue of mitigation and expects all adverse effects on the transport network to be mitigated. How will the Applicant's approach to mitigation change if the draft NPSNN is adopted in its current form?</p> <p>Response:</p> <p>The Applicant considers that the policies in the draft National Policy Statement for National Networks (NPSNN) published for consultation in March 2023²⁷ regarding impacts on transport networks, when taken as a whole, do not significantly change the decision-making tests to be applied to transport Nationally Significant Infrastructure Projects. Neither do the tests require a different approach in principle to the mitigation of impacts as a result of the Project.</p> <p>Paragraph 5.280 of the draft NPSNN states:</p>

²⁷ Department for Transport (2023). Draft National Policy Statement for National Networks.

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		<p><i>‘Where a development negatively impacts on surrounding transport infrastructure including connecting transport networks, <u>the Secretary of State should ensure that the applicant has taken reasonable steps to mitigate these impacts.</u> This could include the applicant increasing the project’s scope to avoid impacts on surrounding transport infrastructure and providing resilience on the wider network. In particular, this should recognise the importance of providing adequate lorry parking facilities, taking into account any local shortages, to reduce the risk of parking in locations that lack proper facilities or could cause a nuisance. The applicant may increase the project’s scope to avoid impacts on the surrounding transport infrastructure and improve network resilience. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the Secretary of State should expect applicants to accept requirements and/or obligations to fund infrastructure or mitigate adverse impacts on transport networks.’ (emphasis added)</i></p> <p>Importantly, paragraph 5.280 states that <i>‘the Secretary of State should ensure that the applicant has taken reasonable steps to mitigate these impacts’</i>, not that ‘all adverse effects on the transport network’ should be mitigated as suggested in the question.</p> <p>The paragraphs on mitigation in the draft NPSNN help to confirm that a different approach is not intended in principle. Paragraph 5.272 and 5.273 of the draft NPSNN state:</p> <p><i>‘Mitigation measures for schemes should be proportionate and reasonable, focussed on facilitating journeys by active travel, public transport, and cleaner fuels. Where development would worsen accessibility, there is a strong expectation that such impacts should be mitigated. ...’</i></p> <p>The wording is almost identical to the paragraphs 5.215 and 5.216 of the current adopted NPSNN²⁸ and does not raise new issues which are not already addressed in the Application.</p> <p>Paragraph 5.280 of the draft NPSNN includes similar wording that <i>‘reasonable steps to mitigate’</i> impacts should be taken. It is therefore the Applicant’s view that a different approach is not intended, in principle, to the decision-making process or mitigation.</p> <p>The transitional arrangements detailed in paragraphs 1.16 and 1.17 of the draft NPSNN clearly state that applications accepted for examination before the draft NPSNN is designated (which includes the Project) should be considered in accordance with the terms of the 2014 designated NPSNN. This means that the 2014 NPSNN</p>

²⁸ Department for Transport (2014). National Policy Statement for National Networks.

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>will apply to the decision on the Lower Thames Crossing application, notwithstanding the draft NPSNN may be designated before the decision is taken.</p> <p>While the draft NPSNN is capable, at the judgment of the Secretary of State, of being an '<i>important and relevant consideration</i>' under section 104(2)(d) of the Planning Act 2008, the primary consideration is the designated 2014 NPSNN which the SoS must decide the application in accordance with as required by section 104(3) of the Planning Act 2008 (subject to the exceptions in subsections (4) to (8)). The Applicant also stresses that the draft is subject to further refinement as it is the subject of consultation.</p> <p>Nonetheless, in response to ExQ1_Q16.1.1 the Applicant has provided an assessment of the Project against the policies in the emerging draft NPSNN at Deadline 4 in the Policy Accordance Assessment of the Project Against the Consultation Draft NPSNN [Document Reference 9.98], including paragraph 5.280. The draft NPSNN has been out for consultation and is subject to amendment as a result of that, which has a bearing upon the weight that the Applicant considers should be attached in the decision-making process to the current draft – nevertheless the Applicant considers the Draft NPSNN Policy Accordance Assessment [Document Reference 9.98] demonstrates that the Project accords with the provisions and requirements of the draft NPSNN.</p> <p>For the reasons set out above, the Applicant considers that 'proportionate' and 'reasonable' steps have been taken to mitigate impacts on the connecting transport network, as set out in the Planning Statement [APP-495] paragraphs 6.5.331 and 6.5.332. Therefore, for the reasons set out above the Applicant's approach to mitigation of impacts on the transport network would not change if the draft NPSNN is adopted in its current form.</p>
ExQ1_Q4.2.2	N/A	<p>Monitoring Timing, Period and Frequency</p> <p>Bearing in mind that there would be LTC construction traffic on the network one year before opening and advice in NH's Post-opening Project Evaluation (POPE) manual, does the Applicant consider that the timing, period and frequency of traffic monitoring currently set out in the Wider Network Impacts Management and Monitoring Plan (WNIMMP) is appropriate? If so, please explain why.</p> <p>Response:</p> <p>The Applicant considers that the timing, period and frequency of traffic monitoring currently set out in the Wider Network Impacts Management and Monitoring Plan (WNIMMP) [APP-545] is appropriate.</p> <p>Traffic monitoring would be undertaken at least one-year pre-opening to establish the baseline (to provide a comparison against the monitoring carried out during the operational phase). Following the Written Ministerial</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>Statement²⁹, the date on which data collection would start is now expected to be 2031. The commitment therefore ensures data will be collected across the last full year of construction. It is acknowledged that there would be Project related construction traffic on the network at this time, and the data collected will be reviewed against other datasets (the Applicant has set out that data will be collected as part of the Traffic Management Plans, and the Site-Specific Travel Plans) so that the traffic impacts from the construction of the Project can be determined. It should be noted that during the last year of construction (included within Phase 11), the impacts forecast on the network as set out in the Transport Assessment [REP3-112 to REP3-116] would be limited as the majority of physical construction would be complete, and testing and commissioning would be underway.</p> <p>The Applicant considers that undertaking monitoring prior to the start of construction would not provide a suitable baseline. Changes to the network and local flow changes arising from new developments mean that there would be uncertainty over the nature of the baseline in the pre-opening period. This uncertainty is considered likely to be more significant than the uncertainty arising from the limited effects from the Project's construction in the final year before opening.</p> <p>The before and after surveys would also be supplemented by existing data sources (where already available), including Department for Transport (DfT) journey time datasets, National Highways traffic datasets, and any historical traffic datasets from relevant local highway authorities within the local area of influence, subject to agreement with the data owners.</p> <p>In alignment with National Highways Post Opening Project Evaluation (POPE) timescales, traffic monitoring reports would be produced at one-year and five years post-opening (currently expected to take place in 2033 and 2037, respectively). After the first year, an evaluation typically monitors trends in traffic growth, journey times and reliability, safety and environment. After five years the evaluation will continue to monitor these trends as well as typically undertaking environmental site visits and an economic assessment of the outturn value for money. The evaluation methodology assumes that the change in the observed traffic flows, journey times and collisions in the first five years of a project's life can be associated to its predicted long-term economic benefits. Traffic monitoring reports produced at one-year and five years post-opening are therefore considered appropriate to present the observed traffic patterns over time. However, to ensure that the relevant data continues to be adequately captured over the full duration of the monitoring period, a monitoring review process would be set out in the traffic impact</p>

²⁹ UK Parliament (2023). Transport Update: Statement made on 9 March 2023, Statement UIN HCWS625. Accessed August 2023. <https://questions-statements.parliament.uk/written-statements/detail/2023-03-09/hcws625>

PINS ID	External Stakeholder (where applicable)	Question / Response
		monitoring scheme (to be approved by the Secretary of State), as detailed at paragraph 5.6.2 of WNIMMP [APP-545]. Proposals put forward by key stakeholders would also be considered.
ExQ1_Q4.2.3	N/A	<p>Monitoring and Mitigation: Effects on Public Transport Services</p> <p>Does the Applicant intend to compensate public transport providers for delays incurred during the construction phase of the scheme? If not, why?</p> <p>Response:</p> <p>The Applicant does not intend to offer compensatory funds to public transport operators. The Applicant considers the existing control measures are sufficiently robust to effectively minimise the effects on public transport and maintain acceptable and accessible service levels, while delivering the construction of the Project.</p> <p>When assessing the impacts of the Project, the Applicant has taken into account the impacts to public transport services to then determine sufficient controls to manage those impacts. The outline Traffic Management Plan for Construction (oTMPfC) [REP3-120] details the mechanisms throughout the document which would be in place (such as the Traffic Management Forum, Plate 3.2) which would allow for discussions with public transport operators and local authorities to take place on matters such as appropriate mitigation for public transport impacts during construction. When developing the Traffic Management Plan (TMP), specific measures are outlined to address and minimise the impacts on public transportation, including public transport users and operators (set out in Table 2.3 of the oTMPfC). These measures are designed to reduce the impacts on public transport users and operators, to a minimum, demonstrating a commitment to maintaining the service and accessibility of public transportation during the construction of the Project.</p> <p>While Chapter 8 of the Transport Assessment [REP3-112 to REP3-116] outlines the envisaged impacts, including on public transport, based on the construction scenario as presented in the DCO application, the construction planning stage will allow for a more detailed consideration of the impacts and identification of suitable measures to reduce the impacts. Alongside the planning process and the implementation of controls, monitoring (as set out in paragraphs 2.4.8 to 2.4.24 of the oTMPfC [REP3-120]) will be put in place.</p> <p>The results of this monitoring would be discussed within the Traffic Management Forum, as would the development and refinement of appropriate mitigation where required. Public Transport operators as well as local authorities would be able to recommend mitigation packages at the TMF which would be duly discussed and considered.</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
ExQ1_Q4.2.4	N/A	<p>Monitoring and Mitigation: Effects on Travel to School Trips Does the Applicant agree that it is responsible for monitoring travel to school distances during the construction period and to mitigate any adverse impacts should they arise?</p> <p>Response: The Applicant is aware that there are a number of locations where travel to school has been raised as a particular concern by stakeholders. While the Applicant does not consider that it is responsible for monitoring travel to school distances during the construction period, through ongoing engagement with relevant stakeholders, a suite of measures and mechanisms has been developed in order to mitigate potential adverse impacts that may arise.</p> <p>The outline Traffic Management Plan for Construction (oTMPfC) [REP3-120] provides an outline framework that would be applied for the design, management and communication of construction traffic management and will be used to inform the Traffic Management Plan for Construction (TMP) which is legally secured under Requirement 10 in Schedule 2 to the draft Development Consent Order (DCO) [REP3-077].</p> <p>Table 2.3 of the oTMPfC [REP3-120] contains specific requirements for individual stakeholder groups, of which local schools are one. The table notes the requirement for access / egress to local schools for staff and students to be maintained, together with a requirement for unhindered and safe walking and cycling routes. The distance for students and staff to travel to school will be considered by the contractor and Traffic Management Forum as part of the development of the Traffic Management Plan. Minimising impacts to the local and wider communities is a key objective when planning traffic management measures; lengths of traffic management (in distance and duration) are set out in the oTMPfC.</p> <p>Environmental Statement Appendix 2.2: Code of Construction Practice, First Iteration of Environmental Management Plan (CoCP) [REP3-104] states that the Contractor's Communication and Engagement Plan will specify a detailed programme of community engagement for specific stakeholder groups, including schools, identifying proposed methods and likely timing of consultation activities during the construction phase. Community Liaison Groups are proposed to be open to attendance from the local community, which would include school representatives. Local community leaders from the Community Liaison Groups will be identified and invited to attend the Traffic Management Forum (this could also include school representatives). Particular matters relating to school travel planning could therefore be raised within these forums and escalated to the Joint Operations Forum as required.</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>Specific stakeholders to have raised concerns relating to the effects on travel-to-school trips include the London Borough of Havering (LBH) and Gravesham Borough Council. The impact on schools in LBH is documented in item 2.1.23 of the Statement of Common Ground between the Applicant and LBH [REP1-105] and remains a matter under discussion. Engagement with LBH has taken place specifically around mitigation measures for potentially affected schools. As acknowledged, a School Engagement Plan is in place for the Project, accompanied by a register of engagement activities undertaken with individual schools which records feedback about issues / concerns that individual schools express. The engagement programme with schools aims to raise awareness of the Project and to manage issues, for example environmental issues or those relating to access / travel to school. In a meeting in July 2023, it was confirmed that a Schools Working Group would be created within Havering for those schools most affected, with further steps to include the development of a travel plan for each affected school. Requests for mitigation in the form of both physical infrastructure improvements and behaviour change activities for the schools have been made by LBH; the final outcome will depend on the outcome of school engagement planning.</p> <p>Similarly, in relation to Gravesham Borough Council, disruption and additional traffic have been identified as having an adverse effect on primary school children. The Applicant has advised that any schools that would be adversely affected by construction activities are included in National Highways' liaison programme and that this continues to be a matter under discussion.</p> <p>In summary, the Applicant considers that, through the mechanisms identified, such as the oTMPfC, the Traffic Management Forums and ongoing engagement with individual schools, adverse impacts arising as a result of construction traffic management measures (such as road closures and diversions) are capable of being mitigated and that distances and duration of any diversion access routes will be minimised.</p>
ExQ1_Q4.2.5	N/A	<p>Mitigation Security: Orsett Cock</p> <p>The Applicant's Deadline 1 submission "Localised Traffic Modelling" [REP1-187] suggests that changes to the traffic light layout, timings and sequencing would be required at Orsett Cock to optimise flows. How would this work be secured in the DCO?</p> <p>Response:</p> <p>Paragraph 4.2.6 on page 33 of Localised Traffic Modelling [REP1-187], states:</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p><i>'Further differences become apparent on journeys originating from point 1 and point 4 in 2045. The increased traffic arising from this growth causes higher variability in the stochastic outputs developed by VISSIM. Such variability is highly sensitive to signal controls and refinements would be made during the detailed design stage, and with the collaboration of Thurrock Council in the early operational phase, to modify traffic light layout, timings and sequencing to optimise flows.'</i></p> <p>During the development of the detailed design, the Applicant will be undertaking further analysis to check the performance of the highways design. As part of this design process, flows onto the Orsett Cock roundabout will be considered.</p> <p>As Orsett Cock roundabout is part of the local road network, it will be transferred back to the local highway authority, in this instance Thurrock Council, following the conclusion of the works. Article 10 of the draft Development Consent Order (DCO) [REP3-077], requires that works be undertaken to the reasonable satisfaction of the local highway authority. As confirmed at ISH3, the Applicant is further proposing Protective Provisions for Local Highway Authorities which will require design engagement with the local highway authority, and it will require these comments to be taken into account at that stage. These obligations ensure that the works undertaken on the roundabout will be discussed with the local highway authority and will be subject to these relevant requirements.</p> <p>The Applicant would further note that it will continue to work closely with Thurrock Council to optimise flows between the local road network and the strategic road network, in accordance with the obligation to work with local highways authorities and others in a collaborative manner as required by the licence from the Department for Transport under which National Highways operates (paragraph 5.19 of Highways England: Licence³⁰).</p> <p>Following the opening of the Project, the Wider Network Impacts Monitoring and Management Plan [APP-545] sets out the approach to monitoring the impacts of the Project on the wider local and strategic networks, and proposes a traffic impact monitoring scheme, secured through Requirement 14 of Schedule 2 of the draft DCO [REP3-077].</p> <p>The Orsett Cock junction is specifically referred to as a location where monitoring will be undertaken, at paragraph 5.3.4 of the Wider Network Impacts Monitoring and Management Plan [APP-545].</p>

³⁰ Department for Transport (2015). Highways England: Licence

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/431389/strategic-highways-licence.pdf

PINS ID	External Stakeholder (where applicable)	Question / Response
ExQ1_Q4.3.1	N/A	<p>Missing Journey Times</p> <p>In terms of journey time reliability can the applicant explain why in Transport Assessment Appendices B & C important routes have been omitted from the comparison tables, for example for Tilbury Port only movements 7-12 have been presented? Where are the comparisons for movements 1-4?</p> <p>Response:</p> <p>The route based journey times presented within Transport Assessment Appendices B [APP-531] and C [APP-532] provide journey time information for routes where a crossing of the Thames would be required. Movements 1 to 4 inclusive are to the north of the Thames, as is Tilbury Port.</p> <p>It should be noted that the journey time information presented does not provide information relating to journey time reliability but reflects forecast journey times from each forecast year and modelled time period from the Applicant's transport model. The appraisal of journey time reliability is set out in Section 9.2 of Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [APP-526].</p> <p>The Applicant has extracted the journey times for routes where a crossing of the River Thames is not required for all of the route origin points. These are included within the updated Transport Assessment Appendices B [Document Reference 7.9 Appendix B (2)] and C [Document Reference 7.9 Appendix C (2)], which have been submitted at Deadline 4.</p>
ExQ1_Q4.3.2	N/A	<p>Orsett Cock - DTA Analysis</p> <p>Analysis by DPWLG indicates that extensive queuing would occur the LTC and A13 off- slips to the Orsett Cock roundabout as well as the A128 approach. Does the Applicant agree with the findings of the DTA? If not, please provide clear reasons why.</p> <p>Response:</p> <p>The Applicant does not agree with the traffic movements used within the work presented by DTA on behalf of DP World London Gateway, as set out within Annex A of their Written Representation [REP1-333]. The basis for the Applicant's disagreement is that DTA has used erroneous input data. For example, DTA assumed approximately 1,000 extra vehicles in the morning peak would be leaving the Lower Thames Crossing to travel down the A1089, as was confirmed by DTA during ISH4. This is not aligned with the LTAM forecasts, which show that these trips are distributed between the A1089 and local roads.</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>The Applicant submitted its localised traffic modelling of the Orsett Cock junction at Deadline 1 in Localised Traffic Modelling Appendix B: Orsett Cock VISSIM Local Model Validation Report [REP1-188] and Localised Traffic Modelling Appendix C: Orsett Cock Forecasting Report [REP1-189].</p> <p>The Applicant’s forecasting report does also show queues on the A122 and A13 off-slips to the Orsett Cock junction and the A128 approach. However, on the A13 off-slip to the junction, queues do not extend back to the mainline A13 or A122 in either forecast year in any of the modelled time periods.</p> <p>The Applicant has provided further commentary in relation to the operation of the Orsett Cock junction, in relation to the scenario of queuing traffic impacting the A13/A122 mainlines in answer to ExQ1_Q4.7.5.</p>
ExQ1_Q4.3.3	N/A	<p>U-turning Vehicles at Orsett Cock</p> <p>Can the Applicant quantify the number and type of U-turning vehicles at Orsett Cock roundabout in the various assessment scenarios?</p> <p>Response:</p> <p>The Applicant’s transport model does not show any U-turning traffic at the Orsett Cock junction. In all modelled scenarios and time periods the number of U-turning vehicles at the Orsett Cock junction is zero.</p> <p>The Applicant is aware that DP World London Gateway (DPWLG), within Annex A of their Written Representation [REP1-333], provides a figure of for U-turning vehicles of ‘1,000 vehicles in the AM peak and 1,300 in the PM peak’ (paragraph 2.2.35). The Applicant considers that DPWLG is actually referring to traffic that uses much of the circulatory (such as that which would travel from the A122 to the A1089 via the Orsett Cock junction), and that this is not U-turning traffic.</p> <p>In addition, the Applicant does not recognise the figures quoted by DPWLG.</p> <p>Table 3 presents the destination of traffic that leaves the A122 at the A13/A1089/A122 Lower Thames Crossing junction and heads to the Orsett Cock junction, based on the 2030 and 2045 forecasts from the Applicant’s strategic transport model. This shows that the maximum number of Passenger Car Units (PCUs) heading from the A122 to the A1089 is forecast to be 309 in the 2030 PM peak and 433 in the 2045 PM peak.</p>

PINS ID	External Stakeholder (where applicable)	Question / Response																																																																															
		<p style="text-align: center;">Table 3 Destination of traffic leaving the Project via the Orsett Cock junction, 2030 and 2045</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3" style="width: 15%;">To</th> <th colspan="4" style="text-align: center;">2030</th> <th colspan="4" style="text-align: center;">2045</th> </tr> <tr> <th colspan="2" style="text-align: center;">AM</th> <th colspan="2" style="text-align: center;">PM</th> <th colspan="2" style="text-align: center;">AM</th> <th colspan="2" style="text-align: center;">PM</th> </tr> <tr> <th style="text-align: center;">PCU</th> <th style="text-align: center;">%</th> <th style="text-align: center;">PCU</th> <th style="text-align: center;">%</th> <th style="text-align: center;">PCU</th> <th style="text-align: center;">%</th> <th style="text-align: center;">PCU</th> <th style="text-align: center;">%</th> </tr> </thead> <tbody> <tr> <td>A128 NB</td> <td style="text-align: center;">185</td> <td style="text-align: center;">16</td> <td style="text-align: center;">97</td> <td style="text-align: center;">6</td> <td style="text-align: center;">271</td> <td style="text-align: center;">19</td> <td style="text-align: center;">140</td> <td style="text-align: center;">7</td> </tr> <tr> <td>A1013 EB</td> <td style="text-align: center;">291</td> <td style="text-align: center;">25</td> <td style="text-align: center;">582</td> <td style="text-align: center;">34</td> <td style="text-align: center;">314</td> <td style="text-align: center;">22</td> <td style="text-align: center;">645</td> <td style="text-align: center;">32</td> </tr> <tr> <td>A128 SB</td> <td style="text-align: center;">244</td> <td style="text-align: center;">21</td> <td style="text-align: center;">489</td> <td style="text-align: center;">29</td> <td style="text-align: center;">281</td> <td style="text-align: center;">19</td> <td style="text-align: center;">534</td> <td style="text-align: center;">26</td> </tr> <tr> <td>A1013 WB</td> <td style="text-align: center;">150</td> <td style="text-align: center;">13</td> <td style="text-align: center;">183</td> <td style="text-align: center;">11</td> <td style="text-align: center;">176</td> <td style="text-align: center;">12</td> <td style="text-align: center;">223</td> <td style="text-align: center;">11</td> </tr> <tr> <td>A1089 SB</td> <td style="text-align: center;">245</td> <td style="text-align: center;">21</td> <td style="text-align: center;">309</td> <td style="text-align: center;">18</td> <td style="text-align: center;">327</td> <td style="text-align: center;">22</td> <td style="text-align: center;">433</td> <td style="text-align: center;">21</td> </tr> <tr> <td>A13 WB</td> <td style="text-align: center;">63</td> <td style="text-align: center;">5</td> <td style="text-align: center;">28</td> <td style="text-align: center;">2</td> <td style="text-align: center;">89</td> <td style="text-align: center;">6</td> <td style="text-align: center;">62</td> <td style="text-align: center;">3</td> </tr> </tbody> </table>	To	2030				2045				AM		PM		AM		PM		PCU	%	PCU	%	PCU	%	PCU	%	A128 NB	185	16	97	6	271	19	140	7	A1013 EB	291	25	582	34	314	22	645	32	A128 SB	244	21	489	29	281	19	534	26	A1013 WB	150	13	183	11	176	12	223	11	A1089 SB	245	21	309	18	327	22	433	21	A13 WB	63	5	28	2	89	6	62	3
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ExQ1_Q4.3.4	N/A	<p>Variation in the number of A13/A1089 Turning Movements</p> <p>There appears to be a very significant difference between the forecasts of the Applicant and DPWLG in respect of the number of U-turning vehicles. For example, paragraph 2.2.8 of the DTA Report [Annex A, REP1-333] refers to 1,000 and 1,300 in the AM/PM peak hours respectively while the Applicant's Deadline 2 submission [REP2-050] (Table A.2) refers to 231 and 204 PCUs. How does the Applicant explain these differences?</p> <p>Response: The Applicant has set out a response in ExQ1_Q4.3.3 above.</p>																																																																															
ExQ1_Q4.3.5	N/A	<p>Diversion Routes</p> <p>Can the Applicant explain the strategic diversion routes in the event of a closure of the Dartford Crossing once the Lower Thames Crossing is operational?</p>																																																																															
		<p>Response:</p> <p>Both Crossings would be managed by National Highways in accordance with standard National Highways Incident Management Processes (DMRB GM703), in order to provide a co-ordinated response to incidents at either Crossing, including:</p> <ul style="list-style-type: none"> • Managed through the Regional Operations Centre • Traffic Officer resources for both Crossings 																																																																															

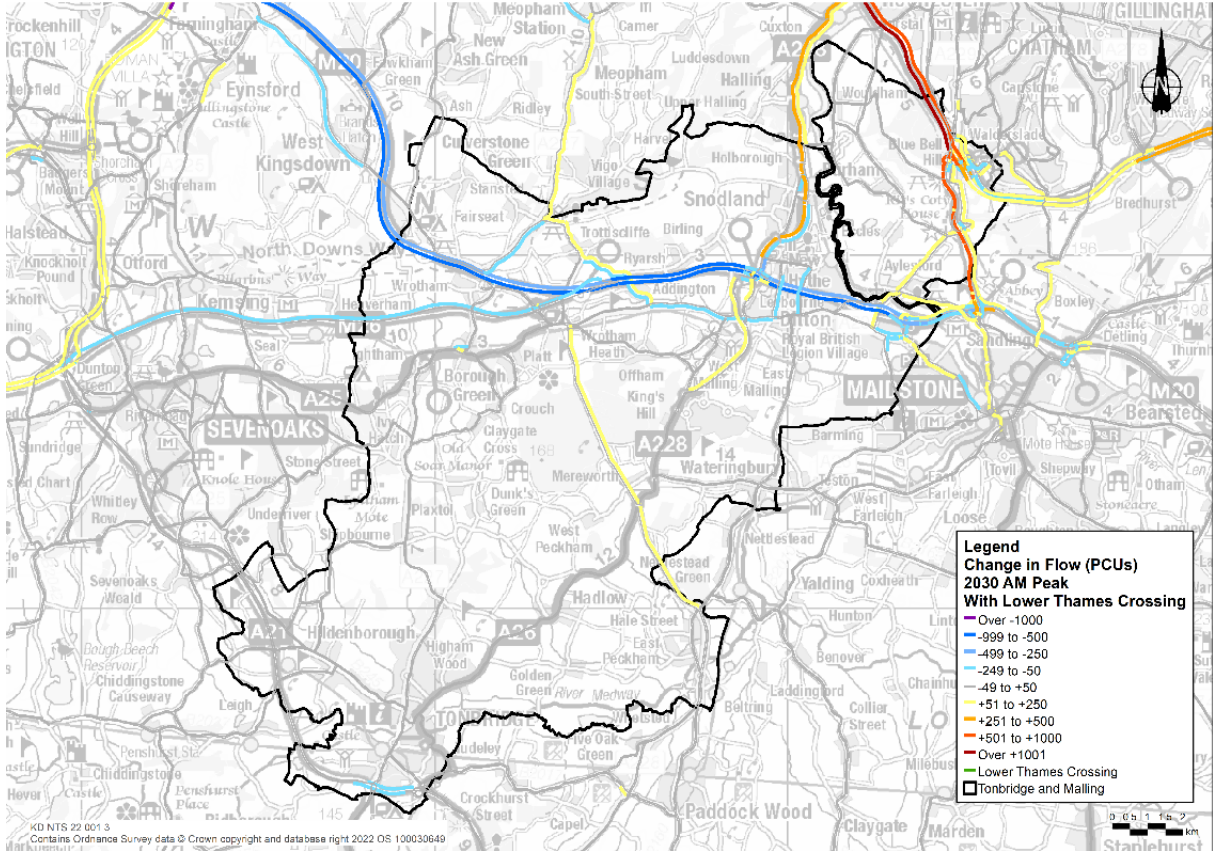
PINS ID	External Stakeholder (where applicable)	Question / Response
		<ul style="list-style-type: none"> • National management escalation structure for dealing with the response to different levels of incident. • Communications resources for advanced warnings (Variable message signs, social media, press, radio etc.)
		<p>National Highways works in partnership with key responders (Association of Ambulance Chief Executives, National Fire Chiefs Council and National Police Chiefs' Council) under the CLEAR agreement to minimise the impact of incidents on road users and the economy through an integrated, coordinated approach. The agreement sets out roles and responsibilities of the key organisations involved in traffic incident management on the strategic road network.</p> <p>The majority of incidents would be managed at a day-to-day operational level and would likely have a relatively minor effect on road users.</p> <p>More complex incidents would be escalated to a Regional Response to enable strategic involvement for the planning of resources and resolution, press coverage and wider strategic signing.</p> <p>In the case of most incidents, even those which require a Regional Response, the Dartford Crossing would continue to operate at or above 50% lane capacity in either direction, with the remainder managed as set out below:</p> <ul style="list-style-type: none"> • Traffic in the immediate vicinity wishing to use the Dartford Crossing would likely continue to use the remaining capacity. • Traffic on strategic routes towards the Dartford Crossing would be warned of the delays through (all of which currently exist): <ul style="list-style-type: none"> – Variable message signs (including journey time information and differential route information at strategic points) – Sat Nav / in car navigation systems – Traffic England website (incident descriptions, delay information and resolution estimates) – Press, radio etc. – Social media <p>This would enable road users who have already commenced their journey to make early and informed decisions around the best choice of route for example:</p> <ul style="list-style-type: none"> • Remain enroute to the Dartford Crossing • Divert to the Lower Thames Crossing via an appropriate route (as early as possible)

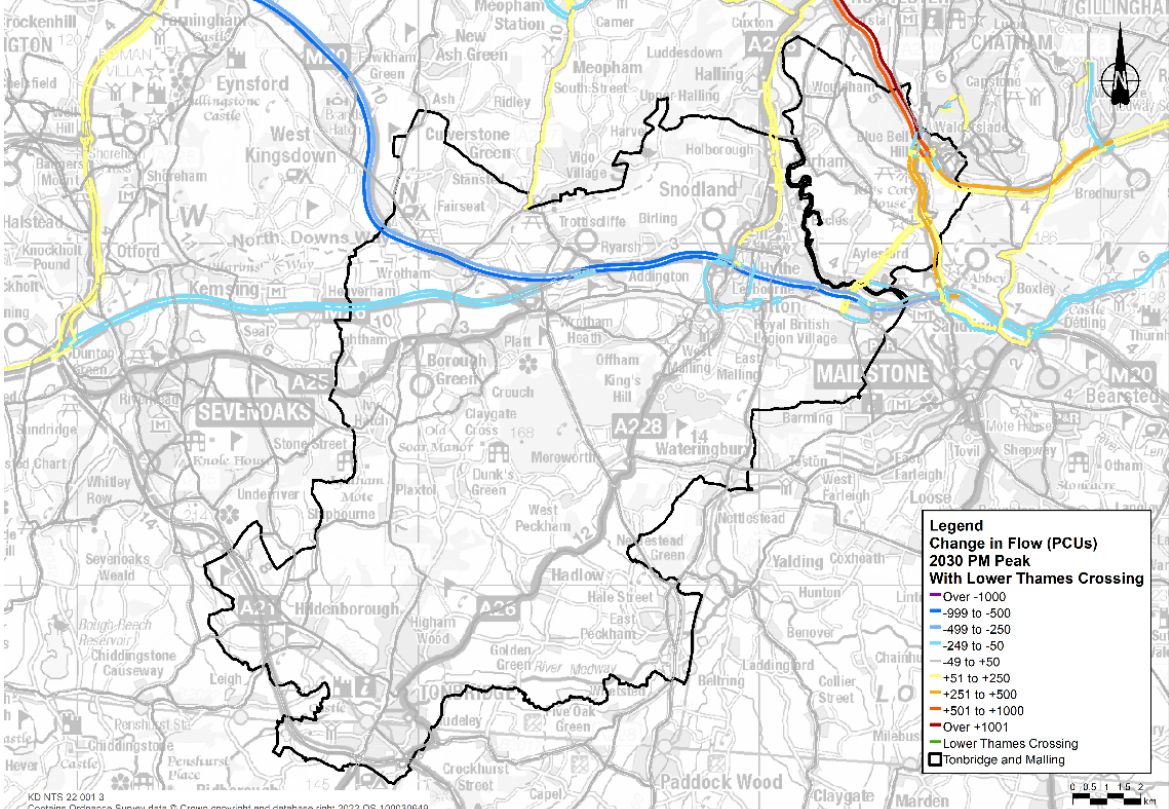
PINS ID	External Stakeholder (where applicable)	Question / Response
		<ul style="list-style-type: none"> • Use alternative sections of the SRN if appropriate (e.g. the western section of the M25) <p>The use of media streams to alert people to the potential delays would also likely have the effect of temporarily reducing the number of people attempting to make a crossing, therefore temporarily reducing overall demand. (as demonstrated by the protests on the QEII Bridge in 2022)</p> <p>To deal with the rare event of a full closure of the Dartford Crossing, the Applicant would use its existing procedures to develop strategic diversion routes in accordance with Design Manual for Roads and Bridges (DMRB) standards (currently GG 907³¹ for planned works and GG 903³² for unplanned events).</p> <p>Routing on the strategic road network would be used, including the use of the Lower Thames Crossing in these diversion routes.</p> <p>However the amount of traffic locally diverting between the Crossings would be strategically managed, using the interventions outlined above, so that customers are able to make journey decisions in advance of arriving at the Dartford Crossing.</p>
ExQ1_Q4.3.6	N/A	<p>Dangerous Goods Vehicles at Dartford</p> <p>What is the justification for retaining provision for Dangerous/Oversized Goods Vehicles at Dartford once LTC is operational?</p> <p>Response:</p> <p>At the Dartford Crossing restrictions apply to northbound traffic, limiting vehicles with an axle weight over 7,500 kg on the east lane in each tunnel, and restricting load heights to 4.8m in the western tunnel and 5.0m overall. In addition, a width restriction of 9 feet (2.75m) and a total length restriction of 61 feet and 6 inches (18.75m) is in force. The Dartford Crossing northbound therefore applies restrictions on vehicle size that do not apply to than applies across the wider road network. As part of the traffic management protocols, vehicles greater than 2.75m wide or 18.75m long require escort through the tunnel. In addition to this, dangerous goods vehicles also require escort.</p> <p>While the escorts do lead to disruption of traffic flows, Dartford Crossing will remain a critical link on the strategic road network.</p>

³¹ Highways England (2021). Design Manual for Roads and Bridges, GG 907 Customer service standard for diversion routes for planned works and activities.

³² Highways England (2020). Design Manual for Roads and Bridges, GG 903 Customer service standard for diversion routes for unplanned events.

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>In terms of dangerous goods vehicles, the Dartford Crossing provides the only crossing east of central London that can accommodate vehicles allowed through category C and category D tunnels. A typical fuel tanker can only use a category C tunnel. Introducing a prohibition on dangerous goods vehicles at the Dartford Crossing would require vehicles from east London to take an extended diversionary route, requiring certain journeys to substantially increase in length. In particular, the Applicant notes the substantial bulk liquid terminals adjacent to the Dartford Crossing, which supply fuel across the region.</p> <p>In terms of size restrictions, although the Silvertown tunnel once open will not have size restrictions, diverting vehicles from the Dartford Crossing would also result in vehicles having to make significant diversions.</p> <p>While introducing prohibitions at the Dartford Crossing to remove the requirement for escorts could improve the performance of the existing crossing, it would not be feasible without having the A122 Lower Thames Crossing in place. Conversely, the relief provided by the A122 Lower Thames Crossing to the Dartford Crossing would reduce the disruption arising from the escorts. It should be noted that the capacity constraints resulting from the need for escorts have been accounted for in the traffic modelling.</p> <p>The key justifications for retaining provision for Dangerous/Oversized Goods Vehicles at Dartford Crossing once the Lower Thames Crossing is operational are:</p> <ul style="list-style-type: none"> • retention of route choices, including the avoidance of diversion of Dangerous/Oversized Goods Vehicles from the M25 to the Lower Thames Crossing • maintaining operational flexibility and resilience between the Dartford Crossing and Lower Thames Crossing.
ExQ1_Q4.3.8	Tonbridge & Malling Council	<p>Benefits to Tonbridge & Malling’s Network</p> <p>Paragraph 3.4 of the Council’s LIR acknowledges that positive, neutral, and negative should be identified. Save for flows west of junction 4 M20, no other traffic benefits are identified in the LIR. Can Tonbridge and Malling Council confirm that there are no other locations in the borough that would experience positive effects?</p> <p>Response:</p> <p>The Applicant has extracted forecast flow changes as a result of the Project within the Tonbridge and Malling local authority area, as shown in Plates 1 and 2 for the AM and PM peaks in 2030. The Tonbridge and Malling local authority area extents are shown on the maps.</p> <p>The plates show that in addition to flows west of M20 junction 4 as identified by the authority, flows on the M20 between junctions 4 and 5 are also forecast to see a reduction in both directions in both peak periods. Flows on</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>the M26 are also forecast to see a reduction of up to 249 Passenger Car Units (PCUs) (eastbound only in the AM peak and both directions in the PM peak) for its entire length. Some local roads within Leybourne are also forecast to see a reduction of up to 249 PCUs including the A20 and A228.</p> <p>Plate 2 Forecast flow changes as a result of the Project, AM peak, 2030, Tonbridge and Malling</p> 

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		<p>Plate 3 Forecast flow changes as a result of the Project, PM peak, 2030, Tonbridge and Malling</p> 
ExQ1_Q4.4.1	N/A	<p>Brentwood Enterprise Park</p> <p>It is noted by Essex County Council that the scheme would sever the existing egress from the Brentwood Enterprise Park. References are noted to a replacement joint access from the B186 Warley Street as well as the existing overbridge – Can the Applicant clarify what is proposed in relation to the Brentwood Enterprise Park?</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>Response:</p> <p>Brentwood Enterprise Park (BEP) is a proposed development on land to the south-east of the M25 junction 29, known as Codham Hall South, which is owned by Mr Christopher Padfield. BEP is being promoted by St Modwen Developments Limited and the planning application is currently being considered by Brentwood Borough Council. The site of the proposed BEP is currently occupied by several light industrial occupiers. Access to the site is primarily from the south-east corner of junction 29, with another access via the existing bridge over the A127 from Codham Hall North.</p> <p>Following engagement between the Applicant and St Modwen, it was accepted and understood at an early stage of discussions that a direct access from junction 29 into BEP would not be feasible from a traffic or safety perspective, with or without the Lower Thames Crossing proposals. St Modwen therefore undertook to revise their design and access to BEP is now proposed from the north-east of junction 29 via a new bridge over the A127 with a second access located to the west of the B186.</p> <p>The Applicant is progressing a Land and Works Agreement with St Modwen and Mr Padfield regarding the interfaces between the two projects, it is hoped that this would be signed prior to the end of the examination. For further details please see Comments on WRs Appendix F: Landowners [REP2-051] page 55.</p>
ExQ1_Q4.4.2	N/A	<p>Separate A13 Interchanges</p> <p>Why was Thurrock Council’s suggestion of separate interchanges north and south of the A13 discounted?</p> <p>Response:</p> <p>The development and assessment of the A13/A1089 junction alternatives is detailed in Section 3.22 of Environmental Statement Chapter 3: Assessment of Reasonable Alternatives [APP-141] and Chapter 5 of the Planning Statement [APP-495].</p> <p>The proposed layout within the Development Consent Order (DCO) application connects the A122 with the strategic and local highway network including the A13, A1089 and Orsett Cock junction. Junctions south and north of the A13 at Tilbury and on the Ockendon link would not allow this direct connection onto the strategic highway network without requiring vehicles to use the local road network. As shown in Visual Representation of A13/A1089/LTC Intersection for ISH3 [AS-146].</p> <p>The junction has been developed to provide the required links to allow the project to meet its objectives of reducing congestion at the Dartford crossing. The links onto the A13 allow vehicles from the east to use the A122 and reduce the flows to the west of the proposed junction.</p>

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		<p>With regard to an additional connection around North and South Ockendon, as proposed by Thurrock Council and identified at paragraph 9.6.10 of their Local Impact Report [REP1-281], the Applicant has to have regard to the purpose and function of a junction on the strategic road network. Although directed towards the provision of new junctions on existing highways, the Applicant considers guidance in the Highways England: Licence³³ which states:</p> <p><i>'5.36(a)(i) In the case of sections of the network designed for high speed traffic, with partially or comprehensively limited access, there should be a presumption against connection, except where it can be provided safely and where there is a demonstrable benefit to the economy.'</i></p> <p>Further guidance is set out in the policy document Strategic road network and the delivery of sustainable development, DfT Circular 01/2022³⁴, which states:</p> <p><i>'18. New connections (for example, new junctions or direct accesses) on the SRN lead to more weaving and turning manoeuvres, which in turn create additional risk to safety and reduce the reliability and efficiency of journeys, resulting in a negative impact on overall national economic activity and performance.'</i></p> <p>Although the council has identified locations north of the A13 for proposed connectivity with the Project, this needs to be considered in terms of the guidance and policy. Currently there is no suitable connectivity in the area to connect to the new road, as the existing road (the B186) is not suitable to connect to a section of the network designed for high speed traffic. While the Applicant recognises that Thurrock Council has advised that they are considering modifications to the highway network in the area to support the Local Plan and local growth, the plan for the area, including highways connectivity, has not yet been developed to a sufficient extent to carry out a detailed analysis of that proposed connection.</p> <p>The position of the Applicant on the Tilbury Link Road has been set out in a number of representations. The provision of a connection at Tilbury would not remove the need for the junction with the A13, for reasons set out above. During the review of the Project undertaken when the Thames Freeport was designated, the Applicant sought direction and received instruction from the DfT and Department for Levelling Up, Housing and Communities (DLUHC), that the Tilbury Link Road should be delivered through a separate consenting process to</p>

³³ Department for Transport (2015). Highways England: Licence

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/431389/strategic-highways-licence.pdf

³⁴ Department for Transport (2022). DfT Circular 01/2022: Strategic road network and the delivery of sustainable development.

<https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>the Project. The Tilbury Link Road has been identified in the Route Strategy Initial Overview Report: Kent Corridors to M25³⁵ as being within the pipeline of projects for the fourth road investment period (RIS4). In summary, the Applicant considers that the proposed route of the A122 does not cross any roads of an appropriate capacity between the A13 and M25 that could be connected into with a junction. Any junction in this area would have to connect back to the A13 via a link road. A connection to the A13 eastbound is important for a river crossing east of Dartford to allow A13 traffic to cross the river.</p>
ExQ1_Q4.4.3	N/A	<p>Segregated Public Transport Bearing in mind the direction of Government policy set out in the draft NPSNN, what consideration has been given to providing segregated public transport access at locations proximate to tunnel portals to create attractive and competitive public transport journey times?</p> <p>Response: The Project does not propose segregated public transport access at locations proximate to the tunnel portals. The Applicant does not consider that it would be necessary or proportionate to increase the Project's footprint for this purpose. Nevertheless, the Project has the effect of creating relief and resilience in the road network, which will benefit public transport as well as other road users. This is shown, for instance, in Plate 7.14 of the Transport Assessment [REP3-112].</p> <p>The Project provides significant additional connectivity across the River Thames, as well as enabling shorter and faster journeys across many routes. Bus operators providing local bus services using the new crossing will be exempt from road user charges as set out in Section 2.2 of the Road User Charging Statement [APP-517].</p> <p>The Applicant also proposes to work collaboratively with the Council outside of the scope of the Project to help bring forward the Tilbury Link Road, which would be able to provide additional network connectivity, particularly for local buses – see page 10 of the Applicant's Comments on LIRs Appendix H: Thurrock Council (Part 2 of 5) [REP2-063].</p>

³⁵ National Highways (2023). Route Strategy Initial Overview Report: Kent Corridors to M25. https://nationalhighways.co.uk/media/jbgh5ham/r14-kent-corridors-to-m25_acc.pdf

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>The Applicant presents an assessment of how the Project accords with emerging Government policy in the revised Draft National Policy Statement for National Networks (NPSNN)³⁶, in the accordance table submitted in response to ExQ1_Q16.1.1 [Document Reference 9.98] at this deadline (Deadline 4).</p> <p>The transitional provisions set out in paragraphs 1.16 and 1.17 of the draft NPSNN make it clear that the Project will be determined against the designated 2014³⁷ version of the NPSNN, albeit that the 2023 draft is capable, at the Secretary of State’s discretion, of being important and relevant under the provisions of section 104(2)(d) of the Planning Act 2008.</p> <p>The draft NPSNN has been out for consultation and is subject to amendment as a result of that, which has a bearing upon the weight that the Applicant considers should be attached in the decision-making process to the current draft – nevertheless the Applicant considers the table demonstrates that the Project accords with the provisions and requirements of the draft NPSNN.</p>
ExQ1_Q4.4.4	N/A	<p>Emergency Access Modification Could the emergency accesses be modified to create such public transport provision either now or in the future?</p> <p>Response: The purpose of the emergency accesses is to improve accessibility and response times for all first responders. To achieve these objectives, the emergency accesses need to be kept clear and usable by first responders at all times.</p> <p>The Project includes the following emergency access points:</p> <ul style="list-style-type: none"> • B186 North Road (Works No. 8D) • Brentwood Road (Works No. 6D) • A13 junction (Works No. 7H and 7W) • A226 Gravesend Road • Tilbury Operational and Emergency junction (Works Nos. 5E and 5F) <p>In relation to B186 North Road (Works No. 8D), Brentwood Road (Works No. 6D), A13 junction (Works No. 7H and 7W) and A226 Gravesend Road:</p>

³⁶ Department for Transport (2023). Draft National Policy Statement for National Networks.

³⁷ Department for Transport (2014). National Policy Statement for National Networks.

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>These emergency access points have been designed solely for use for operational and emergency purposes. The design of mainline merges and diverges have been developed for occasional use by conspicuous vehicles, including the use of the technology features that will support the use of the emergency accesses. The accesses are therefore not intended to support the operation of accesses or egress for other purposes, including as a public transport route, as this would adversely impact operations and safety.</p> <p>It is also critical to the function of these access and egress points that they remain clear and accessible at all times, to facilitate emergency response. By allowing other vehicle types to use these emergency access points, it increases the risk of blockage or conflict on the access points during an emergency response.</p> <p>In relation to the Tilbury operational and emergency access:</p> <p>The junction has currently been designed for operational and emergency purposes. Taking into account the current design of the junction it may be feasible to accommodate public transport vehicle movements in the future. The highways geometry at this location is in accordance with DMRB standards that would be appropriate for use by bus services if proposed in the future. However, in terms of mitigation against the risk of misuse and to ensure the availability and functionality as an emergency access, future assessments would be required, including engagement with emergency services, to determine whether it would be feasible to accommodate public transport. The Applicant's response to Public transport access at the Tilbury Operational Junction are detailed in item 2.1.277 of the SoCG between (1) National Highways and (2) Thurrock Council [REP3-092].</p>
ExQ1_Q4.4.5	N/A	<p>Reduction in A2 Running Lanes</p> <p>Concerns have been raised by the reduction of the number of running lanes on the M2/A2 at the LTC interchange (4 to 2 eastbound). Would this reduction create a bottleneck restricting through flows on the SRN? If not, please explain why.</p> <p>Response:</p> <p>Currently the A2 has four lanes in each direction between M25 junction 2 and M2 junction 1.</p> <p>The changes that the Applicant is proposing in the section through the M2/A2/A122 Lower Thames Crossing junction would be as set out below.</p> <p>The A2 corridor and junction designs are shown in the Works Plans (Volume B Composite (Sheets 1 to 20)) [REP3-037] and the Junction Layout Plans [PDB-003].</p> <p>Traffic heading eastbound on the A2 from the west of the Gravesend East junction would use the two nearside lanes (Works No. 2B) to access the following:</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<ul style="list-style-type: none"> • A122 • Brewers Road • A2 (to Strood) • A289 <p>The two outside lanes would provide access onto the M2 (Works No. 2S). This maintains the total number of lanes available to eastbound traffic as four through the junction. M2-bound traffic (Works No. 2S) would be joined by traffic from the A122 southbound (Works No. 2A) increasing the number of lanes to four (Works No. 1A).</p> <p>The A2/A289 eastbound link road (Works No. 1C) would maintain its two lanes. This creates a total of six lanes to the east of the M2/A2/A122 Lower Thames Crossing junction for eastbound traffic and is an increase of two lanes over the existing situation:</p> <ul style="list-style-type: none"> • Four lanes for A2 eastbound traffic wishing to use the M2 • Two lanes for A2 eastbound traffic wishing to access Brewers Road, the A2 (to Strood) and the A289 <p>The splitting of these movements into two separate carriageways was developed due to the close proximity of existing junctions along the A2 corridor. For safety reasons, the Applicant has proposed the link road as this would eliminate weaving on this section of the A2 corridor.</p> <p>The proposed design as set out above has been modelled within the Project’s transport model (the Lower Thames Area Model) and the results reported in the Transport Assessment [REP3-112 to REP3-116] reflect how the forecast traffic would use the number of lanes (and the destinations available) and report the performance of the road network. In addition, the Applicant has undertaken localised traffic modelling as part of design development – as set out in Localised Traffic Modelling [REP3-126], and within Localised Traffic Modelling Appendix G: Traffic Operational Appraisal – VISSIM Local Model Validation Report [REP1-193] and Localised Traffic Modelling Appendix H: Traffic Operational Appraisal – VISSIM Forecasting Report [REP1-194].</p> <p>As shown in Plates 5.1 to 5.6 of the Traffic Forecasts Non-Technical Summary [APP-528], the A2 west of and through the M2/A2/A122 Lower Thames Crossing junction would experience a reduction in traffic as a result of the Project, by over 1,000 Passenger Car Units (PCUs) in some of the modelled hours, representing a significant percentage reduction (20% to 40%) in flow compared to that which would occur without the Project.</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>The Visual Representation of A2/M2/LTC Intersection for ISH3 [AS-145] illustrate the traffic movements that would be removed from the A2/M2 mainline and would use the A2 link road.</p> <p>A further response can be found in Part 3 of the Consultation Report [APP-066] to SOU50. This sets out that the overall number of lanes on the A2 corridor has not been reduced, as the proposal for the A2 through the Gravesend East junction and the junction with the Project is to have two lanes eastbound and three lanes westbound. When the A2 parallel link roads are considered, this makes a total of four lanes eastbound and five lanes westbound, which is one more lane than the current configuration of the A2/M2 which has four lanes in each direction. East of the proposed M2/A2/A122 Lower Thames Crossing junction, the proposal for the A2 is to have four lanes in each direction, which amounts to a total of six lanes in each direction when the A2 parallel link roads are considered. This makes two lanes more in each direction than are currently provided for the combined A2/M2 traffic.</p> <p>The Applicant does not consider that the proposed design would cause a bottleneck along this section as there would be a reduction in traffic flows from the west, with this flow being split between the A2/M2 mainline and the A2 eastbound link road.</p>
ExQ1_Q4.4.6	N/A	<p>Capacity at A2/LTC Interchange</p> <p>Modelling work undertaken by Kent County Council (KCC) using the Kent Transport Model has shown that certain nodes within the proposed LTC/A2 junction would operate over capacity in the opening year (see para 8.20 of KCC’s LIR). How does the Applicant respond?</p> <p>Response:</p> <p>Kent County Council (KCC) have kindly shared a copy of their Kent transport model (KTM) VISUM model runs with the Applicant which has greatly assisted in answering this question.</p> <p>Upon review of the KTM provided to the Applicant by KCC, it seems that the comments in the KCC Local Impact Report [REP1-241] are as a result of an incorrect interpretation of the KTM results. Within the junction, the nodes are coded in the KTM as Control Type = ‘Unknown’ which means that the model does not calculate any capacities or delays; the node is essentially treated as a ‘free-flow’ node.</p> <p>KTM, because it uses VISUM software, assumes a default value for the capacity when calculating metrics for the Control Type = ‘Unknown’ nodes, even though that default value is not actually used by the model itself. For example, node 932041 in the KTM is a merge within the junction where a two-lane slip road merges with a four-lane mainline. The default capacity for both the four-lane and the two-lane entries to the merge is 1,800 vehicles</p>

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		<p>per hour, whereas using typical capacities of 1,800 per lane a more appropriate capacity value for the two entries is 7,200 and 3,600 respectively. The flows on both entry arms are well in excess of 1,800, and therefore, using these default capacities the software reports a volume/capacity of over 100%. But within the model, as that node has an 'Unknown' control type, the volume/capacity ratio is meaningless and it is noted that the model doesn't calculate any delays.</p> <p>When interpreting the volume/capacity ratios reported in VISUM, it is necessary to first extract the reported volume/capacity ratios and then to screen out the reported values for all nodes where the control type for the junction is 'Unknown', as a default value for capacity is used by VISUM when calculating this metric for those junctions.</p>
ExQ1_Q4.5.1	N/A	<p>WCH routes Various stakeholders have complained about inaccurate or insufficient details in respect of WCH routes. Can the Applicant clarify where this information can be found in the Examination Library?</p> <p>Response: Details of Public Rights of Way (PRoWs) and walker, cyclist and horse riding (WCH) routes and design principles are provided in:</p> <ul style="list-style-type: none"> • Rights of Way and Access Plans (Volume B) [REP1-025] and (Volume C) [REP3-045] • Environmental Statement Chapter 13: Population and Human Health [APP-151] • Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [APP-512] • Transport Assessment Appendix A: Public Rights of Way [APP-530] • Design Principles [REP3-110] <p>The Applicant prepared Supplementary WCH Maps, which were published at Deadline 2, to consolidate into a single set of plans, and on a small number of map sheets, details of both existing and proposed WCH routes shown in other plans submitted as part of the Development Consent Order (DCO) application. These Supplementary WCH Maps act as a quick reference document, which is supplemented by other plans at a larger scale showing details of existing and proposed WCH routes. These Supplementary WCH Maps aim to provide stakeholders with a better understanding of the Applicant's WCH proposals, in particular the difference between existing WCH routes that the Applicant would improve, new routes that the Applicant would create and the intended users of the WCH.</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		The Supplementary WCH Maps submitted at Deadline 2 are as follows: <ul style="list-style-type: none"> • Supplementary Walking, Cycling and Horse Riding (WCH) Maps (Volume A) [REP2-072] • Supplementary Walking, Cycling and Horse Riding (WCH) Maps (Volume B) [REP2-073] • Supplementary Walking, Cycling and Horse Riding (WCH) Maps (Volume C) [REP2-074]
ExQ1_Q4.5.2	N/A	<p>LTC/A2 crossings Can the Applicant clarify how Non-Motorised Users (NMUs) would cross the LTC/A2 interchange?</p> <p>Response: Non-motorised Users (NMUs) referred to within the DCO documents as Walkers, cyclists and horse riders (WCH) would not be provided with a direct east–west crossing through the M2/A2/A122 Lower Thames Crossing interchange. Instead, alternative WCH routes would be provided to maintain connectivity between communities and create recreational loops for WCH around the interchange, providing improved access to Shorne Woods Country Park, Ashenbank Wood, Jeskyns Community Woodland, Claylane Wood and newly landscaped areas between Thong and Gravesend.</p> <p>The WCH route proposals surrounding the M2/A2/A122 Lower Thames Crossing interchange are described within Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [APP-512].</p> <p>The four main proposals are as follows:</p> <ul style="list-style-type: none"> • Thong Lane green bridge north – a new crossing to the north of the M2/A2/A122 Lower Thames Crossing interchange • NS167/169 diversion – a north–south route connecting to Thong Lane green bridge north and to WCH routes to the east of the A122 • Thong western loop – New bridleways to the west of the A122 connecting to Thong Lane green bridge north, Thong Village and Shorne Woods Country Park • Re-routing of National Cycle Route (NCR) 177 – NCR 177 would be diverted to the south of the A2 at Gravesend East junction, where an off-carriageway track for walkers and cyclists will allow east–west movement to the south of the M2/A2/A122 Lower Thames Crossing interchange. Off-carriageway tracks at Thong Lane green bridge south and Brewers Road green bridge would allow connectivity back to the northern side of the A2.

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>The proposed WCH routes surrounding the M2/A2/A122 Lower Thames Crossing interchange are shown in more detail within the following documents:</p> <ul style="list-style-type: none"> • Rights of Way and Access Plans (Volume B) [REP1-025] • Supplementary Walking, Cycling and Horse Riding (WCH) Maps (Volume A) [REP2-072]
ExQ1_Q4.5.3	N/A	<p>Cycling and Severance of Routes</p> <p>The Cycle Advocacy Network have stated that the proposal fails to provide a coherent cycle network at overbridges adjacent to the Marling Cross, Hares Bridge, Henhurst Road and Brewers Road. They are to footpath standard only requiring cyclists to dismount. The Applicant is asked to explain why have these provisions not been designed into the proposal. The ability to improve cycle provisions and thus health opportunities should be maximised.</p> <p>Response:</p> <p>The Applicant has proposed a WCH strategy which will provide increased connectivity across the A2 and improving access to Shorne Woods Country Park, Ashenbank Wood, Jeskyns Community Woodland, Claylane Wood and newly landscaped areas between Thong and Gravesend. These WCH routes aim to encouraging an increase in active travel, and in turn facilitate health improvements.</p> <p>Hares Bridge</p> <p>As set out in the Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [APP-512], NS175A forms part of the temporary alignment of National Cycle Route (NCR) 177. During the works NCR 177 will cross the A2 at Hares Bridge; here NS175A is to be upgraded to include use by both pedestrians and cyclists as the bridge is wide enough for shared provision, and the height of the existing parapets is sufficient for this purpose. NS175A to the south of the High Speed 1 (HS1) line will be provided with a surface upgrade to facilitate use by cyclists. The existing bridge width over HS1 is not wide enough to meet the minimum width required for shared use by pedestrians and cyclists. Consequently cyclists will be required to dismount and walk for approximately 60m, as they currently do, along the extent of NS175A. In order to achieve a route that did not require cyclists to dismount at this location, the Applicant would have needed to either replace the existing HS1 bridge or to supplement it with a separate parallel structure. Furthermore, once the permanent NCR 177 route is operational, cyclists will have an off-carriageway track crossing the A2 removing the need for the use of Hares Bridge and the adjacent HS1 bridge.</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>Marling Cross</p> <p>As set out in the Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [APP-512] and shown within the Supplementary Walking, Cycling and Horse Riding (WCH) Maps (Volume A) [REP2-072] the proposed permanent realignment of NCR 177 will cross the A2 at the Gravesend East junction (Marling Cross) and there will be an off-carriageway track for walkers and cyclists on the eastern side of the bridge; additionally there will be signalised crossings on this route both north and south of the bridge.</p> <p>Henhurst Road</p> <p>The proposed east-west realignment of NCR177 extends across the northern side of Henhurst Road roundabout. There are no proposals for additional WCH facilities south along Henhurst Road therefore changes to the HS1 bridge are not required.</p> <p>Brewers Road</p> <p>At Brewers Road the bridge over the A2 is being replaced with a new green bridge. This includes a new off-carriageway track for walkers and cyclists, and for horse riders on the eastern side of the road. This proposal is described within the Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [APP-512] and shown within the Supplementary Walking, Cycling and Horse Riding (WCH) Maps (Volume A) [REP2-072]. Design details of the proposed WCH track are provided within the Design Principles [REP3-110], with reference to Clause No. S1.17, PEO.03 and PEO.04.</p> <p>To the north this track terminates at a new Pegasus crossing that allows users to connect to existing facilities on the western side of Brewers Road. To the south of HS1 an existing off-carriageway track for walkers and cyclists is to be extended and upgraded to include horse riders. There will be an approximately 30m gap between the facilities on the new bridge over the A2 and the extended facilities south of HS1 on Brewers Road. This gap coincides with the HS1 bridge – the existing profile of the earthworks on this bridge is such that widening the surface would change loading patterns requiring modifications to the HS1 asset due to the skew crossing angle and impact on HS1 operation. This would result in cost risks associated with the modification of the existing structure, resulting in delay.</p>
ExQ1_Q4.6.1	N/A	<p>Excavated Materials Assumptions</p> <p>Can the Applicant explain the assumptions used to identify the quantities of both excavated material generated and to be placed within the order limits?</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>Response:</p> <p>The Applicant’s approach to quantification of excavated material generated by the Project is set out in the Technical Note on Earthworks Quantification [REP2-076]. This technical note outlines the key assumptions used by the Applicant to quantify the excavated material generated by the Project and trust that it provides the necessary information to answer the ExA’s question. The Applicant would, however, be happy to provide any further information required following the ExA’s review of the Technical Note.</p> <p>Following submission of the examination questions Thurrock Council have provided a response to this Technical Note, which can be found in Section 23 of Thurrock Council’s Comments on Applicant’s submissions at D1 and D2 [REP3-211]. This confirms that Technical Note explains ‘<i>the process undertaken, the data sources used, and the principles incorporated into the development of the applicant’s models</i>’ and that ‘<i>the Technical Note provides the Council with a greater level of confidence in the figures provided as the basis for determining the environmental impacts of managing the material</i>’.</p>
ExQ1_Q4.6.2	N/A	<p>Scope of Outline Traffic Management Plan for Construction (oTMPfC)</p> <p>Are utility work sites excluded from the scope of the oTMPfC [REP1-174]? If so, please explain how the Requirements in terms of traffic and transport will be enforced against the various utility contractors on the project.</p> <p>Response:</p> <p>Utility work sites are not excluded from the scope or requirements of the outline Traffic Management Plan for Construction (oTMPfC) [REP3-120], with utility specific elements set out in Section 4.2 and Table 4.3 of the oTMPfC.</p> <p>Utility companies would form part of the Traffic Management Forum, a forum to review planned traffic management for works including utility works. See Plate 3.2 in the oTMPfC which illustrates the structure of the Traffic Management Forum.</p> <p>With regards to enforcement of the Requirements, the Code of Construction Practice [REP3-104] states the following:</p> <p><i>‘1.4.3 National Highways, being the party in whom the powers of the DCO are vested (unless otherwise transferred under the terms of the DCO), is responsible for the delivery of the Project. National Highways is responsible for all the works, which includes overseeing and assuring the Contractors.</i></p> <p><i>1.4.4 The Contractors, including those carrying out the utilities works, will comply with applicable environmental legislation at the time of construction, together with any additional environmental controls required under the DCO,</i></p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p><i>including those commitments set out in this CoCP and REAC relevant to the works. National Highways maintains the responsibility for ensuring all those commitments are met but it will also ensure that contracts awarded to Contractors do not conflict with the delivery of relevant commitments.'</i></p> <p>This is secured through Requirement 10 (Traffic management) of Part 1 of Schedule 2 of the draft Development Consent Order (DCO) [REP3-077].</p>
ExQ1_Q4.6.3	N/A	<p>Provision for mitigation Outline Traffic Management Plan for Construction</p> <p>Concerns have been raised that the oTMPfC [REP1-174] as currently drafted has no mechanism for delivery of mitigation if modelling indicates issues will occur. Can the Applicant clarify its position and amend the oTMPfC to strengthen the commitment to mitigation?</p> <p>Response:</p> <p>The Applicant has carried out extensive quantitative assessment of the Project's construction phase as presented in Chapter 8 of the Transport Assessment [REP3-112 to REP3-116]. This reflects a reasonable worst case and provides a proportionate assessment of the selected construction scenario. Measures to reduce impacts from construction traffic have been included within the DCO, namely within the control documents, e.g. HGV bans in the outline Traffic Management Plan for Construction (oTMPfC) [REP3-120].</p> <p>The delivery of further measures would be via the Traffic Management Forum (TMF). The oTMPfC details construction traffic monitoring requirements (Section 2.4) including how the output of the monitoring would inform traffic management measures. The TMF would feed into the planning of future works and development and implementation of appropriate measures (utilising monitoring data) for any localised traffic and traffic-related impacts which arise as a result of construction the Project (see paragraph 2.4.21, part d, and Plate 3.2 in the oTMPfC [REP3-120] for further details on the TMF purpose and structure).</p> <p>The Applicant considers that the oTMPfC contains a robust commitment for the main works Contractors to develop measures where required using real monitoring data during the construction phase, coupled with embedded mitigation within the design and the control documents as a result of the traffic assessments carried out to date.</p> <p>As part of the preliminary design development, the Applicant undertook an iterative process to refine the design and reduce the construction traffic impacts. By engaging proactively with key stakeholders in the early stages, the Applicant has recognised common themes and areas and, in response, has developed these preliminary measures, which are set out in Tables 2.2 and 2.3 of the oTMPfC [REP3-120]. These measures would be included in the traffic management plan, as set out in Table 2.3, providing a commitment to tackle these concerns. The</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>ongoing engagement with stakeholders remains an integral part of the Applicant's strategy. The oTMPfC provides a robust mechanism, specifically the TMF, which provides a framework that is designed to further develop and deliver, where necessary, measures during the construction phase. This iterative process would be supported by real-time monitoring data, ensuring an adaptive and responsive mechanism.</p> <p>The level of construction assessments, controls and commitments within the DCO are appropriate for this stage of the Project.</p>
ExQ1_Q4.6.6	N/A	<p>Sourcing of Aggregates</p> <p>In keeping with the proximity principle, would the Outline Materials Handling Plan [APP-338], benefit from a commitment to source aggregates from nearby wharves wherever possible?</p> <p>Response:</p> <p>The commitments for use of the river set out in the outline Materials Handling Plan (oMHP) [APP-338] align with the proximity principle (in relation to sourcing of aggregates via the river), demonstrating the Applicant's considered intent to utilise nearby wharves for sourcing aggregate where viable. As a baseline commitment the Project has committed to utilise port facilities for at least 80% by weight of bulk aggregates imported to the north portal construction area. The detail of the commitments is set out in full in Section 6 of the oMHP, demonstrating the Applicant's robust stance on river-based material transportation.</p> <p>As part of the commitment to consider multimodal transportation, the Contractor would be expected to demonstrate how their approach effectively mitigates adverse effects, including environmental and traffic-related concerns, not prohibiting the use of the river beyond the specified commitments. This requirement is explicitly outlined in paragraph 8.3.3 of the oMHP: <i>'The Project requires the Contractor to consider and implement a multimodal approach to material transport in order to minimise negative impacts and reduce safety risks. The MHP to be submitted to the Secretary of State for approval would include an explanation of how multimodal solutions have been included and implemented or discounted'</i>.</p> <p>Through these commitments, the Applicant has a robust position on the use of the river for material transportation and hence does not consider it necessary to provide an additional commitment to sourcing aggregates from nearby wharves.</p> <p>In determining the use of the river commitment, the Applicant has taken a proportionate approach, aiming to extract the advantages associated from use of the river while simultaneously maintaining a level of adaptability to promote a competitive, environmentally better, value for money project. This approach, supported by a Better than Baseline Commitment, requires a proactive approach by the Contractors to optimise river transport for bulk</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>aggregates imported to the North Portal construction area beyond the baseline commitment where reasonably practicable.</p> <p>To expand on the rationale behind the Applicant's stance on utilising the river for aggregate sourcing, the following detail is provided: The intent of the commitments is to minimise Heavy Goods Vehicle (HGV) movements and its associated impact on the road network, including environmental impacts. The northern tunnel entrance compound, situated within the North Portal construction area, would be the largest compound as part of the construction of the Project and the only compound to be river facing and closely connected to port facilities. Hence, the location of the North Portal construction area lends to the use of the river for the delivery of material with minimal use of the road network.</p> <p>The Applicant's position is that expanding the river use commitment beyond the North Portal construction area becomes counter to the intent to reduce impact on the road network.</p> <p>For compounds situated north of the Tilbury Loop railway line, the use of the road network would be required and does not lend to a non-road-based approach. A higher dependency on river-use for these compounds would result in more concentrated vehicle deliveries from the same supply site/start point, i.e. Port of Tilbury, which in turn increases pressure on the local road network, including the A1089, already identified as a point of concern by Port of Tilbury London Limited (PoTLL) during engagement with them. This matter can be found in item 2.1.22 of the Statement of Common Ground between National Highways and PoTLL [REP3-090]. The Applicant is continuously engaging with PoTLL to address those concerns. The supply chain and connectivity to sites located north of the Tilbury Loop railway line extends beyond those situated along the riverfront. Such a commitment therefore would overlook the broader distribution of the supply chain. Annex B.1 of the oMHP [APP-338] provides a non-exhaustive list of potential suppliers for reference.</p> <p>Similarly, importing materials to the construction compounds to the south of the River Thames via existing ports may not always be appropriate, due to the reliance on the local road network and a lack of direct access from the river to construction compounds. The construction of direct access between the river to the construction compounds south of the River Thames would be constrained by the Thames Estuary and Marshes Ramsar. Additionally, the southern tunnel entrance compound would only see a small percentage of the overall required bulk aggregates imported for works as part of the tunnel's contract, with a larger portion required at the North Portal construction area.</p> <p>It may therefore give the impression that expanding the river use commitment to the remaining compounds would reduce construction traffic on the road network because the movements would be undertaken via the river, resulting in fewer adverse effects, providing a benefit from environmental and community perspectives. However,</p>

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>when reviewing the Project as a whole, the Applicant considers that this would not be the case. This is because the river proximity to compounds other than the northern tunnel entrance compound, would actually lead to a greater reliance on the road network for vehicles travelling between the river and those compounds. In addition, an expanded river commitment may potentially result in a larger volume of HGV movements, with those concentrated in areas around the few suitable port facilities. This larger volume of HGV movements would likely increase road traffic noise and deteriorate the air quality in those concentrated areas.</p> <p>The Applicant considers the commitment for use of port facilities set out in the oMHP [APP-338] to be adequate for the reasons listed above.</p>
ExQ1_Q4.7.1	N/A	<p>Construction Phase Accident Analysis</p> <p>Has the Applicant carried out an accident assessment for the construction phase? If not, please explain why?</p> <p>Response:</p> <p>The Applicant’s response to this question relates to road safety during the construction phase. The COBALT accident assessment conducted for the Project assumes traffic flows on a completed and fully operational highway network. The Applicant has not undertaken COBALT accident assessment associated with the construction phase as this analysis will be dependent upon how a contractor proposes to construct the project through the detailed design process. In addition, the COBALT methodology applies a relatively limited set of road categorisations that would not support analysis of measures such as narrow lanes and contraflows that will be required during construction.</p> <p>In addition to the statutory requirements that govern construction activities (including Construction Design & Management Regulations, Management of Health & Safety Regulations) and non-legislative processes (including Department for Transport Chapter 8 concerning temporary traffic management), the Applicant has a further requirement that is embedded within design Manual for Roads and Bridges (DMRB) GG 104 Requirements for Safety Risk Assessment³⁸. Contractors will be required to comply with DMRB GG 104.</p> <p>The purpose of DMRB GG 104 is to risk assess an activity (e.g. construction) that can have an impact on safety risk for workers, road users on the trunk road and motorway network and other parties (including those who could be affected by activity). Within this process, the risk of the likelihood of the occurrence and severity of collisions is</p>

³⁸ Highways England (2018). Design Manual for Roads and Bridges, GG 104 Requirements for safety risk assessment. <https://www.standardsforhighways.co.uk/tses/attachments/0338b395-7959-4e5b-9537-5d2bdd75f3b9?inline=true>

PINS ID	External Stakeholder (where applicable)	Question / Response												
		assessed, with proportionate mitigation identified to reduce residual risk to the health & safety principle of as low as is reasonably practicable.												
ExQ1_Q4.7.2	N/A	<p>Combined Modelling and Appraisal Report (ComMA)</p> <p>Figures Can the Applicant explain why the accident reduction figures presented in the ComMA Appendix D [APP-526] are presented in terms of PIC/km rather than PIC/mvkm?</p> <p>Response:</p> <p>The Applicant’s forecast change in the number of accidents as a result of the Project are set out in Section 8.6 of Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [APP-526] (and Chapter 9 of the Transport Assessment [REP3-116]).</p> <p>The Applicant has used COBALT software to undertake the accident appraisal and, as is standard, has presented outputs in terms of Personal Injury Accidents (PIAs). The rate of accidents (both with and without the Project) per million vehicle kilometres (mvkm) is shown in Table 8.12 of the Economic Appraisal Report for both 2030 and 2045 (as the PIA/mvkm varies for each year of the appraisal period).</p> <p>Table 8.10 presents the total number of accidents (with and without the Project) over the 60-year appraisal period, and the change in the number of casualties over 60 years per kilometre.</p> <p>Although Personal Injury Casualties (PIC)/mvkm is not a standard output from COBALT, to aid the ExA, the Applicant has produced outputs providing PIC/mvkm for 2030 and 2045 as shown in Table 4.</p> <p style="text-align: center;">Table 4 PIC/mvkm across the appraisal area</p> <table border="1" data-bbox="595 1002 2069 1126"> <thead> <tr> <th></th> <th>Without Scheme</th> <th>With Scheme</th> <th>Change</th> </tr> </thead> <tbody> <tr> <td>Casualty rate per million vehicle km in 2030</td> <td>0.163</td> <td>0.158</td> <td>-0.005</td> </tr> <tr> <td>Casualty rate per million vehicle km in 2045</td> <td>0.146</td> <td>0.141</td> <td>-0.005</td> </tr> </tbody> </table> <p>All of the data within the application, and that shown in the table above, demonstrates that the Project would result in a fall in the accident rate, but an increase in accident numbers as a result of more vehicle kilometres being travelled in the appraisal area (shown in Pate 8.3 of the Economic Appraisal Report), mainly as a result of longer (cross-river) journeys that the Project would enable.</p>		Without Scheme	With Scheme	Change	Casualty rate per million vehicle km in 2030	0.163	0.158	-0.005	Casualty rate per million vehicle km in 2045	0.146	0.141	-0.005
	Without Scheme	With Scheme	Change											
Casualty rate per million vehicle km in 2030	0.163	0.158	-0.005											
Casualty rate per million vehicle km in 2045	0.146	0.141	-0.005											
ExQ1_Q4.7.3	N/A	<p>Casualty Rates</p> <p>Is it the standard practice for the Applicant to express accident savings as a rate per kilometre as opposed to providing absolute savings in casualties and accidents? If so, please provide examples from other made DCOs.</p>												

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>Response:</p> <p>It is standard practice for National Highways to use both rates and absolute numbers to express the occurrence of accidents and casualty savings. Within the Applicant’s submitted documentation there are references to both the anticipated casualty rate and absolute numbers. These are both included within Section 9.3 of the Transport Assessment [REP3-116]. Collision rates have been referred to within other Development Consent Order (DCO) applications, including:</p> <ul style="list-style-type: none"> • M4 Motorway (Junctions 3 to 12) (Smart Motorway). Planning Inspectorate reference TR010019. DCO made 2 September 2016. • A14 Cambridge to Huntingdon Improvement Scheme. Planning Inspectorate reference TR010018. DCO correction order made 13 November 2017. Reference to accident rate included in paragraph 4.4.96 of the Examining Authority’s Report of Findings and Conclusions³⁹. • A1 Birtley to Coal House Improvement Scheme. Planning Inspectorate reference TR010031. DCO correction order made 30 April 2021. Reference to accident rate included in paragraph 5.4.2 of 7.3 Transport Assessment Report⁴⁰. • A19 Downhill Lane Junction Improvement. Planning Inspectorate reference TR010024. DCO made 16 July 2020. Reference to the use of national average collision rates included in paragraph 5.4.1 of 7.4(1) Transport Assessment updated for Deadline 3⁴¹. <p>Other recent DCOs, not currently made:</p> <ul style="list-style-type: none"> • A66 Northern Trans-Pennine Project. Planning Inspectorate reference TR010062. Deadline for the Secretary of State to make a decision is 7 November 2023.

³⁹ Planning Inspectorate (2016). A14 Cambridge to Huntingdon Improvement Scheme Examining Authority’s Report of Findings and Conclusions and Recommendation to the Secretary of State for Transport. Accessed August 2023. <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010018/TR010018-001731-A14%20ExA%20Recommendation%20Report.pdf>

⁴⁰ Highways England (2019). A1 Birtley to Coal House, 7.3 Transport Assessment Report. Accessed August 2023. <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010031/TR010031-000595-7.3%20Transport%20Assessment%20Report.pdf>

⁴¹ Highways England (2019). A19 Downhill Lane Junction Improvement, 7.4(1) Transport Assessment. Accessed August 2023. [https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010024/TR010024-000352-TR010024_APP_7.4\(1\)%20%20Transport%20Assessment%20Report.pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010024/TR010024-000352-TR010024_APP_7.4(1)%20%20Transport%20Assessment%20Report.pdf)

PINS ID	External Stakeholder (where applicable)	Question / Response
		<ul style="list-style-type: none"> • A12 Chelmsford to A120 Widening Scheme. Planning Inspectorate reference TR010060. Deadline for the Planning Inspectorate to submit its recommendation is 12 October 2023.
ExQ1_Q4.7.4	N/A	<p>Accident Analysis Can the Applicant explain why monetised impact of accidents is the same across the three traffic scenarios? Intuitively one would expect accidents to increase proportionally with flows.</p> <p>Response: In line with The Transport Appraisal Process⁴² (for example paragraph 1.1.3), the Applicant has taken a proportionate approach to the economic appraisal of the Project, as set out in Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [APP-526]. As set out in Table 11.2 of the Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [APP-526], accidents represented -£67.8 million out of a total of £3,299.5 million of Level 1 and Level 2 benefits, representing just over 2% of the total. Whilst the number of accidents would change broadly in proportion with a forecast change in traffic flows, given that the monetised impact represents only 2% of the total of Level 1 and Level 2 benefits there would be a low level of variance across the low, core and high scenarios. Therefore, the Applicant in line with a proportionate approach to appraisal has only conducted the monetised impact accident appraisal for the core scenario, as is set out in paragraph 8.6.22 of the Economic Appraisal Report.</p>
ExQ1_Q4.7.5	N/A	<p>Queuing onto Orsett Cock Does the Applicant agree that if queuing were to extend back along the Orsett Cock slip roads onto the A13/LTC mainline carriageways, this would present an unacceptable safety risk?</p> <p>Response: The Applicant agrees that if queuing were to extend back along the Orsett Cock slip roads onto the A13/A122 Lower Thames Crossing mainline carriageways in forecast operations, while the mainline carriageways are in a freeflow state (i.e. vehicles travelling at or near the speed limit), the safety risk would be unacceptable. However, the modelling undertaken by the Applicant indicates that this is not the case for forecast operations.</p>

⁴² Department for Transport (2018). Transport Analysis Guidance: The Transport Appraisal Process.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938766/tag-transport-appraisal-process.pdf

PINS ID	External Stakeholder (where applicable)	Question / Response
		<p>Design Manual for Roads and Bridges GG 104⁴³ defines safety risk as the expected consequence of a specified hazard being realised with the combination of the likelihood and expected severity of the outcome. Safety risk is a measure of harm and loss associated with an activity. GG 104 also defines an unacceptable risk as being one where the benefits secured do not warrant the risk being taken.</p> <p>If there were some scenarios in which queuing could extend back onto the A13/A122 Lower Thames Crossing mainline carriageways, the acceptability of this would require consideration of the likelihood of the scenario, the frequency at which it was expected to occur, the severity of the outcome, and the benefits of the proposals that allow such a scenario to arise.</p> <p>A local junction micro-simulation model has been developed to understand the impacts of the Project at the Orsett Cock junction. The traffic modelling forecasts are intended to provide indicative predictions for how the Project would perform under normal circumstances. The results from the micro-simulation model demonstrate that while overall delays and queueing are forecast to increase at the junction with the implementation of the Project, the predicted queues on all approaches can be accommodated within the available safe storage space and with this, there would be no stationary or crawling traffic on the mainline (the Project or A13). The full results of the local junction model are reported in Localised Traffic Modelling Appendix C: Orsett Cock Forecasting Report [REP1-189]. Since the micro-simulation model demonstrates that queuing does not extend back along the Orsett Cock slip roads onto the A13/A122 Lower Thames Crossing mainline carriageways in normal operation, the Applicant considers that the junction performs acceptably, and that overall, the benefits on the road network would outweigh the adverse impacts.</p> <p>The Applicant acknowledges that traffic flows on the road network are subject to uncertainty, and that incidents and road closures are likely to take place in the future. Such scenarios could cause queues to extend back along the Orsett Cock slip roads onto the A13/A122 Lower Thames Crossing mainline carriageways, but this would not happen under normal operation, and so the residual risk is considered to be low. Technology would be in place on the Project road to allow for the reduction of any risk in such an event, such as the ability to reduce speed limits and the use of Variable Message Signs (VMS) to inform drivers of queues.</p>

⁴³ Highways England (2018). Design Manual for Roads and Bridges, GG 104 Requirements for safety risk assessment. <https://www.standardsforhighways.co.uk/tses/attachments/0338b395-7959-4e5b-9537-5d2bdd75f3b9?inline=true>

Annex A Results of the Common Analytical Scenarios, including tests where p=4

Table A.1 Comparison of forecast flows at the Dartford Crossing without the Project (PCUs)

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DM Core	16,030	14,340	15,250	16,350	15,730	16,260
TEMPro 8 DM High economy	16,180	14,800	15,600	16,440	16,260	16,350
TEMPro 8 DM Low economy	15,960	14,040	15,020	16,260	15,120	15,860
TEMPro 8 DM Regional	16,020	14,310	15,220	16,260	15,210	16,010
TEMPro 8 DM Behavioural Change	15,910	13,710	14,780	16,310	15,070	15,780
TEMPro 8 DM Technology	16,130	14,660	15,500	16,380	16,070	16,280
TEMPro 8 DM Vehicle-led Decarbonisation	16,120	14,660	15,490	16,400	16,090	16,280
TEMPro 8 DM Mode-balanced Decarbonisation	15,910	13,900	14,910	16,270	15,360	15,970
TEMPro 8 High p=4	16,210	15,170	15,750	16,440	16,250	16,330
TEMPro 8 Low p=4	15,790	13,240	14,620	16,170	14,650	15,720
Difference from TEMPPro 8 Core						
TEMPPro 8 DM High economy	144	459	357	94	528	93
TEMPPro 8 DM Low economy	-76	-306	-221	-84	-613	-402
TEMPPro 8 DM Regional	-7	-35	-25	-90	-516	-253
TEMPPro 8 DM Behavioural Change	-119	-627	-464	-38	-660	-476
TEMPPro 8 DM Technology	95	322	250	30	343	19
TEMPPro 8 DM Vehicle-led Decarbonisation	92	315	249	50	356	23
TEMPPro 8 DM Mode-balanced Decarbonisation	-121	-444	-339	-79	-367	-287
TEMPPro 8 High p=4	175	825	504	97	518	70
TEMPPro 8 Low p=4	-239	-1,103	-630	-172	-1,080	-538
Range	414	1,928	1,134	269	1,608	631

Table A.2 Comparison of forecast flows at the Dartford Crossing with the Project (PCUs)

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DS Core	13,230	10,660	12,040	15,040	12,840	13,690
TEMPro 8 DS High economy	13,840	11,330	12,600	15,460	13,870	14,220
TEMPro 8 DS Low economy	12,850	10,290	11,700	14,240	11,820	12,870
TEMPro 8 DS Regional	13,190	10,620	11,980	14,390	12,060	13,180
TEMPro 8 DS Behavioural Change	12,660	9,850	11,300	14,390	11,670	12,530
TEMPro 8 DS Technology	13,580	11,090	12,420	15,340	13,450	13,990
TEMPro 8 DS Vehicle-led Decarbonisation	13,560	11,080	12,400	15,350	13,460	14,010
TEMPro 8 DS Mode-balanced Decarbonisation	12,860	10,160	11,620	14,780	12,300	13,210
TEMPro 8 High p=4	14,110	11,790	12,820	15,450	13,830	14,080
TEMPro 8 Low p=4	12,240	9,430	11,120	13,920	11,300	12,650
Difference from TEMPro 8 Core						
TEMPro 8 DS High economy	607	672	566	415	1,035	529
TEMPro 8 DS Low economy	-378	-371	-334	-798	-1,022	-828
TEMPro 8 DS Regional	-42	-47	-57	-648	-782	-510
TEMPro 8 DS Behavioural Change	-576	-811	-742	-650	-1,174	-1,165
TEMPro 8 DS Technology	344	427	381	301	614	300
TEMPro 8 DS Vehicle-led Decarbonisation	332	421	364	312	616	312
TEMPro 8 DS Mode-balanced Decarbonisation	-376	-505	-416	-266	-545	-481
TEMPro 8 High p=4	880	1,127	786	412	988	384
TEMPro 8 Low p=4	-995	-1,238	-922	-1,118	-1,544	-1,039
Range	1,183	1,483	1,308	1,213	2,209	1,695

Table A.3 Comparison of flows at the Lower Thames Crossing (PCUs)

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPPro 8 DS Core	7,850	6,390	7,650	8,930	7,550	8,750
TEMPPro 8 DS High economy	8,120	6,730	7,940	9,450	8,320	9,330
TEMPPro 8 DS Low economy	7,670	6,190	7,430	8,450	6,960	8,350
TEMPPro 8 DS Regional	7,820	6,350	7,630	8,630	7,090	8,520
TEMPPro 8 DS Behavioural Change	7,370	5,900	6,970	8,300	6,600	8,080
TEMPPro 8 DS Technology	8,100	6,700	7,880	9,320	8,090	9,070
TEMPPro 8 DS Vehicle-led Decarbonisation	8,090	6,690	7,880	9,300	8,070	9,120
TEMPPro 8 DS Mode-balanced Decarbonisation	7,430	6,010	7,200	8,360	6,840	8,240
TEMPPro 8 High p=4	8,200	6,940	7,910	9,300	8,280	9,120
TEMPPro 8 Low p=4	7,250	5,730	7,050	8,340	6,570	8,320
Difference from TEMPPro 8 Core						
TEMPPro 8 DS High economy	278	344	288	526	771	580
TEMPPro 8 DS Low economy	-171	-196	-215	-475	-588	-404
TEMPPro 8 DS Regional	-21	-35	-22	-297	-451	-232
TEMPPro 8 DS Behavioural Change	-480	-492	-678	-633	-950	-671
TEMPPro 8 DS Technology	250	307	236	388	546	314
TEMPPro 8 DS Vehicle-led Decarbonisation	245	299	234	373	525	361
TEMPPro 8 DS Mode-balanced Decarbonisation	-414	-374	-450	-566	-709	-514
TEMPPro 8 High p=4	357	552	260	372	734	368
TEMPPro 8 Low p=4	-596	-660	-595	-589	-976	-434
Range	953	1,212	966	1,158	1,747	1,251

Table A.4 Percentage change in traffic flows at the Dartford Crossing, with the Project, in the CAS

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DS High economy	4.6%	6.3%	4.7%	2.8%	8.1%	3.9%
TEMPro 8 DS Low economy	-2.9%	-3.5%	-2.8%	-5.3%	-8.0%	-6.0%
TEMPro 8 DS Regional	-0.3%	-0.4%	-0.5%	-4.3%	-6.1%	-3.7%
TEMPro 8 DS Behavioural Change	-4.4%	-7.6%	-6.2%	-4.3%	-9.1%	-8.5%
TEMPro 8 DS Technology	2.6%	4.0%	3.2%	2.0%	4.8%	2.2%
TEMPro 8 DS Vehicle-led Decarbonisation	2.5%	4.0%	3.0%	2.1%	4.8%	2.3%
TEMPro 8 DS Mode-balanced Decarbonisation	-2.8%	-4.7%	-3.5%	-1.8%	-4.2%	-3.5%
TEMPro 8 High p=4	6.7%	10.6%	6.5%	2.7%	7.7%	2.8%
TEMPro 8 Low p=4	-7.5%	-11.5%	-7.6%	-7.4%	-12.0%	-7.6%

Table A.5 Percentage change in traffic flows at the Lower Thames Crossing, in the CAS

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DS High economy	3.5%	5.4%	3.8%	5.9%	10.2%	6.6%
TEMPro 8 DS Low economy	-2.2%	-3.1%	-2.8%	-5.3%	-7.8%	-4.6%
TEMPro 8 DS Regional	-0.3%	-0.5%	-0.3%	-3.3%	-6.0%	-2.7%
TEMPro 8 DS Behavioural Change	-6.1%	-7.7%	-8.9%	-7.1%	-12.6%	-7.7%
TEMPro 8 DS Technology	3.2%	4.8%	3.1%	4.3%	7.2%	3.6%
TEMPro 8 DS Vehicle-led Decarbonisation	3.1%	4.7%	3.1%	4.2%	7.0%	4.1%
TEMPro 8 DS Mode-balanced Decarbonisation	-5.3%	-5.9%	-5.9%	-6.3%	-9.4%	-5.9%
TEMPro 8 High p=4	4.5%	8.6%	3.4%	4.1%	9.7%	4.1%
TEMPro 8 Low p=4	-7.6%	-10.3%	-7.8%	-6.6%	-13.0%	-5.0%

Table A.6 Change in flow at the Dartford Crossing with the Project, Opening year, PCUs

Scenario	AM				IP				PM			
	DM	DS	Change	% change	DM	DS	Change	% change	DM	DS	Change	% change
TEMPro 7.2 DM Core	16,020	13,280	-2,740	-17%	14,410	10,780	-3,630	-25%	15,310	12,020	-3,290	-21%
TEMPro 8 DM Core	16,030	13,230	-2,800	-17%	14,340	10,660	-3,680	-26%	15,250	12,040	-3,210	-21%
TEMPro 8 DM High economy	16,180	13,840	-2,340	-14%	14,800	11,330	-3,470	-23%	15,600	12,600	-3,000	-19%
TEMPro 8 DM Low economy	15,960	12,850	-3,100	-19%	14,040	10,290	-3,740	-27%	15,020	11,700	-3,320	-22%
TEMPro 8 DM Regional	16,020	13,190	-2,830	-18%	14,310	10,620	-3,690	-26%	15,220	11,980	-3,240	-21%
TEMPro 8 DM Behavioural Change	15,910	12,660	-3,260	-20%	13,710	9,850	-3,860	-28%	14,780	11,300	-3,490	-24%
TEMPro 8 DM Technology	16,130	13,580	-2,550	-16%	14,660	11,090	-3,570	-24%	15,500	12,420	-3,080	-20%
TEMPro 8 DM Vehicle-led Decarbonisation	16,120	13,560	-2,560	-16%	14,660	11,080	-3,570	-24%	15,490	12,400	-3,090	-20%
TEMPro 8 DM Mode-balanced Decarbonisation	15,910	12,860	-3,050	-19%	13,900	10,160	-3,740	-27%	14,910	11,620	-3,280	-22%
TEMPro 8 High p=4	16,210	14,110	-2,100	-13%	15,170	11,790	-3,380	-22%	15,750	12,820	-2,930	-19%
TEMPro 8 Low p=4	15,790	12,240	-3,550	-22%	13,240	9,430	-3,810	-29%	14,620	11,120	-3,500	-24%

Table A.7 Change in flow at the Dartford Crossing with the Project, Opening year, PCUs

Scenario	AM				IP				PM			
	DM	DS	Change	% change	DM	DS	Change	% change	DM	DS	Change	% change
TEMPro 7.2 DM Core	16,020	13,280	-2,740	-17%	14,410	10,780	-3,630	-25%	15,310	12,020	-3,290	-21%
TEMPro 8 DM Core	16,030	13,230	-2,800	-17%	14,340	10,660	-3,680	-26%	15,250	12,040	-3,210	-21%
TEMPro 8 DM High economy	16,180	13,840	-2,340	-14%	14,800	11,330	-3,470	-23%	15,600	12,600	-3,000	-19%
TEMPro 8 DM Low economy	15,960	12,850	-3,100	-19%	14,040	10,290	-3,740	-27%	15,020	11,700	-3,320	-22%
TEMPro 8 DM Regional	16,020	13,190	-2,830	-18%	14,310	10,620	-3,690	-26%	15,220	11,980	-3,240	-21%
TEMPro 8 DM Behavioural Change	15,910	12,660	-3,260	-20%	13,710	9,850	-3,860	-28%	14,780	11,300	-3,490	-24%
TEMPro 8 DM Technology	16,130	13,580	-2,550	-16%	14,660	11,090	-3,570	-24%	15,500	12,420	-3,080	-20%
TEMPro 8 DM Vehicle-led Decarbonisation	16,120	13,560	-2,560	-16%	14,660	11,080	-3,570	-24%	15,490	12,400	-3,090	-20%
TEMPro 8 DM Mode-balanced Decarbonisation	15,910	12,860	-3,050	-19%	13,900	10,160	-3,740	-27%	14,910	11,620	-3,280	-22%
TEMPro 8 High p=4	16,210	14,110	-2,100	-13%	15,170	11,790	-3,380	-22%	15,750	12,820	-2,930	-19%
TEMPro 8 Low p=4	15,790	12,240	-3,550	-22%	13,240	9,430	-3,810	-29%	14,620	11,120	-3,500	-24%

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