Lower Thames Crossing

Thurrock Council Comments on Applicant's Submissions at Deadline 3 (D3)

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Thurrock Council

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Document Control Sheet

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	Name	Position	Signature	Date
Prepared by:	Various			
Reviewed by:	David Bowers / Chris Stratford	Director / Senior Consultant	DB/CS	19/09/23
Approved by:	Mark Bradbury	Acting Director of Place, Thurrock Council	MB	19/09/23

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Executive Summary

Section 1 – Introduction

1. This D4 submission seeks to respond to all of the applicant's Deadline 3 (D3) submission documents that were uploaded to the PINS website on 30 August 2023, whether new or amended in track changes. Some submitted documents do not require Council comments and so do not form part of this submission. Further details of the relevant sections are set out below.

2. The Council would like to note that in many instances within the applicant's documents covered by this submission, there is no further analysis, evidence, documentation or response that addresses the Council's points made in its submissions.

3. The applicant has in most cases has referred to previous documentation, reiterated its previous position and/or stressed that it has been both 'reasonable and proportionate', without actually being so.

4. The Council contends that this is not reasonable, particularly if a major stakeholder is making substantive technical points, then it is incumbent on the applicant to respond with further analysis, evidence, documentation or argument that addresses the Council's points.

Section 2 – Control Document Changes

5. The Control documents include an enhanced arrangement in the CoCP for the assessment of Greygoose Farm. Other changes to the oTMPfC, EMP, Outline Landscape and Ecology Management Plan, Design Principles are minor or are changes on which the Council has no objection. However, there remain significant comments on the updates to the Statement of Commonality and Consents and Agreements Positions Statement.

Section 3 – Environmental Statement (ES) Addendum (v3) and other ES Document Changes

6. There are several minor changes to the ES on which the Council has no substantive comments. The approach to the assessment of air quality is still an area of concern for the Council and requested information still has not been provided, as requested in the LIR (REP1-281) in Section 10.2 and in the Council's D3 submission (REP3-211) in the Executive Summary paragraph 77-81 and in Section 18.9.1 – 18.9.12. The Council considers that appropriate mitigation measures for air quality impacts should have been investigated by the applicant though the design process of the LTC project.

Section 4 – Draft Development Consent Order

7. The amendments and responses do not address the Council's extensive concerns regarding the dDCO, as raised in our LIR (REP1-281) and SoCG (submitted at D3) (REP3-093). The Council has no concerns about the amendments made within (REP3-078). The Council has raised a number of key concerns during ISH7 and these are provided in the Council's separate ISH7 submission.

Section 5 – Statement of Reasons (v4), including Annexes A and B (v4), Land Plans (v4), Special Category Land Plans (v4) and Crown Land Plans (v4)

8. The applicant has failed to address any of the points raised by the Council in its D3 submission.

Section 6 – General Arrangement Plans (GA) (v2), Rights of Way & Access Plans (v2), Engineering Drawings and Sections (v3), Structures Plans (v2) and all Other Transport Plans (v2 and v3)

9. There are several minor changes to the General Arrangement Plans, Rights of Way and Access Plans, Engineering Drawings, Structure Plans and all other Transport Plans. The Council has no substantive comments on these changes.

Section 7 – Works Plans (v2), Temporary Works Plans (v2), Works Plans Utilities (v2) and Drainage Plans (v2)

10. The applicant has failed to address any of the points raised by the Council at D3 on Works Plans and Temporary Works Plans and Works Plans Utilities. Further information is provided on the Drainage Plans, but the Council still requires further information to be provided to enable the Council to understand the impacts of the scheme. An update on discussions between the applicant and Statutory Undertakers is requested.

Section 8 – Transport Assessment Parts 1 – 3 (v2)

11. There are several minor changes to the Transport Assessment. The Council has no substantive comments on these changes but highlights its ongoing concerns about the approach to the modelling of the local road network.

Section 9 – Tunnel Depth Report and SoCG Between Applicant and PoTL (v2)

12. Minor changes have been made to the Tunnelling Depth Report and the SoCG between the applicant and PoTL. The Council has no substantive comments on these changes.

Section 10 – Additional Localised Traffic Modelling Reports

13. The Council has reviewed the additional localised traffic modelling reports provided by the applicant following a request from the Examining Authority. Out of the seven locations for which the Council has repeatedly requested microsimulation models, models for five locations had been shared by the applicant in their D3 submissions (REP3-127 – REP3-130 and REP3-132). However, only the Orsett Cock base year model has been approved by the Council. The review of the other base year and forecast models undertaken by the Council has highlighted significant issues in the models, which need to be addressed before they can be used as a reliable evidence base.

14. The Council therefore contends that microsimulation modelling is not complete and further microsimulation modelling needs to be undertaken as summarised in the table below.

Section 11 – NTEM 8 and Common Analytical Scenarios

15. The Council is concerned that the applicant has not presented 'like-for-like' comparisons of traffic flows in terms of modelled years. The Council considers that the applicant is under-reporting the impact of using NTEM v8 by claiming additional background growth, which reduces the differences in the traffic flow comparisons for the use of different NTEM versions. The Council requests that the applicant provides comparisons using the same modelled year (2030) as the DCO modelling. In addition, the Council requests that the applicant provides it with the TomTom data referred to in ISH4.

16. The Council has serious concerns around the network modelling changes that the applicant has undertaken as part of the modelling update to reflect NTEM 8. The Council considers that these changes mean a fair and valid comparison cannot be made between the new NTEMv8 runs and the previously presented modelling. The Council requests that the applicant is asked to provide modelling comparisons without these network changes included, so that a direct comparison can be made.

17. The Council has serious concerns around the lack of appraisal evidence provided by the applicant as part of its new analysis. The Council is concerned that the results provided to date indicate that the economic benefits of the scheme will reduce, further reducing the economic case for the scheme. No evidence is provided within the note to back up claims the impact of NTEMv8 is negligible on the economic case for the scheme. The Council requests that the analysis of the use of NTEM v8 on the economic appraisal is provided by the applicant.

Section 12 – Council Commentary on S106 Agreement Progress

18. The process to achieve no agreement on the S106 has taken almost two years, despite five meetings and much evidence produced by the Council to the applicant. The applicant has sought to disguise its lack of progress in a recent submission by only providing a high level update. There are several significant areas of concern to the Council that remain outstanding and await positive responses from the applicant. The applicant's proposed programme for achieving an agreed S106 Agreement is already delayed and unlikely to be achieved to the significant detriment of the Council, in the Council's opinion.

1 Introduction

1.1.1 This submission seeks to respond to all relevant and necessary of the applicant's Deadline 3 (D3) submission documents that were uploaded to the PINS website on 30 August 2023, whether new or amended in track changes. Some submitted documents do not require Council comments and so do not form part of this submission. Further details of the relevant sections are set out below.

1.1 Context

1.1.2 There were 219 submissions at D3 and of that total the applicant made 147 submissions of which 69 were in track changes and which have been assessed to determine if the Council needed to comment.

1.2 Structure of this Submission

1.1.3 This document provides comments on the relevant and necessary submitted documents, as set out below.

a. Control documents

b. Environmental Statement Addendum (v3)

c. Draft Development Consent Order

d. Statement of Reasons (SoR)

e. General Arrangement plans

f. Various Work Plans

g. Transport Assessment

h. Tunnel Depth

i. Localised Traffic Modelling

j. Section 106 Agreement progress

Commentary

1.1.4 The Council would like to note that in many instances within the applicant's documents covered by this submission, there is no further analysis, evidence, documentation or response that addresses the Council's points made in its previous submissions in its Local Impact Report (REP1-281) and its Appendices or its D3 Submission (REP3-211) and its Appendices.

1.1.5 The applicant has in most cases has referred to previous documentation, reiterated its previous position and/or stressed that it has been both 'reasonable and proportionate', without actually being so.

1.1.6 The Council contends that this is not reasonable, particularly if a major stakeholder is making substantive technical points, then it is incumbent on the applicant to respond with further analysis, evidence, documentation or argument that addresses the Council's points.

2 Control Document Changes

2.1 Introduction

2.1.1 This Section provides the Council's comments made to various Control Documents for the scheme.

2.2 Outline Traffic Management Plan for Construction (oTMPfC)

2.2.1 The changes made to the oTMPfC (REP3-121) comprise minor editing and formatting updates and therefore there are no substantive comments from the Council regarding the updated NH submission.

2.3 Code of Construction Practice (CoCP) (v3)

2.3.1 There is a change to Table 7.1 REAC table (REP3-105) to include site 247 at Greygoose Farm. This is an improvement and secures the same level of investigation on this non-designated asset as that proposed for the Scheduled Monument – this was recommended in the Council's LIR (REP1-281) in Section 10.4.4. There are some further minor editing and formatting updates on which the Council has no comment.

2.4 Environmental Management Plan (EMP) (v3)

2.4.1 The amendments to the EMP north of the Thames are minor corrections and therefore the Council has no comments.

2.5 Outline Landscape and Ecology Management Plan (v3)

2.5.1 The only changes are the addition of paragraph 2.1.7, which clarifies what 'emergency services' are covered in Table 2.1 and the addition of Transport for London (TfL) as a Relevant Stakeholder. The Council has no comments to make on these changes.

2.6 Design Principles (v2)

2.6.1 An additional principle has been added regarding designing in suicide prevention measures. Other changes to the text are relatively minor and enhanced measures, for example, relating to the creation of Open Mosaic Habitat. The Council has no objection to the proposed changes.

2.7 Statement of Commonality (v4)

2.7.1 The Council has no comments on the amendments within this document, except Table 4.2, which sets out *'……to assist the Examining Authority in understanding the headings which remain under discussion or not agreed, particularly such headings where the position is shared across more than one stakeholder. Therefore, the categorisation and colour coding in the matrix is intended to represent the broad position per heading (it is not absolute). In addition, footnotes have been used to indicate exceptions.'*

2.7.2 The Council does not accept that the row relating to the Council is accurate and still has not been discussed with the Council, as was the case in the previous version 2. Some items are listed as 'broadly under discussion' or 'no matters raised at this point' and these are incorrect or not agreed and it misrepresents the status of matters with the Council. This is considered

serious and requiring explanation, although it may be updated further by the applicant once it has reviewed the Council's LIR, which makes serious points on all matters colour-coded 'grey' in Table 4.2. The Council is willing to discuss with the applicant the content of Table 4.2 and is prepared following such discussions to arrange for a corrective update to that table at D5 or D6.

2.7.3 Furthermore, Section 4.2 that sets out broad progress on a range of topics is, in the Council's view, too broad to be valuable and is so broad as to be potentially misleading. This is because many points listed as 'agreed' may be minor and some points listed as 'not agreed' may be major and yet this generalisation does not distinguish and it is just a number count, which is of very little value. The Council has serious concerns about most of the topics covered in this section.

2.7.4 In addition, there have been a number of other changes that comprise minor editing and formatting updates and therefore there are no further substantive comments from the Council regarding the updated applicant's submission.

2.8 Consents and Agreements Position Statement (v3)

2.8.1 Again, there have been a number of other changes that comprise minor editing and formatting updates and therefore there are no further substantive comments from the Council regarding the updated NH submission. However, the Council's comments in Section 6.1 of its D3 submission (REP3-211) have not been dealt with and still require responses from the applicant.

2.8.2 **Overall Summary: the Control Documents include an enhanced arrangement in the CoCP for the assessment of Greygoose Farm. With the exception of the Statement of Commonality Table 4.2, the other changes are minor or are changes on which the Council has no objection.**

3 Environmental Statement Addendum (v3) and other ES Document Changes

3.1 Introduction

3.1.1 This Section provides the Council's comments on changes to the Environmental Statement Addendum (v3) and other ES Document changes.

3.2 ES Addendum (v3)

Geology and Soils

3.2.1 A minor change is provided in Environmental Statement - Chapter 10 - Geology and Soils Health (APP-148) with an amendment to Paragraph 10.5.8 bullet point u. This aligns the document with GS023. The Council has no comment on this change.

3.3 Cultural Heritage

3.3.1 Environmental Statement - Chapter 6 (AS 044) has been amended to update the assessment of a previously identified heritage asset in Kent, where the link between a Grade I listed building and non-designated built heritage asset had not previously been identified. The Council has no comment on this change.

3.3.2 There is a minor change to Chapter 17.2 with two additional sites raised to being medium value. The Council has no comment on this change.

3.3.3 There is a change to Section 6.5.17 of REAC (REP1-157) which has been amended to include site 247 at Greygoose Farm. This is an improvement and secures the same level of investigation on this non-designated asset as to that proposed on the Scheduled Monument. This was recommended in the Council's LIR (REP1-281) in Section 10.4.4.

3.4 Hedgerow and Tree Preservation Order Plans (v2)

3.4.1 There are minor changes which do not alter overall effects. The Council has no comment on these changes.

3.5 Open Space (Planning Statement Appendix D) (v2)

3.5.1 There are minor changes which do not alter overall effects. The Council has no comment on these changes.

3.6 Population and Human Health – HEqIA (v2)

3.6.1 The changes made to the HEqIA at Deadline 3 (REP3-119) relevant to the Council comprise minor editing and formatting updates and therefore there are no further comments from the Council regarding this updated NH submission.

3.7 Air Quality Quantitative Health Impact Assessment (AQQHIA)

3.7.1 The applicant has undertaken an AQQHIA (REP3-141) to quantify health effects associated with the absolute change in air pollutant concentrations.

3.7.2 An in-depth review of the methodology used to undertake the AQQHIA has not been undertaken and the Council reserve its judgement on its adequacy. However, it should be noted that the results used in the AQQHIA are taken from the air quality assessment submitted with the DCO submission (APP-143). The Council still has outstanding queries on this assessment and a response is required to enable the Council to have a full understanding of the assessment, such as the approach to model verification as identified in the Local Impact Report (REP1-281) Section 10.2.

3.7.3 The assessment concludes that the potential change in mortality is not of a level that would be measurable or detectable in annual public health statistics across the entire scheme. In the AQQHIA's Annex A 'Mortality Burden by Local Authority (NO_2)' does though indicate that Thurrock is predicted to experience the greatest change in mortality burden, due to LTC, compared to other Boroughs.

3.7.4 Results of the AQQHIA within Thurrock have been aggregated across the local authority. It is considered that if the results were presented at a greater resolution, based on the results of the air quality assessment (APP-143), those receptors in the east of Thurrock would experience a greater change in mortality because of the scheme, due to the likely magnitude of impacts on air quality in this area as shown in the Borough wide air quality modelling undertaken by Thurrock (REP1-285).

3.7.5 The predictions made by the applicant are based on 'opening year' traffic flows and it should be recognised that traffic is predicted to increase significantly within the first 15 years of operation.

3.7.6 The rate of renewal of vehicles and uptake of Electric Vehicles (EV) will contribute to anticipated reductions in NOx emissions from road transport. However, this is unlikely to result in any noticeable decrease in $PM_{2.5}$ emissions (and heavier weights of EV could result in increased emissions). There is uncertainty as to the rate of this change and whether any decrease in NOx emissions will outweigh the growth in traffic flows using the LTC.

3.7.7 Therefore, the duration of these predicted impacts is uncertain and $PM_{2.5}$ impacts due to LTC are likely to increase further in future years with increased traffic flows using the LTC resulting in residents of Thurrock continuing to experience an elevated fraction of mortality attributable to particulate air pollution.

3.7.8 Given the impacts and deterioration in air quality predicted for numerous residential properties within Thurrock, the Council considers that appropriate mitigation measures should have been investigated by the applicant through the design process of the LTC project.

3.7.9 **Summary: there are several minor changes to the ES on which the Council has no substantive comments. The approach to the assessment of air quality is still an area of serious concern for the Council and requested information still has not been provided by the applicant. At present the assessment is not considered to be adequate or sufficient for the purposes of an ES. The Council considers that appropriate mitigation measures for air quality impacts should have been investigated by the applicant though the design process of the LTC project; this has not been done sufficiently.**

4 Draft Development Consent Order (DCO) (Version 5.0), Schedule of Changes to the Draft DCO (Version 3.0) and Applicant's Responses to IP dDCO Comments at D2

4.1 Introduction

4.1.1 This Section provides the Council's comments on changes to the draft Development Consent Order.

4.2 Draft Development Consent Order (Version 5.0)

4.2.1 The Council has reviewed the Deadline 3 submissions on the dDCO (REP3-078 – tracked changes version 5), Schedule of Changes to the dDCO (REP3-137) and the applicant's response to IP comments (REP3-144).

4.2.2 The amendments and responses do not address the Council's extensive concerns regarding the dDCO, as raised in our LIR (REP1-281) and SoCG (submitted at D3) (REP3-093). The Council has no concerns about the amendments made within (REP3-078).

4.2.3 The Council has raised a number of key concerns during Issue Specific Hearing 7 (ISH7) and these are provided in the Council's separate ISH7 submission – 'Post Event Submissions for Issue Specific Hearings (ISH3 - ISH7) and Compulsory Acquisition Hearings (CAH1 and CAH2)' within the appropriate section.

4.2.4 **Summary: the amendments and responses do not address the Council's extensive concerns regarding the dDCO, as raised in our LIR (REP1-281) and SoCG (submitted at D3) (REP3-093). The Council has raised a number of key concerns during Issue Specific Hearing 7 (ISH7) and these are provided in the Council's separate ISH7 submission – 'Post Event Submissions for Issue Specific Hearings (ISH3 - ISH7) and Compulsory Acquisition Hearings (CAH1 and CAH2)' within the appropriate section.**

5 Statement of Reasons (v4), including Annexes A and B (v4), Land Plans (v4), Special Category Land Plans (v4) and Crown Land Plans (v4)

5.1 Introduction

5.1.1 This Section provides the Council's comments on changes to the Statement of Reasons (SoR).

5.2 Statement of Reasons

5.2.1 The only material amendment to the Statement of Reasons is the addition of further lines of text to Annex B to refer to the engagement between the applicant and the Council that took place subsequent to 26 May 2023.

5.2.2 The applicant has deleted two plots (27-85 and 27-87), which extend to 287 square metres. The impact of the removal of these plots is not material.

5.2.3 The applicant has added plots (41-11, 41-12, 41-20, 41-21, 41-24, 41-36, 41-37, 41-38, 41-39, 41-40, 41-41, 41-43, 42-51, 42-178, 42-181, 42-182, 42-183, 42-184, 42-185, 44-120, 44-121, 44-123, 45-176 and 45-177). The impact of the addition of these plots is not considered material.

5.2.4 The applicant has failed to address any of the points raised in Section 18.13 of the Council's submission at D3 – 'Thurrock Council Comments on applicant's Submissions at Deadline 1 and 2 (D1 and D2)' (REF3-211).

5.2.5 **Summary: the applicant has failed to address any of the points raised by the Council in its D3 submission** (REF3-211)**.**

6 General Arrangement Plans (GA) (v2), Rights of Way & Access Plans (v2), Engineering Drawings and Sections (v3), Structures Plans (v2) and all Other Transport Plans (v2 and v3)

6.1 Introduction

6.1.1 This Section provides the Council's comments on changes to General Arrangement Plans, Rights of Way and Access Plans, Engineering Drawings, Structure Plans and all other Transport Plans.

6.2 General Arrangement (GA) Plans (v2)

6.2.1 The only amendments in the General Arrangement Plans are shown on Sheets 6 and 11 (REP3-030) and Sheet 23 (REP3-032).

6.2.2 There are altered borders for ecological habitat creation and receptor site for protected species and an addition of an underground multi-utility alignment in both Sheet 6 and 11. The border for woodland planting has been altered and the walking, cycling and horse-riding (WCH) route has been severed in Sheet 6. The underground gas diversion route has been altered in Sheet 11.

6.2.3 The Order Limits have changed, and woodland planting area has been removed in the highlighted area on Sheet 23.

6.2.4 The Council has no comment on these changes.

6.3 Right of Way and Access Plans (v2)

6.3.1 The Council has no comment on the changes.

6.4 Engineering Drawings and Sections (v2)

6.4.1 Amendments made to (REP3-052) are shown in Sheets 4 and 12. There is a typographical correction of distance between the northbound road profile and proposed ground level and the Order Limits have changed in the highlighted area on Sheet 4. There is the addition of topography lines in Sheet 12.

6.4.2 The Council has no comment on these changes.

6.5 Structures Plans (v2)

6.5.1 The only amendments in Structure Plans are shown on Sheets 5 (REP3-064). There is the addition of an existing modified structure, the addition of an overbridge structure. The Order Limits have changed in the highlighted area on Sheet 5.

6.5.2 The Council has no comment on these changes.

6.6 Streets Subject to Temporary Restrictions and Use Plans (v2)

6.6.1 The only amendments in Streets Subject to Temporary Restrictions are shown on Sheet 23 (REP3-050) where the Order Limits have changed in the highlighted area on Sheet 23.

6.6.2 The amendments described above do not appear to impact streets subject to temporary restrictions.

6.6.3 The Council has no comment on these changes.

6.7 Classification of Road Plans (v3)

6.7.1 The only amendments in Classification of Road Plans are shown on Sheet 2 and 3 (REP3-062), where the Order Limits have changed in the highlighted areas.

6.7.2 The amendments described above do not appear to impact classification of Road Plans.

6.7.3 The Council has no comment on these changes.

6.8 Traffic Regulation Measures Plans (v2)

6.8.1 The only amendment in Traffic Regulation Measures Plans is shown on Sheet 23 (REP3-060), where the Order Limits have changed in the highlighted area on Sheet 23. The amendment does not appear to impact traffic regulation measures.

6.8.2 The Council has no comment on these changes.

6.9 Route Alignment and Order Limits (v2)

6.9.1 The only amendment in Route Alignment and Order Limits (REP3-097) is shown on Sheet 1, where the Order Limits have some minor changes as shown in the highlighted area on Sheet 1. The amendment does not appear to impact the route alignment.

6.9.2 The Council has no comment on these changes.

6.9.3 **Summary: there are several minor changes to the General Arrangement Plans, Rights of Way and Access Plans, Engineering Drawings, Structure Plans and all other Transport Plans. The Council has no further comments on these changes.**

7 Works Plans (v2), Temporary Works Plans (v2), Works Plans Utilities (v2) and Drainage Plans (v2)

7.1 Introduction

7.1.1 This Section provides the Council's comments on changes to Works Plans, Temporary Works Plans, Works Plans Utilities and Drainage Plans.

7.2 Work Plans (v2)

7.2.1 The only amendments on the Work Plans are shown on Sheets 6 and 11 (REP3-038) and Sheet 23 (REP3-040), where Work Nos. OSC2 and OSC3 have been removed on Sheets 6 and 11 and the Order Limits have changed in the highlighted area on Sheet 23.

7.2.2 The amendments described above do not appear to impact the utilities works.

7.2.3 It should be noted that Sheet 23 on the Works Plans (REP3-040) is labelled as 'Utilities' rather than 'Composite' (all other sheets within these Works Plans are labelled as 'Composite'). The applicant will need to confirm whether Sheet 23 is in the correct location or whether it has been mislabelled.

7.2.4 The applicant has continued to not address any of the points raised in Section 18.11 of the Council's D3 submission 'Thurrock Council Comments on applicant's Submissions at Deadline 1 and 2 (D1 and D2)' (REP3-211) and Thurrock Council's Local Impact Report (REP1-281).

7.3 Temporary Works Plans (v2)

7.3.1 The only amendment on the Temporary Work Plans is shown on Sheet 23 (REP3-072), where the Order Limits have changed in the highlighted area on Sheet 23. The amendment does not appear to impact the utilities.

7.3.2 The applicant has failed to address any of the points raised in Section 18.11 of the Council's D3 submission 'Thurrock Council Comments on applicant's Submissions at Deadline 1 and 2 (D1 and D2)' (REP3-211) and Thurrock Council's Local Impact Report (REP1-281).

7.4 Works Plans Utilities (v2)

7.4.1 The only amendment on the Work Plans - Utilities is shown on Sheet 23 (REP3-042), where the Order Limits have changed in the highlighted area on Sheet 23. The amendment does not appear to impact the utilities works.

7.4.2 The applicant has continued to not address any of the points raised in Section 18.11 of the Council's D3 submission 'Thurrock Council Comments on applicant's Submissions at Deadline 1 and 2 (D1 and D2)' (REP3-211) and Thurrock Council's Local Impact Report (REP1-281).

7.5 Drainage Plans (v2)

Changes to Drainage During Construction Phase

7.5.1 The applicant describes changes that were made relating to 'Drainage during Construction Phase: Deadline 3 Submission - Other: 9.64 Cover Letter and Submissions for Deadline 3' (REP3-140), in paragraph 4.1.3. The proposed amendment EA02 relates to the location of the temporary drainage pipeline and outfall, required during the construction phase, from the North Portal work area.

7.5.2 The proposed temporary works relating to Drainage do not appear to be shown on the Temporary Works Plans. The North Portal work area is predominantly shown on Sheets 16 and Sheets 20 of the Temporary Works Plans Volume B. This has not been updated since the Additional Submissions in December 2022: Additional Submission - 2.17 Temporary Works Plans - Volume B - (Sheets 1 to 20) (Tracked) (Version 2) (AS-035).

7.5.3 The applicant has not made clear where the proposed temporary drainage pipeline and outfall will be located. The Council requests clarification on the proposed amendment EA02 and updates to the drawings accordingly.

Changes to Drainage Plans

7.5.4 The Drainage Plans changed at Deadline 3 are: Deadline 3 Submission - Other: 2.16 Drainage Plans Volume A (key plan) v2.0 tracked changes (REP3-066), and Deadline 3 Submission - Other: 2.16 Drainage Plans Volume C (key plan) v2.0 tracked changes (REP3-068).

7.5.5 The only changes made with the Volume C set is within Sheet 23, which shows the area just north of the North Portal Junction. The only change that can be observed is to an area along and adjacent to the Tilbury Loop Railway. The Order Limits have been reduced.

7.5.6 The Drainage Plans Volume B (Sheets 1 to 20) have not been updated since the first issue in October 2022: 2.16 Drainage Plans (Volume B) (Sheets 1 to 20) (APP-048).

Further Changes Required by the Council

7.5.7 Any discrepancies where construction roads are commissioned or operational from early in the construction programme must be aligned with the drainage infrastructure and the applicant should confirm this within its REAC, either through amendments or a new addition.

7.5.8 For example, the Transport Assessment (APP-529) shows that a section of road (part of Work No. 6A) near the Muckingford Road junction, will be in operation during Phase 5.

7.5.9 The Drainage Plans (REP3-068) Sheets 23, 24, 27 and 28 indicate the drainage infrastructure that serves this section includes ditches and an Attenuation Basin (Work No. 6E). The catchment for Work No. 6E extends beyond the section of road that will become operational during phase 5.

7.5.10 The Council would like clarification that the drainage in this area (and other areas, if applicable) has been aligned with proposed Transport Management phasing strategy.

7.5.11 The Council request that the Drainage Plans Volume B are updated: 2.16 Drainage Plans (Volume B) (Sheets 1 to 20) (APP-048). In particular, Sheet 16 and 20 should be updated to reflect the proposed discharge of the pumped system from the North Portal Ramp to the Basins in North Portal Junction, as described in Section 12 of the Flood Risk Assessment - Part 8, document number (APP 467).

7.5.12 Sheet 19 shows the Order Limits including the Coalhouse Point and Coalhouse Fort areas, however, no design information is shown. The Council requests the applicant updates Sheet 19 to show the proposed drainage that will be required along with the wetland proposals at Coalhouse Point. This should include proposed intake structures and pumping stations. Additionally, the drawing update should include existing (and new if applicable) flood defences and define extents of long-term maintenance responsibility/ interface with the Environment Agency (EA).

7.6 Status of Negotiations with Statutory Undertakers (v2)

7.6.1 In terms of the applicant's amendments to the Status of Negotiations with Statutory Undertakers (REP3-123), the Council notes that numbers 5, 11, 12, 14, 16, 19, 21, 22, 26, 27, 28, 29 and 31 within Table 2.1 show that an agreement has yet to be reached, but that the 'applicant is confident that agreement will be reached during the Examination Period'.

7.6.2 It is also noted that for numbers 8 and 13 within Table 2.1, the applicant is expecting ongoing negotiations to take place during the Examination.

7.6.3 With regard to number 10 in Table 2.1, the applicant has noted that 'it is anticipated that agreement will be reached with Lumen on all other matters during the Examination period'. Clarification is required as to whether the separate side agreement between the applicant and Lumen Technologies UK Ltd, which has not yet been agreed, will be agreed during or after Examination. Further detail of the timescales of this separate side agreement is also required.

7.6.4 The Council wishes to see an update during the Examination regarding all agreements that are yet to be reached with Statutory Undertakers.

7.6.5 **Summary: the applicant has failed to address any of the points raised by the Council at D3 on Works Plans and Temporary Works Plans and Works Plans Utilities. Further information is provided on the Drainage Plans, but the Council still requires further information provided to enable the Council to understand the impacts of the scheme. An update on discussions between the applicant and Statutory Undertakers is requested at D5 or D6.**

8 Transport Assessment Parts 1 – 3 (v2)

8.1 Introduction

8.1.1 This Section provides the Council's comments on changes to the Transport Assessment (TA).

8.2 Transport Assessment Parts 1 - 3 (v2)

8.2.1 The only amendments for Transport Assessment Parts 1 – 3 are shown in (REP3-113). These amendments relate to volume to capacity ratios, change in flows with the Project and the percentage change in flows with the Project.

8.2.2 The Transport Assessment shows an updated increase in volume over capacity ratio on the A2(T) for 2045 AM and PM peak for the M2/A2/A122 LTC junction.

8.2.3 There is an updated increase in the volume over capacity ratio north and south of the A13/A1089/A122 LTC junction. Modelling shows an increase in the volume over capacity ratio on A13 at the A13/A1089/Orsett Cock junction entry and exit for the 2045 AM and PM time periods. It should be noted that the Council has significant concerns concerning the modelling of this junction as discussed in Section 10 of this submission below.

8.2.4 The Transport Assessment shows an updated increase in the volume over capacity ratio on A127 east and west of LTC/M25 junction and on M25 north and south of LTC/M25 junction (2042 AM). There is an updated increase in the volume over capacity ratio on A127 east of LTC/M25 junction and on M25 north and south of LTC/M25 junction and there is an increased volume over capacity ratio on B186 (2042 PM).

8.2.5 Minor alterations have been made to the change in flows with the project. There is the addition of the LTC Route to the Plate key. The modelled area has been expanded. These amendments do not appear to affect the conclusions of the Transport Assessment.

8.2.6 Minor alterations have been made to the percentage change in flows with the Project and to traffic volumes as a percentage of road capacity. These amendments do not appear to affect the conclusions of the transport assessment.

8.2.7 **Summary: there are several minor changes to the Transport Assessment. The Council has no substantive comments on these changes but highlights its ongoing concerns about the approach to the modelling of the local road network and the general concerns with the approach to mitigating effects.**

9 Tunnel Depth Report and SoCG Between Applicant and PoTL (v2)

9.1 Introduction

9.1.1 This Section provides the Council's comments on changes to the Tunnel Depth Report and the SoCG between the applicant and PoTL.

9.2 Tunnel Depth Report

9.2.1 The Tunnel Depth Report (REP3-146) has identified potential inconsistencies regarding the minimum amount of cover above the tunnels.

9.2.2 The PLA may in the future seek to deepen the navigable channel, which would result in a change to the riverbed level and therefore this would result in uncertainty of level of cover over the tunnel. There is particular concern at CS6 where the level of cover is at a minimum and a protection zone is recommended.

9.2.3 The Council has no substantive comments on these changes.

9.3 SoCG Between Applicant and PoTL (v2)

9.3.1 The changes made to the SoCG between the applicant and PoTL (REP3-091) comprise minor editing and formatting updates and therefore there are no substantive comments regarding the updated applicant's submission.

9.3.2 **Summary: minor changes have been made to the Tunnelling Depth Report and the SoCG between the applicant and PoTL. The Council has no substantive comments on these changes.**

10 Additional Localised Traffic Modelling Reports

10.1 Introduction

10.1.1 This Section provides the Council's comments on additional localised traffic modelling reports provided by the applicant at D3.

10.2 Introduction to D3 Submission on Localised Traffic Modelling (v2)

10.2.1 No localised traffic modelling was submitted within the DCO application. The assessment of impacts of LTC on the Thurrock local highway network are summarised by the applicant in the Transport Assessment (APP-529) and the Combined Modelling and Appraisal Report (ComMA) (APP-518) with sole reliance and reference to LTAM. No reference was made within the DCO application to localised modelling.

10.2.2 It was only when the ExA required the applicant, during Issue Specific Hearing 1 (ISH1), to submit localised modelling at Deadline 1 (as set out in the Localised Traffic Modelling report (REP1-187)) that localised modelling formed any part of the evidence base before the Examination. Had it not been for that request by the ExA and many Interested Parties, including the Council, the only evidence before the Examination from which the ExA would have had to make its recommendation to the Secretary of State would have been LTAM strategic modelling.

10.2.3 The Council's review of the Thurrock Cordon LTAM model (presented in the Council's LIR (REP1-281), the 'Lower Thames Crossing. Review of DCO Cordon Transport Models', **Appendix C, Annex 1, Sub-Annex 1.1**) has identified serious adverse impacts on the LRN at the following seven junctions, which require operational modelling to determine the more precise impacts and potential need for mitigation:

a. The A13/A1089/Orsett Cock junction;

b. The Manorway roundabout;

c. Daneholes roundabout;

d. ASDA Roundabout;

e. A126 Marshfoot Road Junction;

f. A13 westbound merge at Five Bells junction; and,

g. A1012 / Devonshire Road junction.

10.2.4 Table 5.1 of the Localised Traffic Modelling report (REP1-187) submitted by the applicant at Deadline 1 summarised localised modelling reports that have been submitted by the applicant into the Examination. Further models have been submitted by the applicant at Deadline 3 as summarised within the updated Table 5.1 of the Localised Traffic Modelling report (REP3-127). The applicant has provided operable files for the submitted models to the Council.

10.2.5 As expressed within its Deadline 3 response at Section 14 (REP3-211), the Council has significant concerns over the adequacy of the modelling submitted by NH at Deadline 1. The Council is now reporting in this document that there are similarly significant inadequacies with

the modelling submitted by the applicant at Deadline 3 (REP3-127, REP2-128, REP3-129, REP3-130, and REP3-132).

10.2.6 The availability of localised modelling at the key locations within Thurrock along with the status of these microsimulation models is summarised in Table 10.1 below and further detailed in Appendix A, Annex 1 'D4 Modelling Status Flowchart' of this submission. This illustrates the absence of progress to provide acceptable analysis of the forecast impacts.

Table 10.1: Status of Localised Modelling in Thurrock

Location	Localised Model	Provided at DCO submission	Provided at D1 submission	Provided at D3 submission	Base year model agreed with the Council?	Forecast Model agreed with the Council?
a. The Orsett Cock junction	Orsett Cock Vissim model	✗	✓	-	✓	✗
b. The Manorway roundabout	The Manorway Vissim model	✗	✓ (forecast model only)	-	✗	✗
c. Daneholes roundabout	East-west Vissim model	✗	✓	-	✗	✗
d. ASDA Roundabout	ASDA Vissim Model	✗	✗	✓	✗	✗
e. A126 Marshfoot Road Junction	East-west Vissim model	✗	✓	-	✗	✗
f. A13 westbound merge at Five Bells junction; and	*Requested but not provided*	✗	✗	✗	✗	✗
g. A1012 / Devonshire Road junction	*Requested but not provided*	✗	✗	✗	✗	✗

10.2.7 The Council was not aware of many of these localised traffic models until reading the submission at Deadline 1 and these models were not mentioned or shared during many years of technical engagement with the Council. In addition, at no point has the available localised modelling been used collaboratively with the Council to inform the design of proposals for LTC.

10.2.8 The status and local models shared by the applicant at D1 and representing the A13/A1089/Orsett Cock junction, the Manorway roundabout, Daneholes roundabout and A126 Marshfoot Road Junctions and the Council's concerns related to these models have been extensively covered in the Council's submission at D3, Section 14 (REP3-211). No further information has been shared by the applicant at D3 in relation to these models and therefore their status remains unchanged. The sections below provide the Council's review of the additional models, which were shared by the applicant at D3.

10.3 Council's ASDA Roundabout Model Audit

Base Model

10.3.1 At D3 the applicant provided the Council with the ASDA roundabout base year microsimulation model and associated LMVR, Local Model Validation Report (REP3-128). The Council has undertaken a review of this model, which is presented in Appendix A, Annex 2. The review of the model has identified critical issues, which need to be addressed before comments can be provided on the forecast models and the results.

Forecast Models – 2030 and 2045

10.3.2 Notwithstanding this, the ASDA roundabout 2030 and 2045 forecast operational model (REP3-129) has shown increased queueing and delays at this location with LTC in place, which need to be resolved. A comprehensive review of those impacts will not be provided until the base model has been amended and agreed and the forecasts updated from that new base.

Construction Model

10.3.3 The Council's opinion of the inadequacy of the ASDA roundabout base model directly influences the inadequacy of the 2030 forecast model used as the basis for the construction modelling. However, the Council has reviewed the forecast effects on ASDA roundabout during the 11 scenario construction periods as assumed by the applicant

10.3.4 The construction model reported at REP3-132, shows increased queuing and delays during the construction phase. That model is based on the two-TBM strategy which the applicant asserts is its reasonable worst-case scenario. It does not assess the alternative one TBM strategy, which has been stated by the applicant to have a higher impact of worker travel at the ASDA roundabout during Phase 2 construction scenario.

10.3.5 In order to further understand construction impacts at the ASDA roundabout, the Council has analysed the routeing taken by construction traffic as predicted by the LTAM 2030 Thurrock Cordon Model. This was carried out to confirm whether construction traffic has been assigned to the routes which the applicant has indicated in its evidence base would be used to access and leave its construction compounds.

10.3.6 The analysis has focused on the model assigned user class 11 (UC11) representing delivery HGV construction traffic and on UC12 representing Car construction staff vehicles. The analysis excludes earthworks HGV's, which are assigned to fixed routes in LTAM and are not included in the assigned demand matrices. The analysis has been undertaken for 2030 AM peak Phase 5.

10.3.7 Phase 5 together with Phases 4 and 6 were identified as the worst performing phases in both the AM and PM peaks. A particular objective has been to reflect on the assurances that the applicant has been providing over the movement of construction traffic on the network, including at the ASDA roundabout.

10.3.8 Select Link Analysis (SLA) has been undertaken to understand the routes taken by the construction traffic (UC11) destined for and originating from the Northern Tunnel Entrance compound (CA5), whose trips are represented in Zone 5013 of the LTAM construction model.

10.3.9 **Figure 10-1** below shows that the two-way flow into and from the Northern Tunnel Entrance compound, generated only by the LTC project, is predicted to be 136 pcus/hour of which 99 pcus/hour are destined for the compound and 37 originate from the compound. It can be seen that, as expected, the majority of trips destined for the compound (48 pcus/hour) use the A1089 and also pass through the ASDA roundabout, while 24 pcus/hour originating from the compound pass through the ASDA roundabout and use the A1089. This assumes a significant proportion of construction related traffic has its origin and destination within the Port of Tilbury, which could under-estimate the quantum of HGVs passing through the ASDA roundabout considering the applicant's limited commitment to use marine or rail transport for tunnelling operations.

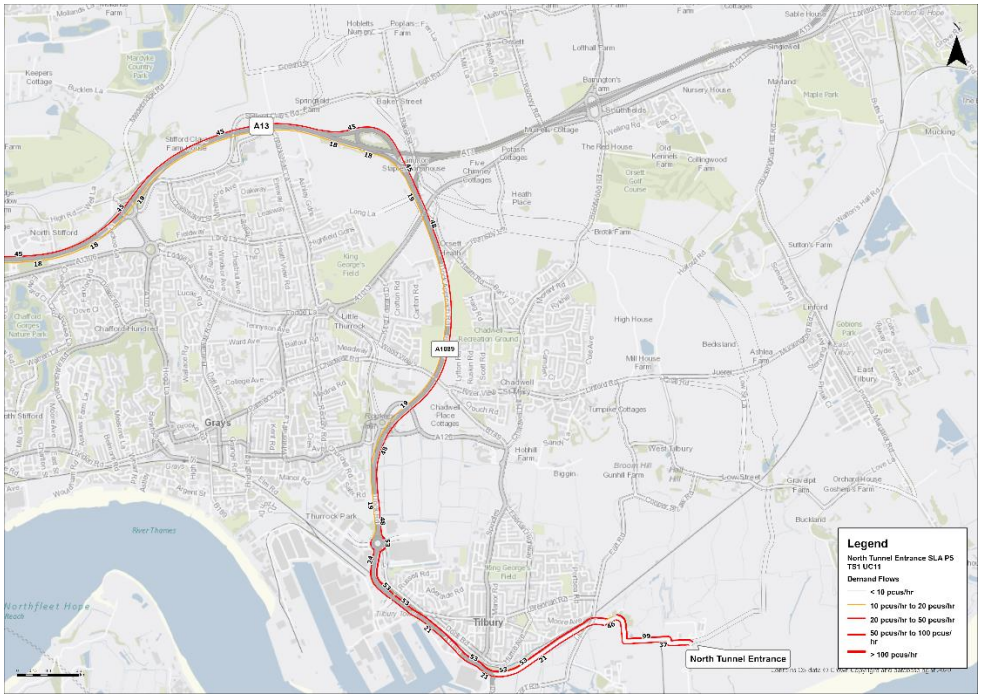


Figure 10-1: UC11 delivery HGV construction traffic routeing Phase 5 AM Peak

10.3.10 The routeing used by UC12 Car construction staff is also of concern. **Figure 10-2** below shows that the two-way traffic to and from the Northern Tunnel Entrance compound is 754 pcus/hour of which 472 pcus/hour is destined for the compound via Station Road and 282 originates from the compound.

Figure 10-2: UC12 Car construction staff traffic routeing Phase 5 AM Peak

10.3.11 It can be seen that of the 282 pcus from the compound, only 50 pcus use the ASDA roundabout and the A1089. Of major concern is that none of the 472 pcus destined for the compound use the A1089 or pass through the ASDA roundabout and the port access, i.e. the primary or secondary access roads as stated in the evidence (e.g. oTMPfC Plate 4.3 (REP3-120)).

10.3.12 Instead, the majority use inappropriate local routes.

10.3.13 The model predicts all workers arriving via East Tilbury and Muckingford Road and Chadwell St Mary via Cross Keys and both using West Tilbury or Gunn Road. For example, as many as 341 pcus/hour use Linford Road/Muckingford Road through Chadwell St Mary via Cross Keys and subsequently through West Tilbury.

10.3.14 It is not considered plausible that none of the staff construction traffic destined for the compound would pass through the ASDA roundabout and this is contrary to the assurances that the applicant has provided on numerous occasions about the routeing of its contractors workforce.

10.3.15 Consequently, it is considered that the ASDA roundabout modelling is flawed and at present underestimates construction traffic impacts at the ASDA roundabout.

10.3.16 The Council has previously observed that the ASDA roundabout is not included within the East-West model, which covers the area just to the north of ASDA roundabout and that the interaction between these two models must be assessed.

10.3.17 Furthermore, it should be noted that the ASDA Roundabout is not currently within the Order Limits and yet localised traffic modelling has been provided by the applicant and that modelled impacts will need to be mitigated. In the Council's view, either the ASDA roundabout must be brought into the Order Limits or any defined mitigation must lie within land under the control of the applicant or the Council, in order to enable the applicant to effect the mitigation necessary, that will then allow its safe operation during construction and operation. But only after the applicant has re-done the modelling to rectify the base models; to properly account for construction traffic impact on the junction; and, accurately assess the operational impacts. Only then will these impacts be more apparent and appropriate mitigation proposed and introduced.

10.4 A13 Westbound Merge at Five Bells Junction

10.4.1 The applicant's strategic model, LTAM, forecasts significant worsening of congestion on the A13 westbound merge resulting in traffic re-routeing through communities of Corringham and Stanford-le-Hope. This concern has been shared in depth with the applicant through the Council's LIR (REP1-281) and within matters under discussion that would be contained within the SoCG submitted at Deadline 3.

10.4.2 At D3 the applicant has shared a Five Bells and Pitsea Hall forecast model and forecasting report (REP3-130). This is an ARCADY model covering three roundabouts at the Five Bells:

a. A176/ B1464;

b. A176/ High Road; and,

c. A176/ B1420.

10.4.3 Further review by the Council revealed that the model does not cover the A13 westbound merge at Five Bells junction and therefore does not address the Council's concerns. There is no benefit in the Council analysing the provided models as they do not represent the forecast problems.

10.4.4 In spite of repeated requests, the Council has not received operational period localised modelling for this location which cover the forecast impacts at the westbound merge from A176 onto A13.

10.5 Different Results Produced by LTAM and Microsimulation Models

10.5.1 The review of the Orsett Cock microsimulation model undertaken by the Council identifies significant differences in the results between the strategic model and the microsimulation model suggesting that the strategic model underestimates local impact. Microsimulation models are more detailed and better represent real world travel conditions. Therefore, in accordance with TfL Traffic Modelling Guidelines V4.0 (set out in Appendix B of this submission) and industry's best practice, the microsimulation model parameters (such as saturation flows and signal timings) for Orsett Cock and other modelled junctions should be replicated in LTAM, so that the models are better aligned through the alignment of capacity parameters.

10.5.2 Furthermore, microsimulation models also need to demonstrate that the same level of traffic forecast by the strategic model can be accommodated. This should involve iterating between the strategic model and the microsimulation models to account for wider traffic re-routing as a result of possible changes to junction design. This approach was discussed at Issue Specific Hearing 4 (ISH4) and is set out in more detail in the Council's written submissions for ISH4 submission – 'Post Event Submissions for Issue Specific Hearings (ISH3 - ISH7) and Compulsory Acquisition Hearings (CAH1 and CAH2)' within the appropriate section.

10.6 Progress Update on the Applicant's Modelling Actions

10.6.1 The Council, along with Essex County Council and DP World London Gateway (DPWLG), attended a workshop with the applicant on 16 August 2023. This workshop focused on clarifying the work required to address the substantial and critical issues identified with the LTAM modelling assessment compared to the microsimulation modelling assessments, particularly the micro-simulation assessment, which has recently been submitted for Examination relating to the A13/A1089/Orsett Cock junction.

10.6.2 This workshop identified serious divergence between the models that should normally have been resolved prior to DCO submission.

10.6.3 All Local Highway Authorities (LHAs) and Interested Parties (IPs) were in agreement that the significance of divergence between the models is entirely inappropriate and does not conform with the current guidance and best practice.

10.6.4 The applicant has been unable to demonstrate that there are any precedents on any large road schemes, where such significant divergence between models has been considered acceptable. Furthermore, it is noted that there are no precedents for a highway DCO of this size, which is effectively a programme of schemes including three major junctions, 14km of new highway through Green Belt and a major tunnel under the River Thames. As such, LTC will create substantial changes in the patterns of movement across a very large region.

10.6.5 In this context, the modelling work required to address apparent inaccuracies in the local transport modelling used by the applicant to design the scheme is entirely proportionate and necessary.

10.6.6 The agreed actions resulting from this meeting were issued to the applicant on 18 August 2023 by the Council with all IPs agreement. The Council has completed its actions promptly. However, some 81% of the agreed actions remain outstanding for the applicant to respond to

the IPs. As such, the applicant has yet to provide the necessary information that would enable a further workshop to progress resolution of outstanding issues agreed.

10.6.7 It is noted that at the Issue Specific Hearing for ISH4 and ISH7, the applicant continued to maintain a position that it is unnecessary to progress the modelling work identified at the A13/A1089/Orsett Cock junction for the purposes of this Examination.

10.6.8 Whilst the applicant continues to defend this position, this is inhibiting its willingness to engage satisfactorily in the work required, as agreed by all parties, to address the issues of model divergence with genuine intent to a timescale that will facilitate appropriate consideration of the current issues and further matters likely to arise during the Examination.

10.6.9 The Local Authorities have attended an exhaustive series of modelling workshops with the applicant prior to submission of the DCO for a year, where all of the matters arising have been extensively discussed.

10.6.10 The lack of resolution of these crucial modelling matters was identified by the Council in its Adequacy of Consultation response (AoC-018) and again in its Local Impact Report (REP1-281). Indeed, both these documents reflect concerns raised by the Council in its responses to repeated rounds of consultation by the applicant (five prior to DCO submission).

10.6.11 Progress by the applicant on resolving known and crucial matters remains unreasonably slow. The lack of progress is reflected in the status update shown in the summary of actions arising from the meeting on the 16 August 2023 and responses from the applicant and again from the Council is provided in Table 10.2 below. This is intended to fully update the ExA on the current state of progress or lack of progress on localised traffic modelling matters.

10.6.12 The Council is concerned that given the limited time remaining in the Examination, the applicant has not demonstrated that there is sufficient time to resolve these known issues, should it now be willing to address them.

10.6.13 The Notes and key below may help in understanding the following table.

Modelling Meeting – 16 August 2023

LHA and IP issue Agreed Actions Summary – 18 August 2023

NH sets out which Agreed Actions it will take forward – 1 September 2023

Note that the applicant did not disagree to any of the actions discussed at the meeting on the 16th August when it had opportunity to do so. Its subsequent refusal to progress with a number of agreed actions took the Applicant 16 days to communicate. Given the tight timescales of the Examination period, the applicant is requested to provide more specific timescales for the completion of agreed actions to determine when information might be available in respect to Examination deadlines.

RAG Key

	Action Status
	Not completed
	Partially completed /underway
	Completed

Table 10.2: Actions arising from meeting 16 August 2023

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
General										
	1	1.1	For all of these actions the scope and method must be agreed with the Council as LHA (and DPWLG), prior to issuance /NH response.		NH	n/a	**Not agreed**, this was not discussed in the meeting.	Thurrock Council as LHA throughout its extensive engagement with the Applicant has consistently required the scope and modelling methodology to be agreed with it before work commences. The Applicant is fully aware that this approach is normal and indeed mirrors the approach that NH would require should it be required to review modelling from an Applicant. The approach proposed is intended to optimise collaboration and the adoption of a best value approach to expedite essential outstanding work within the limited remaining time of the LTC Examination. The Applicant is asked to reconsider its stance on this matter.	n/a	NH continues to adopt an uncollaborative approach which makes it essential for the LHA to scrutinise the technical work. This means that technical work takes longer to resolve.
	2	1.2	NH to have version control for all modelling going forward and model log summarising		NH	NH	Agreed	The Applicant is asked to provide this log of version control for all modelling that it submits to the LHA and ExA.	September	No details of version control have yet to be provided by the Applicant, nor a date in September by

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
			changes that are made between versions.							which this action will be completed.
	3	1.3	NH to provide dates of models set out in Table 3.2 of the Local Modelling Report submitted at D1 and their intended purpose.		NH	NH	Agreed	Please could the Applicant clearly and unambiguously set the modelling out in a timeline to help understand when they were used in the design process and when they were considered redundant.	September	Still awaited. No indication of timescale in September has been provided.
	4	1.4	NH to provide map showing the extent of the models in Table 3.2 of the Local Modelling Report issued at D1 and how they relate to each other (e.g. once we have agreed the Orsett Micro simulation can NH use it to update the A13 Micro simulation model?)		NH	NH	Agreed- We will provide a map showing the extent of the models in Table 3.2 of the Local Modelling Report. The A13 corridor model described is not a model of the entire A13.	Please could the Applicant clearly and unambiguously explain which part of the A13 the model covered and whether this model remains valid.	September	Still awaited. No indication of timescale in September has been provided.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
	5	1.5	NH to clarify whether it is prepared to share the A13 corridor Micro simulation model and the A122 LTC Micro simulation model.		NH	NH	A13 Corridor Micro Simulation- As per above, we don't have a full model of the A13. A122 LTC Micro Simulation Model- This was not discussed in the meeting. Please submit a formal request.	The Applicant did not specify in Table 3.2 of the Local Modelling Report issued at D1 the extent of its 'A13 corridor model'. The Applicant is aware that the question relates to this model and is asked to share both the A13 and the A122 microsim model with Thurrock Council as Local Highway Authority. All requests in writing are formal requests.	**Not Provided**	This information is still awaited from the Applicant as agreed at the meeting on 16 August.
	6	1.6	NH to clarify whether it is prepared to share the M25 corridor model to enable the Council to better understand the performance of J31, J30 and routes through Thurrock		NH	NH	**Not agreed**- The M25 model is not a full corridor model but a model of part of one link of the M25 that was built during design development to investigate a value	Please could the Applicant clearly and unambiguously explain what its M25 corridor model does cover and which option it was built to consider.	**Not Provided**	This information is still awaited from the Applicant as agreed at the meeting on 16 August.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
							engineering option that was not taken forward.			
	7	1.7	NH to provide a timeline to clearly show which models have been used to update the LTAM model and when, as part of NH's iterative approach to modelling (and equally which micro-sim has only been used to test design).		NH		**Not agreed**- The iterative work between LTAM and VISSIM was carried out during design development. It is not appropriate to provide a log of all model runs carried out during design development.	The Applicant states that '*It is not appropriate to provide a log of all model runs carried out during design development'*. The action did not ask the Applicant to do this, the request was for NH to provide a timeline to clearly show which models have been used to update the LTAM model and when, as part of NH's iterative approach to modelling. Thurrock Council as LHA had not previously been made aware of many of the models that the Applicant introduced at D1 in Table 3.2 of the Local Modelling Report and seeks a clear and unambiguous understanding of the modelling approach that the Applicant has adopted. The	September	The Applicant claims that it has adopted an interactive approach to modelling but has refused to explain how or provide any further information. On other DCO projects NH has clearly set out its modelling methodology. In contrast, for the NH largest scheme in history of RIS it continues to adopt an approach which serves to obscure the truth with misleading

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
								Applicant is asked to reconsider its stance on this matter.		or irrelevant information.
	8	1.8	NH to provide programme of provision of additional information set out in this action list, aligned with Examination deadlines and circulate to stakeholders on the meeting.		NH	NH	Agreed		September	The continued failure of the Applicant to provide crucial modelling information in accordance with a timescale is makes it impossible to understand how it will be possible to address crucial issues within the remaining period of the Examination.
LTAM										
	9	2.1	NH to provide flow difference plots between CS67 and CS72 LTAM versions and between CM45 and CM49 (Do-Minimum).		NH	NH	Agreed- Provided in Shape Files, Ref DR0340.		1st September	This information has been provided in a form of shape files and model cordon files, which required further work by the Council to understand the differences between different versions of LTAM. The information provided by the

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
										Applicant was insufficient and further information was requested by the Council to better understand what impact the results submitted for DCO might have on the conclusions that were made in the Council's review of the original DCO2 models. It was found that the changes were mainly in 2030 (the review focused on 2045) and are mainly along the A13.
		2.2		Reference to the use of CS72 instead of CS67 in the Traffic Forecasti		NH	Agreed- Detail provided in email on 1st September.	This was a new Action added by NH.	1st September	This action is complete.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
				ng Report.						
	10	2.3	NH to provide turning movement information for the additional traffic at Orsett Cock (difference between DS and DM) and explanation of where this traffic is going to and from. This will include SLA for movements through the junction to all main destinations including Tilbury and Stanford Le Hope.		NH	NH	**Not Agreed**, however we will provide a select link analysis on all the trips leaving LTC and using Orsett Cock and the exits taken- Ref DR0341.	The Applicant should explain why it does not agree to this reasonable request. The information specified is requested by Thurrock Council as LHA to evaluate impact on its highway network.	1st September	This is required to assist in quantifying the level of displaced traffic as a result of LTC.
Orsett Cock VISSIM										
TC	11	3.1	Stantec to provide NH with information about key changes between Aug/Sept 2022 and D1		TC	TC	Agreed- Please let us know when we should expect these.	This was Included in the Council's D3 submission.		

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
			submission VISSIM models.							
	12	3.2	Following the above, NH to provide explanation about the differences and reasons for these		NH	NH	Response to follow if differences are identified and agreed.		TBC	The Applicant has not yet confirmed when this information will be provided. A clear timeline is crucial.
	13	3.3	NH to demonstrate increased traffic on local roads A1013, A128/Brentwood Rd, B188, as a result of traffic seeking to avoid congestion at Orsett Cock.		NH	NH	Agreed		October	The Applicant has not yet confirmed when this information will be provided. A clear timeline is crucial.
TC		3.4		Thurrock to provide comments on VISSIM forecasti		TC	Agreed	The Applicant inserted an additional unagreed Action for Thurrock in its response on 1st September.		The Council provided comments as part of D3 submission. It also provided corrected VISSIM forecast models at D3.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
				ng model at D3.						
	14	3.5	NH has run a sensitivity test for extended links to reduce latent demand. NH to take on board Thurrock's comments on VISSIM forecasting model at D3 and incorporate into 'extended' model for submission to Examination – aim is for this to be the agreed VISSIM model.		NH	NH	Agreed- TBC once Thurrock's comments have been provided.	The Council provided comments alongside the corrected model at D3.		Initial comments were provided to the Applicant in August. The Applicant has yet to provide a clear timetable for its response.
	15	3.6	Once have agreed 'extended' model, NH to run two sensitivity tests for Rectory Road:		NH	NH	Agreed- TBC once Thurrock's comments have been provided.	Given the importance of this work (action points 14 and 15) the Applicant must agree with the LHA a clear scope for work before commencing with it. A clear programme for completing this work must also be provided.		Initial comments were provided to the Applicant in August. The Applicant has yet to provide a clear timetable for its response.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
	15a		Reallocate proportion of Rectory Road traffic to A128 (i.e. limit to local traffic through Orsett) and understand implications on Orsett Cock – assume 2016 base traffic through Orsett remains and all other traffic reallocated onto A128.		NH					
	15b		Rectory Road closed to all traffic except public transport and active travel.		NH					

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
	16	3.7	NH to provide zoomed in versions of Plates 7.25 – 7.27 in TA for Orsett Cock and Manorway and explain differences between these and VISSIM outputs.		NH	NH	NH agreed to a request from DP World to provide a zoomed in version of plates for Manorway. Orsett Cock was not discussed, and NH **did not agree** to explain the differences between these and the VISSIM outputs.	Orsett Cock was discussed with the Applicant. To clarify, Thurrock Council as Local Highway Authority requires the Applicant provide the information requested and to explain the differences between these and the VISSIM outputs in order to understand and evaluate impact on its highway network.	September	The Applicant has not provided the information required by the ExA to resolve differences between the models. The Applicant is currently refusing to explain the differences.
	17	3.8	Once Orsett Cock VISSIM model agreed, NH to feed VISSIM model parameters back into LTAM (to ensure consistency between model throughput and delay assumptions)		NH	NH	Agreed- Approach to this will need to be agreed with the stakeholders in advance.		Approach to be discussed in September, pending receipt of comments.	Given the volume and significance of outstanding actions that have not been completed by the Applicant, it is difficult to see how it will be productive to discuss and agree the necessary approach

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
			and re-run to determine what changes, if any, result from the refinement to the LTAM model at Orsett Cock – **the approach to this will need to be agreed with the stakeholders in advance.**							in September. The Applicant will need to carefully consider and publish a programme of modelling actions that it will commit to undertake.
	18	3.9	NH to review Tables 4.5 – 4.8 of Report 9.15 to explain why flows from Point 6 (A13 eastbound) to Points 5 and 8 are zero. NH to provide updated tables / explanation.		NH	NH	The report produced routes that were available in the Do Minimum and Do Something. A note extending the analysis to include movements only available in the DS can be prepared following the		BC Following receipt of comments from Thurrock.	The Council provided initial comments on Orsett Cock forecasting model in its D3 submission.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
							receipt of comments from Thurrock on the Orsett Cock model.			
	19	3.1.1	NH to provide details of traffic congestion on the approaches to Orsett to determine what impact this might have on route choices, such as rerouting back via M25 J30/M25.		NH	NH	Details of re-routing will be provided when the iteration between VISSIM and LTAM is complete.	It should be noted that the Applicant has agreed to undertake iteration work to ensure model convergence between VISSIM and LTAM. This appears to contradict claims made by the Applicant that this is not necessary.	TBC, likely October	It seems unlikely that this work will be completed in October given the significance of the work required. The Applicant should provide a more realistic timetable for consideration by the ExA.
	20	3.1.2	Test an all-arms signalised Orsett Cock junction that provides facility for bus priority and safe passage for active travel modes to determine whether this is viable given the capacity constraints of the junction (TR010032/EXAM/9		NH	n/a	**Not agreed** - TR010032/EXAM/9.15 para 4.3.1 states that this will be done at detailed design.	It has consistently been the position of Thurrock Council that this work is necessary for the DCO Examination. Given the crucial nature of the Orsett Cock junction to the integrity of the LTC scheme it is absolutely vital that this work is completed and evaluated in the DCO as required by the Local Highway Authority.	n/a	The Applicant needs to demonstrate that the necessary work could be completed within the Rochdale Envelope. It must be completed as part of the Examination process.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
			.15 para 4.3.1 says this will be done at detailed design stage, but the Council as LHA disagrees and requires this to be done to test the validity of the design proposals submitted at DCO).							
Manorway										
	21	4.1	NH to provide information sufficient to demonstrate that Orsett Cock queuing and delay will not impact on Manorway as a result of traffic re-routing / u-turning at Manorway. The scope for this data needs to be agreed with TC/DPW in advance of issuance.		NH		Agreed- will form part of action 3.3. Scope to be agreed with stakeholders.	The Applicant is asked to clarify why this information will not be available until October given that this should have been established prior to DCO submission. The Applicant has agreed that the scope will be agreed in advance for this action but in action 1.1 refuses to do so. The Applicant is asked to clarify its inconsistent approach.	October	Significant work, including Action 20 (NH 3.1.2) needs to be completed before this action is resolved. It is highly unlikely to be completed by October and a programme is awaited from the Applicant.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
Construction										
	22	5.1	NH to signpost how DP World/London Gateway can understand effect of LTC on DP World/London Gateway during construction – how many HGVs per day on A13 past Manorway during the construction phases.		NH		Agreed- Shapefiles and SATURN Cordon models shared in email 1st September. Ref DR0337 and DR0338.		1st September	Action completed.
Asda Roundabout										
	23	6.1	In TR010032/EXAM/9.15 NH has also agreed to share the ASDA Micro Simulation model and to develop this to test construction traffic. NH to provide the Council with a copy of this model ASAP so that		NH		Agreed- See email 1st September Ref DR0349.		1st September	Modelling information was shared with Port of Tilbury on a confidential basis on the 13th Sept but the LHA has yet to receive this.

Progress RAG	LHA/IP Action No.	NH Action No.	LHA /IP Action Description	NH Action Added / Amended	Action Owner (LHA/IP defined)	Action owner (HA defined)	NH Response 1/9/23	LHA /IP Response D4	NH Timeline	LH/IP Progress Status Update
			the scope of the model and tests required can be agreed with the Council as LHA.							
		6.2		Schematic diagram of models that exist and how they interact or are used.		NH	Agreed		September	

Notes

Modelling Meeting – 16 August 2023

LHA and IP issue Agreed Actions Summary – 18 August 2023

NH sets out which Agreed Actions it will take forward – 1 September 2023

Note that the applicant did not disagree to any of the actions discussed at the meeting on the 16th August when it had opportunity to do so. Its subsequent refusal to progress with a number of agreed actions took the applicant 16 days to communicate. Given the tight timescales of the Examination period, the applicant is requested to provide more specific timescales for the completion of agreed actions to determine when information might be available in respect to Examination deadlines.

RAG Key

	Action Status
	Not completed
	Partially completed /underway
	Completed

10.6.14 **Summary – out of the seven locations for which the Council has repeatedly requested microsimulation models, models for five locations have been shared by the applicant by D4. However, only the Orsett Cock base year model has been approved by the Council. The review of the other base year and forecast models undertaken by the Council has highlighted significant issues in the models, which need to be addressed before they can be used as a reliable evidence base.**

10.6.15 **The Council therefore contends that microsimulation modelling is not complete and further microsimulation modelling needs to be undertaken as summarised in the table below.**

Table 10.3: Localised Modelling in Thurrock – Further Work

Location	Localised Model	Base year model needs to be developed	Forecast year models need to be developed or updated	Agree Base year models with the Council	Agree Forecast Year Models with the Council	Agree Mitigation
a. The Orsett Cock junction	Orsett Cock Vissim model	Completed	Required	Agreed	Required	Required
b. The Manorway roundabout	The Manorway Vissim model	Required*	Required	Required	Required	Required
c. Daneholes roundabout	East-west Vissim model	Completed	Required	Required	Required	Required
d. ASDA Roundabout	ASDA Vissim Model	Completed	Required	Required	Required	Required
e. A126 Marshfoot Road Junction	East-west Vissim model	Completed	Required	Required	Required	Required
f. A13 westbound merge at Five Bells junction		Required	Required	Required	Required	Required
g. A1012 / Devonshire Road junction	Not included in East-West model, D1 or D3 submission	Required	Required	Required	Required	Required

* The Council is completing its own model

10.6.16 **The applicant is continuing resist efforts to complete a collaborative modelling process. There are some 81% of actions for the applicant from the workshop on 16 August 2023 that remain uncompleted. The Council is concerned that given the limited time remaining in the Examination, the applicant has not demonstrated that there is sufficient time to resolve these known issues, should it now be willing to address them.**

11 NTEM 8 and Common Analytical Scenarios

11.1 Introduction

11.1.1 The Council has reviewed document NTEM 8 and Common Analytical Scenarios (REP3-145) provided by the applicant as its Deadline 3 submission.

11.2 Comparison of Results in Section 4 of REP3-145

11.2.1 The Council's review shows that the traffic flow comparisons presented in Section 4 of REP3-145 are misleading.

11.2.2 Table 11.1 shows the total flows in the modelled hours at the Dartford Crossing in various modelling runs presented in REP3-145.

Table 11.1: Comparison of Traffic Flows at Dartford Crossing presented in Tables 3.2 to 3.4 (REP3-145)

Model Hour	Year	Model ID	Description	Traffic flows (PCUs)			
				Cars	LGVs	HGVs	Total (PCU)
AM Peak	*2030*	CM49	NTEMv7.2 DM	7,210	3,110	5,700	16,020
		CM49_T8C2	NTEMv8 DM	6,970	3,230	5,860	16,060
		CMT04	NTEMv8 DM (updated HGV Bans)	6,750	3,270	5,930	15,950
	2032	CMT06	NTEMv8 DM Core (updated HGV Bans)	6,830	3,300	5,900	16,030
Interpeak	*2030*	CM49	NTEMv7.2 DM	6,330	1,760	6,310	14,400
		CM49_T8C2	NTEMv8 DM	6,100	1,830	6,510	14,440
		CMT04	NTEMv8 DM (updated HGV Bans)	5,700	1,820	6,480	14,000
	2032	CMT06	NTEMv8 DM Core (updated HGV Bans)	5,930	1,860	6,560	14,350
PM Peak	*2030*	CM49	NTEMv7.2 DM	9,230	2,060	4,020	15,310
		CM49_T8C2	NTEMv8 DM	9,040	2,140	4,160	15,340
		CMT04	NTEMv8 DM (updated HGV Bans)	8,690	2,140	4,160	14,990
	2032	CMT06	NTEMv8 DM Core (updated HGV Bans)	8,810	2,170	4,270	15,250

11.2.3 This data shows that the overall traffic flow at Dartford Crossing in each scenario is relatively constant but that the composition of the traffic flow, i.e. the vehicle type, varies markedly.

11.2.4 Table 11.2 provides the difference between the new NTEMv8 runs with the previously provided NTEMv7.2 runs.

Table 11.2: Comparison of differences in traffic flows at Dartford Crossing presented in Tables 3.2 to 3.4 (REP3-145)

Model Hour	Year	Model ID	Description	Difference from NTEMv7.2 (PCUs)			
				Cars	LGVs	HGVs	Total (PCU)
AM Peak	2030	CM49	NTEMv7.2 DM				
		CM49_T8C2	NTEMv8 DM	-240	120	160	40
		CMT04	NTEMv8 DM (updated HGV Bans)	-460	160	230	-70
	2032	CMT06	NTEMv8 DM Core (updated HGV Bans)	-380	190	200	10
Interpeak	2030	CM49	NTEMv7.2 DM				
		CM49_T8C2	NTEMv8 DM	-230	70	200	40
		CMT04	NTEMv8 DM (updated HGV Bans)	-630	60	170	-400
	2032	CMT06	NTEMv8 DM Core (updated HGV Bans)	-400	100	250	-50
PM Peak	2030	CM49	NTEMv7.2 DM				
		CM49_T8C2	NTEMv8 DM	-190	80	140	30
		CMT04	NTEMv8 DM (updated HGV Bans)	-540	80	140	-320
	2032	CMT06	NTEMv8 DM Core (updated HGV Bans)	-420	110	250	-60

11.2.5 The data shows that car trips are expected to reduce, but LGV and HGV trips are expected to increase.

11.2.6 The Council considers this change in LGV and HGV flows represents a materially significant level of change to the traffic at Dartford Crossing, which requires further analysis.

11.2.7 The status of the 'HGV Bans' in the modelling is also not explained and needs further explanation (see Section 3 for further discussion (REP3-145)) as this indicates like is not being compared with like.

11.2.8 This review shows that rather than undertake analysis using the same modelled year of 2030 as used in the DCO application documents, the applicant has instead presented 2032 flows. The use of different modelled years adds further confusion into the modelling process, which does not ease the analysis of the data by the Council and the Council would expect that it also adds further confusion for the Examining Authority.

11.2.9 The Council notes presenting traffic flows in 2032 allows the applicant to claim two years of 'free' background growth compared to 2030. Including this growth will reduce the difference between the traffic flows in 2030 and 2032. Figure 11.1 provides a schematic representation of the potential differences between 2030 and 2032 flows.

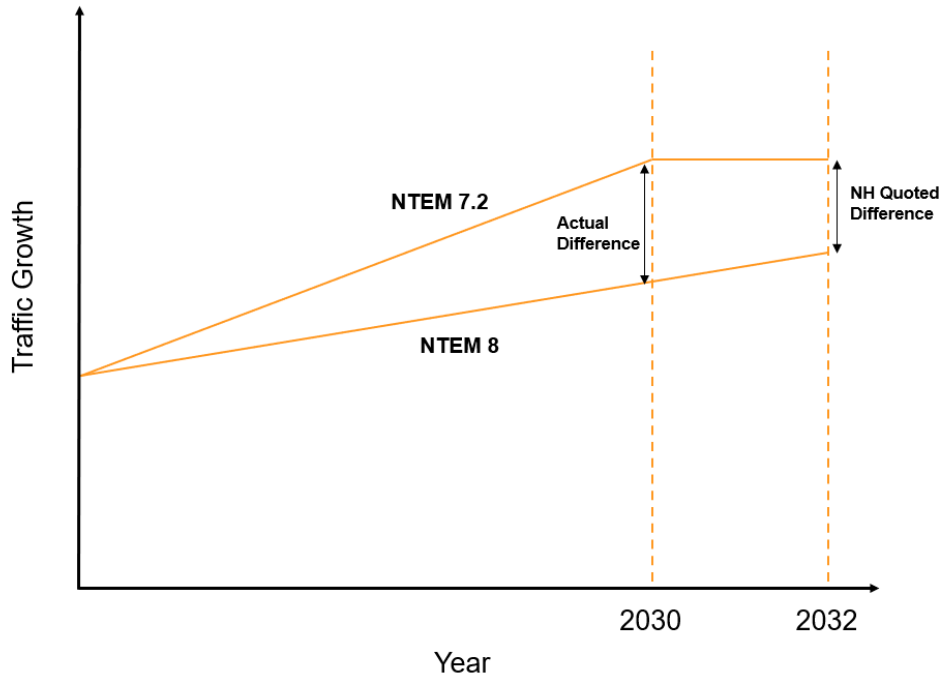


Figure 11.1: Schematic of potential differences in traffic growth between 2030 and 2032

11.2.10 Table 11.3 below shows a comparison between the 2030 and 2032 NTEMv8 runs.

Table 11.3: Comparison of differences between NTEMv8 2030 and 2032 runs (using flows from Table 3.2, REP3-145)

Modelled Hour	Difference between 2030 and 2032 NTEMv8 DM (with HGV ban) flows (CMT06 - CMT04)				
	Cars	LGVs	HGVs	Total Diff (PCU)	Total Diff (% of 2030)
AM peak	80	30	-30	**80**	**1%**
Interpeak	230	40	80	**350**	**3%**
PM peak	120	30	110	**260**	**2%**

11.2.11 The forecast traffic growth between 2030 and 2032 means that in 2032 there is an additional 1% traffic using Dartford Crossing in the AM Peak compared to 2030. The equivalent numbers for the other time periods are 3% in the interpeak and 2% in the PM Peak.

11.2.12 The Council considers this represents a material level of additional traffic which has been incorporated by the Applicant to examine the impact of applying NTEM v8. This means that the comparisons presented by the applicant are not valid and the assessment should be re-run using a consistent model year of 2030.

11.2.13 In fact, Tables 3.2 to 3.4 of REP3-145 show that the applicant did undertake 2030 runs using NTEMv8, which suggests the applicant could have used 2030 as a modelled year as part of their analysis.

11.2.14 However, they chose to update the model to 2032 for the majority of the runs, including all those with the alternative Common Analytical Scenarios from the DfT. It is not clear why they used a modelled year of 2032, when previous analysis has used 2030.

11.2.15 **Summary: the Council is concerned that the applicant has not presented 'like-for-like' comparisons of traffic flows in terms of modelled years. The Council considers that the applicant is under-reporting the impact of using NTEM v8 by claiming additional background growth, which reduces the differences in the traffic flow comparisons for the use of different NTEM versions. The Council requests that the applicant provides comparisons using the same modelled year (2030) as the DCO modelling.**

Concerns Around Wider Changes to the Modelling

11.2.16 The Council is concerned that the applicant has made significant changes to the approach for the modelling of goods vehicles within the modelling.

11.2.17 The Council notes that as part of the new analysis, the applicant has updated the Goods Vehicle matrices with growth factors in line with National Road Traffic Projections 2022 (NRTP22).

11.2.18 Of great concern to the Council is the fact that the applicant has also made a number of network adjustments in the form of updated HGV bans within the model.

11.2.19 These will affect the HGV routings within the model.

11.2.20 The Council considers that the inclusion of such network updates does not allow for a direct comparison between the DCO modelling previously presented and the new NTEMv8 modelling.

11.2.21 The Council notes that Table 3.1 (REP3-145) shows that a 2030 modelling run without the new HGV bans was undertaken. A comparison between this modelling and the NTEMv8 run with the bans in place is shown in Table 11.4 below.

Table 11.4: Comparison of difference in traffic flows at Dartford Crossing with and without HGV bans (based on flows from Tables 3.2 to 3.4, REP3-145)

Modelled Hour	Model ID	Description	Differences with HGV Bans in place (PCUs)			
			Cars	LGVs	HGVs	Total Diff (PCU)
AM Peak	CM49_T8C2	NTEMv8 DM				
	CMT04	NTEMv8 DM (updated HGV Bans)	*-220*	*40*	*70*	***-110***
Interpeak	CM49_T8C2	NTEMv8 DM				
	CMT04	NTEMv8 DM (updated HGV Bans)	*-400*	*-10*	*-30*	***-440***
PM Peak	CM49_T8C2	NTEMv8 DM				
	CMT04	NTEMv8 DM (updated HGV Bans)	*-350*	*0*	*0*	***-350***

11.2.22 Table 11.4 shows there is a significant reduction in the level of car traffic at Dartford Crossing with the bans in place, while HGV and LGV traffic increases in the AM period. This suggests that the introduction of HGV bans changes the proportion of HGVs at Dartford and therefore the new model results are not providing a 'like-for-like' comparison with the previous DCO modelling.

11.2.23 **Summary: the Council has serious concerns around the network modelling changes that the applicant has undertaken as part of the modelling update to reflect NTEM 8. The Council considers that these changes mean a fair and valid comparison cannot be made between the new NTEMv8 runs and the previously presented modelling. The Council requests that the applicant is asked to provide modelling comparisons without these network changes included, so that a direct comparison can be made.**

Concerns Around the Lack of Appraisal Impacts

11.2.24 The Council is concerned that the applicant claims the appraisal impacts of switching to NTEMv8 are negligible but provides no appraisal evidence to support this assertion.

11.2.25 The Council would have expected to see updated monetised journey time benefits and indicative impacts upon the scheme BCR to be provided as part of the assessment of the impact of using up to date NTEM v8 forecasts.

11.2.26 The changes to traffic flows associated with the use of NTEM v8 and NRTP22 are expected to reduce traffic benefits for the scheme. This will further reduce the BCR, which for well-established Level 1 benefits is already benefits is already at 0.48:1.

11.2.27 The Council requests that the impact of using NTEM v8 on the economic appraisal is provided by the applicant.

11.2.28 **Summary: the Council has serious concerns around the lack of appraisal evidence provided by the applicant as part of its new analysis. The Council is concerned that the results provided to date indicate that the economic benefits of the scheme will reduce, further reducing the economic case for the scheme. No evidence is provided within the note to back up claims the impact of NTEMv8 is negligible on the economic case for the scheme. The Council requests that the analysis of the use of NTEM v8 on the economic appraisal is provided by the applicant.**

12 Council Commentary on S106 Agreement Progress

12.1 Introduction

12.1.1 The Section provides the Council's comments on progress in agreeing the S106 Agreement.

12.1.2 The Council presented a limited update on the lack of progress with the Section 106 progress within its D3 submission (REP3-211) in Section 18.14.3. The notes and actions, provided by the applicant on 15 August 2023, from the meeting with the applicant on 8 August 2023 have now been reviewed. Subsequently, a further meeting with the applicant has been arranged for 28 September 2023 and the Council requested on 3 September 2023 that additional items be added to the proposed agenda and that five outstanding actions of the applicant need to be completed – a response is awaited.

12.2 Explanation of Process to Date

12.2.1 The Council's LIR (REP1-281) set out in Section 15.3 and Appendix I, Annex 3, the process to date, which will not be repeated here. However, the process to agree S106 matters with the applicant has been a long and fairly unsatisfactory process commencing in January 2022 and with only five joint meetings during that almost two year period.

12.2.2 The only documents received from the applicant since DCO submission on October 2022 is the Heads of Terms (APP-505), with no further updates. Notwithstanding this, within the Consents and Agreements Position Statement (version 3.0) (REP3-080), it does refer to an update to pedestrian crossing infrastructure in Brennan Road in Tilbury (refer to Section 4.2.13 c and Appendix B) – this is welcomed by the Council, but has never been identified as a significant issue.

12.2.3 Appendix B (page 26) attempts to update progress on the S106 with the Council. This update is kept general, high level and does not provide the ExA with the necessary detail on progress. Therefore, a more detailed update is provided below, which focuses on identifying either lack of progress, disagreement or areas of concern/key issues.

12.3 Outline of Council's Areas of Concern/Key Issues

12.3.1 This can be best set out using the headings within Appendix B of the Consents and Agreements Position Statement (version 3.0) (REP3-080).

12.3.2 **Skills, Education and Employment –** the outstanding issues relating to this vital matters were set out in detail in the Council's LIR (REP1-281) in Section 13.4 and then updated in its D3 submission (REP3-211) in Section 18.12. The Council has received no satisfactory responses from the applicant, and it has refused to accommodate the Council's 'reasonable and proportionate' requests.

12.3.3 **Community Funds** – the applicant has refused to change its definition of 'local'; will not increase the value of the proposed Community Fund; will not change the LAs proposed distributions of the Fund; and will not consider the Community Capacity funding. This is in spite of detailed evidence and previous best practice benchmarking from the Council and a joint request from four directed impacted local authorities.

12.3.4 **Officer Support Contributions –** the Council received a partial offer from the applicant on 15 August 2023 and the Council responded on 3 and 10 September 2023. Outstanding issues remaining relate to the payment of 15% on-costs for officers, national insurance contributions and the inclusion of administrative and apprenticeship roles. These matters are outstanding despite some two years of the Council requesting these matters.

12.3.5 **Pedestrian Crossing Improvements – Severance (Brennan Road, Tilbury) –** the Council welcomed the potential provision and acknowledged that work is ongoing at the proposed roundabout (Fenn Road) and asked that Thurrock and LTC Design leads work together to determine monetary contribution by LTC.

12.3.6 **Other –** matters relating to public transport and the provision of air quality/noise monitors are cited by the applicant as not S106 matters. The Council disagrees.

12.3.7 With regard to mitigation provision at Orsett Village, the applicant proposed to make an 'in kind' or financial contribution to existing plans already developed by the Council. The applicant advised of the urgency to receive the existing plans from the Council, so that any S106 contribution assessment can fit into the S106 deadlines. Subsequently, the Council has responded to the applicant on 10 September 2023 with the following points and awaits the applicant's response:

a. The applicant has agreed that their modelling demonstrates inappropriate levels of traffic using Orsett village;

b. Use of Orsett for construction vehicles is not prohibited in the DCO Control documents and no management is proposed;

c. Until the applicant has completed the modelling, the full extent of the issues anticipated cannot be established;

d. Once this baseline has been established a mitigation scheme needs to be developed.

e. If the applicant agrees that they will pay for mitigation of the serious traffic problems exacerbated by LTC construction and operation, then a suitable scheme will be required, but it is difficult at this stage to determine an overall funding amount;

f. To develop a suitable scheme, funding is required initially to develop the brief establish a scheme and take it through appropriate consultation and the Council can establish the likely funding required over the coming weeks;

g. Given the lengthy hiatus in the applicant addressing this matter there is likely to be insufficient time to do this within the remaining period of the Examination; and,

h. The Council is unclear therefore how the applicant proposes to resolve this matter or indeed what the S106 is intended to focus on at this stage.

12.3.8 The applicant has also presented its draft programme for resolving the outstanding S106 issues. The programme set out on 8 August 2023 was, as follows:

a. Share S106 draft – Early to Mid September;

b. Agreement on Heads of Terms (Scope) – Mid September;

c. S106 draft update (incl. HOTs / Scope) – Mid October;

d. **Deadline 7 17th November** (90% complete) – applicant's submission of draft s106 agreement;

e. S106 Final Update (for signatures) – Mid November [LA to advise on process/timeline for ink signatures];

f. Deadline 8 5th December – applicant's submission of updated s106 agreement;

g. Deadline 9 15th December - Final signed and dated s106 agreement. However, where there is difficulty reaching a negotiated agreement, NH will unilaterally enter into a planning obligation. [Unilateral Undertaking].

12.3.9 Whilst this was always considered by the Council to be extremely challenging, it is already clear that the applicant may already be delayed in achieving its first and second actions, since no draft has been received to date. This is particularly important given the rather fundamental issues outlined above that still require resolution.

12.3.10 **Summary: the process to achieve no agreement on the S106 has taken almost two years, despite five meetings and much evidence produced by the Council to the applicant. The applicant has sought to disguise its lack of progress in a recent submission by only providing a high level update. There are several significant areas of concern to the Council that remain outstanding and await positive responses from the applicant. The applicant's proposed programme for achieving an agreed S106 Agreement is already delayed and unlikely to be achieved to the significant detriment of the Council, in the Council's opinion.**

Appendix A Review of NH Localised Modelling – ASDA Junction and Update on Modelling Status

Annex 1: D4 Local Modelling Status Flow Chart (1) 15.09.23

Annex 2: Technical Note 004 ASDA rb VISSIM Review - v3a 160923

Annex 1: D4 Local Modelling Status Flow Chart (1) 15.09.23

Annex 1 .1: Local Modelling Status Flow Chart

LTAM (Lower Thames Area Model) - Strategic Model

- Better suited to inform LTC business case, economic appraisal and strategic effects assessment
- Inadequate tool to inform and understand the operational impacts of LTC on local junctions
- Out-dated base data
- Poor local road validation
- Uses SRN peak period not LRN

Local Microsimulation or Junction Modelling

- To understand operational Impacts of LTC on local junctions and local communities
- Neither of the assessment results have been agreed between NH and Thurrock

Asda Roundabout

- Base Year model has been completed and shared with the Council but not signed off
- Forecasts have been completed and shared with the Council but not signed off
- Forecast construction model has been completed and shared with the Council but not signed off
- Indicates capacity and safety concerns

Orsett Cock

- Base Year model is complete
- Forecasts have been completed and shared with Thurrock but not signed off
- Indicates significant capacity and safety concerns
- NH has provided updated model but no log of changes provided to understand updates

Daneholes and Marshfoot junctions

- Base Year East-West VISSIM is complete, shared with the Council but not signed off
- Forecasts have been completed and now shared with Thurrock but not cannot be considered until the base year model is signed off
- The impact of LTC on Daneholes or Marshfoot are not understood

The Manorway

- Forecast model has been produced but cannot be relied upon as it was not validated using base year flows
- Further work is required to refine the model before the impacts can be understood

Alternative LGV and HGV Growth Assumptions

- To align with LTC objectives and Wider Economic Impact Assessment

Forecast Growth scenarios

- Completed based on dated guidance and assumptions

Application of Common Analytical Scenarios Framework

- Required to confirm LTC benefits/disbenefits in the context of national uncertainties

Alternative scheme layout

- Required to test adequacy of alternatives

Incident Management scenarios

- Required to substantiate resilience objective

Local Plan Growth Scenarios

- To ensure LTC does not preclude delivery of Thurrock's Local Plan

Impact arising from Thames Freeport

- To test LTC in the context of local uncertainty

Construction Impact Assessment

- To test LTC in the context of local uncertainty

Impact of Significant Events (e.g. Covid-19 pandemic)

- To confirm the assessment results are still valid

Application of the latest DfT's national travel growth forecasts using NTEM 8.0 (for car and public transport trips) and NRTP2022 (for LGV and HGV traffic)

- To confirm the assessment results are still valid

Five Bells junction

- No modelling has been completed to assess and mitigate impacts of the A13 westbound merge at Five Bells junction

A1012/Devonshire Road

- No modelling has been completed to assess and mitigate impacts

Tilbury Junction

- No modelling to support future connection
- Further work is required to refine the operational junction

Key

- Completed and approved by the council
- Completed but not approved
- Not completed

Known construction impacts – Local microsimulation or junction modelling is required to understand need for mitigation

The Manorway roundabout, Orsett Cock roundabout, ASDA roundabout (NH has shared A1089 Asda roundabout Microsim model at Deadline 4) Daneholes roundabout, Marshfoot Road/ A1089 junction, Five Bells westbound merge with A13, A1012/Arterial Road North Stifford/Lodge Lane/ Long Lane roundabout, A1013/ Rectory Road junction, A128 Brentwood Road/ Prince Charles Avenue, A13/A1012 Gyratory in North Stifford, Grays, B149/ Chadwell Hill/ St Chads Road/ Marshfoot Road roundabout, Brentwood Road/ Heath Road, Muckingford Road/ Construction Haul Road, Southend Rd/ Lampits Hill, Station Road/ Love Lane, Stifford Road approach to B1335 Stifford Road

Change Log

This document summarises changes to the Model Status flow-chart and aims to support version control.

LTAM (Lower Thames Area Model) - Strategic Model

D3 status	D4 status
	This element is New **Alternative LGV and HGV Growth Assumptions** • To align with LTC objectives and Wider Economic Impact assessment

Local Microsimulation or Junction Modelling

D3 status	D4 status
Asda Roundabout • Operational Microsim Model has been developed by NH but yet to be shared with Thurrock • To be submitted by NH at Deadline 3 • Base and Future Microsim modelling work is required to understand impacts of LTC	**Asda Roundabout** • Base Year model has been completed and shared with the Council but not signed off • Forecasts have been completed and shared with the Council but not signed off. • Forecast construction model has been completed and shared with the Council but not signed off • Indicates capacity and safety concerns
Five Bells junction • NH has developed junction model but has yet to share it with Thurrock • To be submitted by NH at Deadline 3 • Base and Future Microsim modelling work is required to understand impacts of LTC	**Five Bells junction** • No modelling has been completed to assess and mitigate impacts of the A13 westbound merge at Five Bells junction
Known construction impacts – Local microsimulation or junction modelling is required to understand need for mitigation	**Known construction impacts – Local microsimulation or junction modelling is required to understand need for mitigation**
The Manorway roundabout, Orsett Cock roundabout, ASDA roundabout (NH state that it is preparing A1089 Asda roundabout Microsim model to be shared at Deadline 3), Daneholes roundabout, Marshfoot Road/ A1089 junction, Five Bells westbound merge with A13, A1012/Arterial Road North Stifford/Lodge Lane/ Long Lane roundabout, A1013/ Rectory Road junction, A128 Brentwood Road/ Prince Charles Avenue, A13/A1012 Gyratory in North Stifford, Grays, B149/ Chadwell Hill/ St Chads Road/ Marshfoot Road roundabout, Brentwood Road/ Heath Road, Muckingford Road/ Construction Haul Road, Southend Rd/ Lampits Hill, Station Road/ Love Lane, Stifford Road approach to B1335 Stifford Road	The Manorway roundabout, Orsett Cock roundabout, ASDA roundabout (NH has shared A1089 Asda roundabout Microsim model at Deadline 4) Daneholes roundabout, Marshfoot Road/ A1089 junction, Five Bells westbound merge with A13, A1012/Arterial Road North Stifford/Lodge Lane/ Long Lane roundabout, A1013/ Rectory Road junction, A128 Brentwood Road/ Prince Charles Avenue, A13/A1012 Gyratory in North Stifford, Grays, B149/ Chadwell Hill/ St Chads Road/ Marshfoot Road roundabout, Brentwood Road/ Heath Road, Muckingford Road/ Construction Haul Road, Southend Rd/ Lampits Hill, Station Road/ Love Lane, Stifford Road approach to B1335 Stifford Road

Annex 2: Technical Note 004 ASDA rb VISSIM Review - v3a 160923

Job Name:	ASDA Roundabout Microsimulation Modelling
Note No:	TN004
Date:	September 2023
Subject:	**ASDA Roundabout Base Year Microsimulation Model – Review**

1. Introduction

1.1. In support of ongoing work with the Council regarding the Lower Thames Crossing DCO, the applicant has agreed to undertake a microsimulation modelling exercise to better understand any traffic operational impacts of the LTC within the area of the ASDA roundabout. This model has been prepared using VISSIM and it incorporates the

- A1089 St Andrews Rd / Thurrock Park Way junction (ASDA Roundabout);
- Dock Rd / Amazon access roundabout; and,
- A1089 / Forth Ports access.

1.2. As part of this process the applicant has shared the base models with the Council for review.

1.3. The ASDA roundabout microsimulation model and associated Local Model Validation Report (LMVR) were issued on 1 September 2023. This model has been reviewed by Stantec on behalf of the Council and the findings of this review are included in this Technical Note.

1.4. While we have made every effort to provide accurate and comprehensive insights from our review of the base year model, it is important to note that our analysis is not exhaustive. Further issues or considerations may arise as additional data becomes available or as circumstances evolve.

1.5. As illustrated within the LMVR, the modelled area and zones are illustrated within Figure 1.

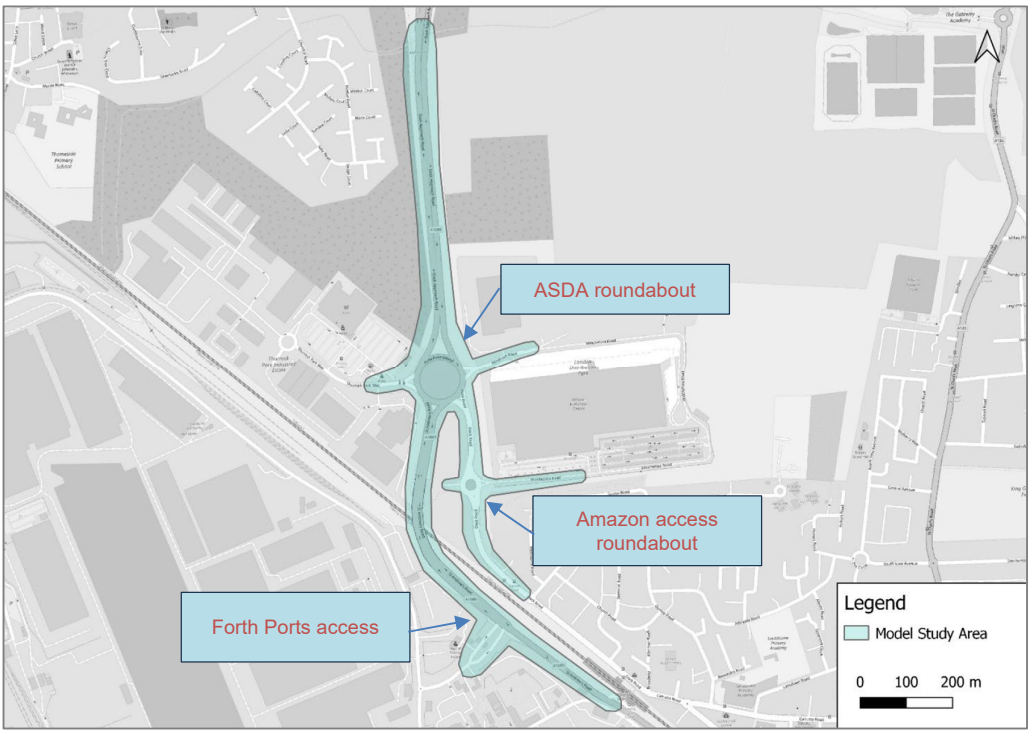


Figure 1: ASDA Roundabout Microsimulation Model Study area

2. Overview

2.1. This Technical Note provides a Red/Amber/Green (RAG) review of the base ASDA roundabout microsimulation model and the LMVR. The review identifies elements within the model that require further development. The review focuses on the model network development and the revision of the LMVR, following industry best practices.

2.2. A summary of the RAG review categorisation along with a brief description is provided below in Table 2.1:

Table 2.1: RAG Review Categorisation

RAG Category	Description
Comments	Findings noted as part of the model audit process that may require consideration and amendment, but are not deemed to have a material impact on the overall operation or outputs derived from the model.
Recommendations /Additional Information required	These observations provide suggested recommendations as part of the model audit process and include requests for supporting evidence made by the reviewer to provide assurance that best modelling practice has been adhered to and therefore the modelling outputs are reliable.
Critical Issues	Issues in the model that require corrective action as these are deemed to have an impact on the operation of the model and associated outputs.

2.3. A further review of the model outputs will be completed once outstanding issues highlighted in this technical note have been sufficiently addressed.

2.4. A model can be accepted by the Council only when all the issues classed as Red or Amber are addressed.

3. Base Model Version 3 Observations

3.1. A review of the Base Model has been undertaken and Table 3.1 identifies the following elements that require further investigation.

Table 3.1: ASDA Base Year Microsimulation Model RAG Review

Nr	Network Objects	Issue	RAG
1	Scenario management	The base year model was calibrated and validated for the AM and PM peak periods. PTV VISSIM 2020 software version was used to develop the models, but the scenario manager function of the software was not used, which would keep the differences between the models at minimum. It is requested to bring the model under scenario management, which would control discrepancies between the AM and PM model and would ensure that forecast and future scenario models are developed quicker without differences in the AM and PM models.	
2	Model network placement	The models were created using CAD background mapping, and it is noted that the network does not line up with the software built in map. While this is not an issue, it was found that the AM and PM models are at different locations, and the AM model seems to be 35 metres offset, and both models are inaccurately rotated (to background mapping).	
3	Model network scaling	Both models are scaled inaccurately and are around 2.6% larger than they should be. This inaccuracy will moderately impact the accuracy of the model, regarding journey times, junction capacities and stacking capacity between the junctions.	
4	Acceleration and deceleration functions	Both the maximum and desired acceleration and deceleration functions are set incorrectly for 'Car' for vehicle types, 'pedestrians' and 'buses' in the AM model.	
5	Vehicle types and models	To represent HGVs in the model, Vehicle type 30 (HGV) is used, which is based on a single HGV model, the 10.215 metres long 'HGV – EU 04 Tractor.fbx'. This represents HGV1 vehicles, but not HGV2 vehicles. It is understood that the HGV proportion of traffic is much higher than average, therefore it is very important to have HGV vehicles modelled accurately in the model. The mix of Vehicle models should reflect the observed proportion of OGV1/OGV2 vehicles, as they have an impact of the capacity of the roundabouts, and the queue lengths in the model.	
6	Driving behaviours	Standstill distance for the urban (motorised) behaviour is set to 1.2 metres from the default 2.0 metres. This is outside of the recommended range or accepted industry standard setting of this parameter.	
7	Driving behaviours	Parameter cc0 (standstill distance) for the 'Freeway' behaviour is set from 1.5 metres to 5.5 metres. It is believed that this parameter has been changed in error, and it should be changed back to 1.5 metres to keep the integrity and robustness of the model. While this driving behaviour is not used in the base year model, keeping	

<table>
<tr><th>Nr</th><th>Network Objects</th><th>Issue</th><th>RAG</th></tr>
<tr><td></td><td></td><td>this inappropriate value in the model maintains the risk that behaviour will be modelled incorrectly if this driving behaviour is used in any future models.</td><td></td></tr>
<tr><td>8</td><td>Links and connectors</td><td>The link and connectors are used in a concise way representing the vehicle movements through the junction.

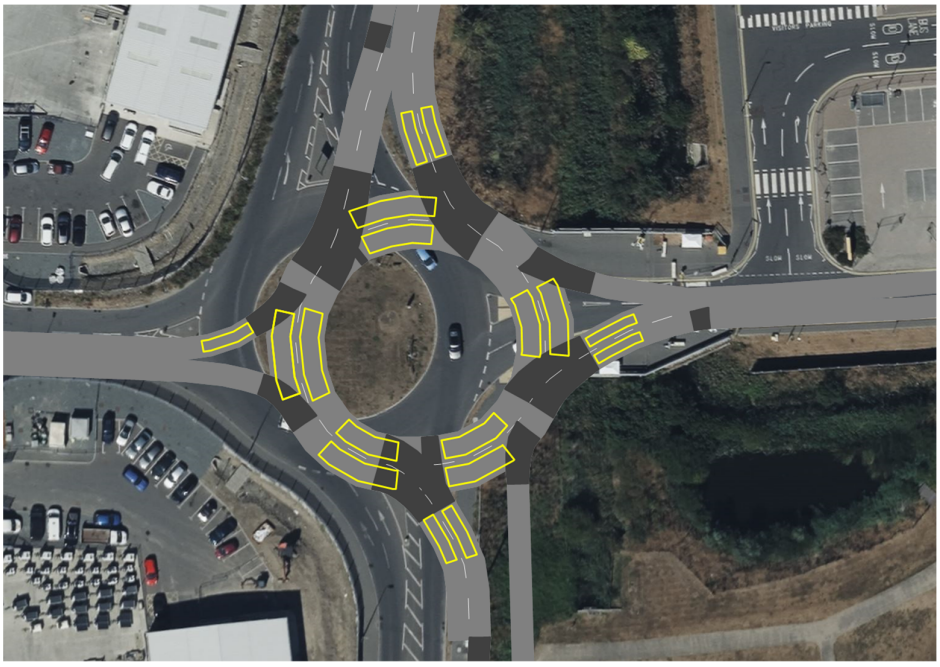
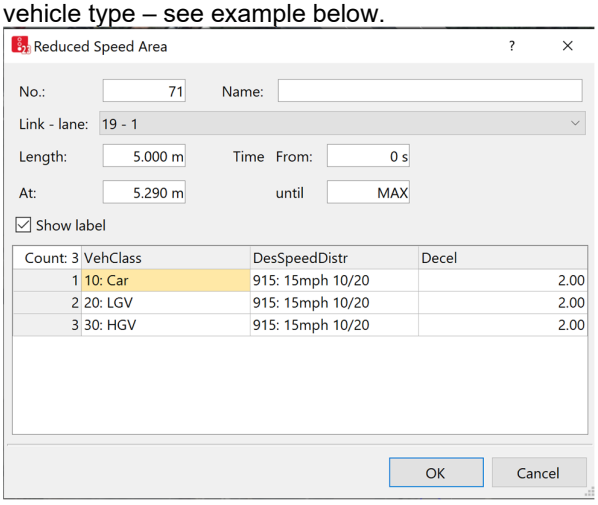
The lane change distance for Link 10404 should be increased from the preset 200 metres to 400 metres. This connector is on the northbound entry of the ASDA roundabout, and as traffic is approaching on a two lanes approach., Vehicles need more distance to get in the correct lane at the roundabout. With the very low level of traffic in the model this is not showing problems, but it is anticipated to be an issue with higher traffic growth in future models.</td><td></td></tr>
<tr><td>9</td><td>Links and connectors</td><td>Emergency lane distance for Link 10029 should be increased from the preset 5 metres to 20 metres to allow left turning traffic to be in the left hand lane on the approach to the Amazon warehouse roundabout. With the current configuration with heavy traffic, traffic can use both lanes to turn left from the north.</td><td></td></tr>
<tr><td>10</td><td>Links and connectors</td><td>The Dock Road / Calcutta Rd roundabout is not modelled in detail. It is noted that traffic is not using this roundabout.</td><td></td></tr>
<tr><td>11</td><td>Links and connectors</td><td>The link and connector system is the backbone of the traffic model. The links and connectors should not be reflecting the traffic lanes at junctions, but they should be reflecting the traffic movements through the junction.

In the base year models many traffic movements are not modelled correctly, resulting in traffic using the roundabouts inaccurately, e.g.:

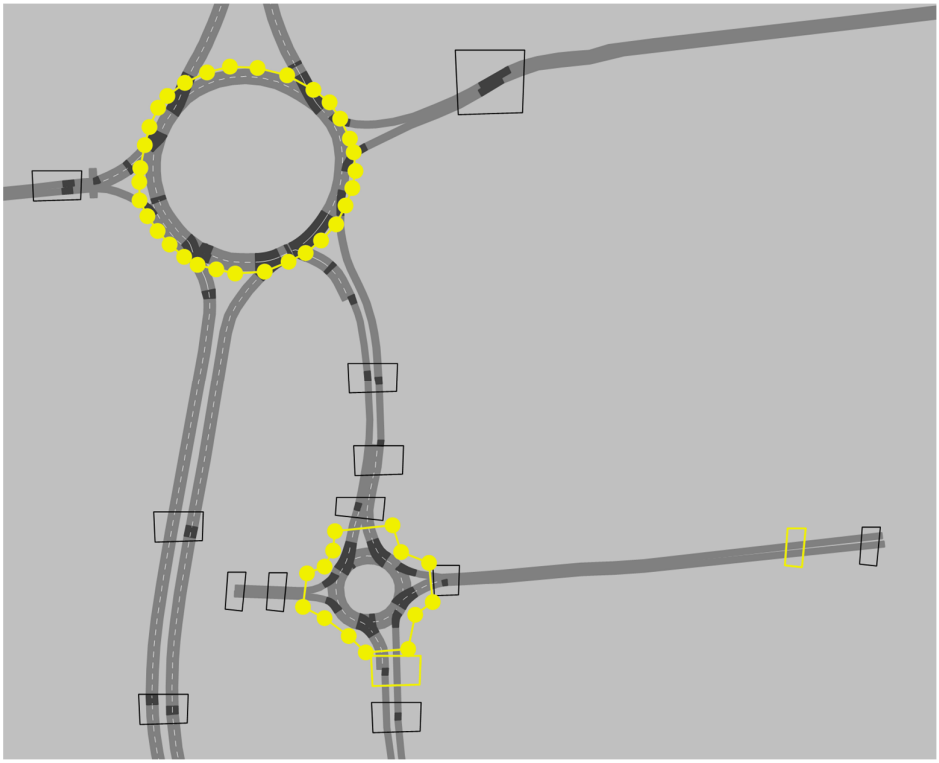
• Entering on the left lane to the junction and then turning right
• U-turning using both lanes in the circulatory
• Circumnavigating the roundabout in the outer lane

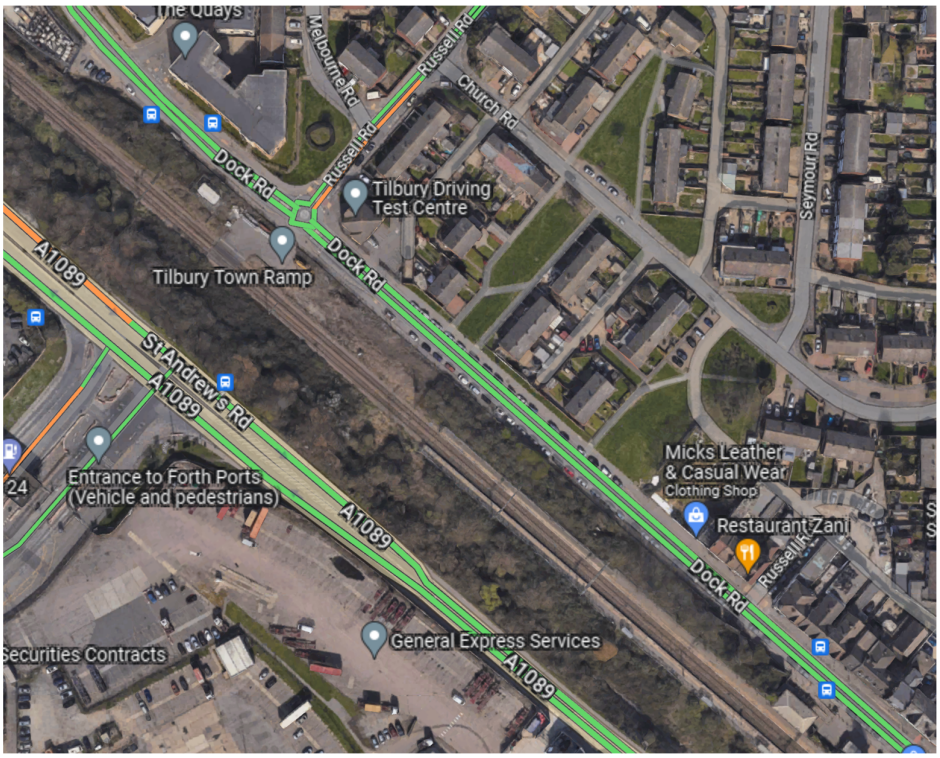
The inadequacy of the link and connector system is shown in the open edges at the roundabouts, where the current open edges allows abnormal vehicle movements:
<table>
<tr><th>Edge</th><th>Rbt</th><th>Dir</th><th>Move</th><th>Issue</th></tr>
<tr><td>186</td><td>Amazon</td><td>SB</td><td>RT</td><td>Vehicles can use the left-hand lane to turn right</td></tr>
<tr><td>189</td><td>Amazon</td><td>SB</td><td>U-turn</td><td>Vehicles can use both lanes for U-turn</td></tr>
<tr><td>193</td><td>Amazon</td><td>WS=B</td><td>RT</td><td>Vehicles can use both lanes to turn right</td></tr>
<tr><td>194</td><td>Amazon</td><td>WB</td><td>U-turn</td><td>Vehicles can use both lanes for U-turn</td></tr>
<tr><td>70</td><td>ASDA</td><td>SB</td><td>RT</td><td>Vehicles will use left-hand lane to turn right</td></tr>
<tr><td>77</td><td>ASDA</td><td>NB</td><td>U-turn</td><td>Vehicles can use both lanes for U-turn</td></tr>
<tr><td>80</td><td>ASDA</td><td>NB</td><td>RT</td><td>Vehicles will use left-hand lane to turn right</td></tr>
<tr><td>84</td><td>ASDA</td><td>NB</td><td>RT</td><td>Vehicles will use left-hand lane to turn right</td></tr>
<tr><td>95</td><td>ASDA</td><td>NB</td><td>U-turn</td><td>Vehicles can use both lanes for U-turn</td></tr>
<tr><td>107</td><td>ASDA</td><td>NB</td><td>RT</td><td>Vehicles will use left-hand lane to turn right</td></tr>
<tr><td>111</td><td>ASDA</td><td>EB</td><td>LT</td><td>Vehicles can use both lanes to turn left</td></tr>
<tr><td>135</td><td>ASDA</td><td>WB</td><td>RT</td><td>Vehicles will use left-hand lane to turn right</td></tr>
<tr><td>150</td><td>ASDA</td><td>WB</td><td>U-turn</td><td>Vehicles can use both lanes for U-turn</td></tr>
</table></td><td></td></tr>
</table>

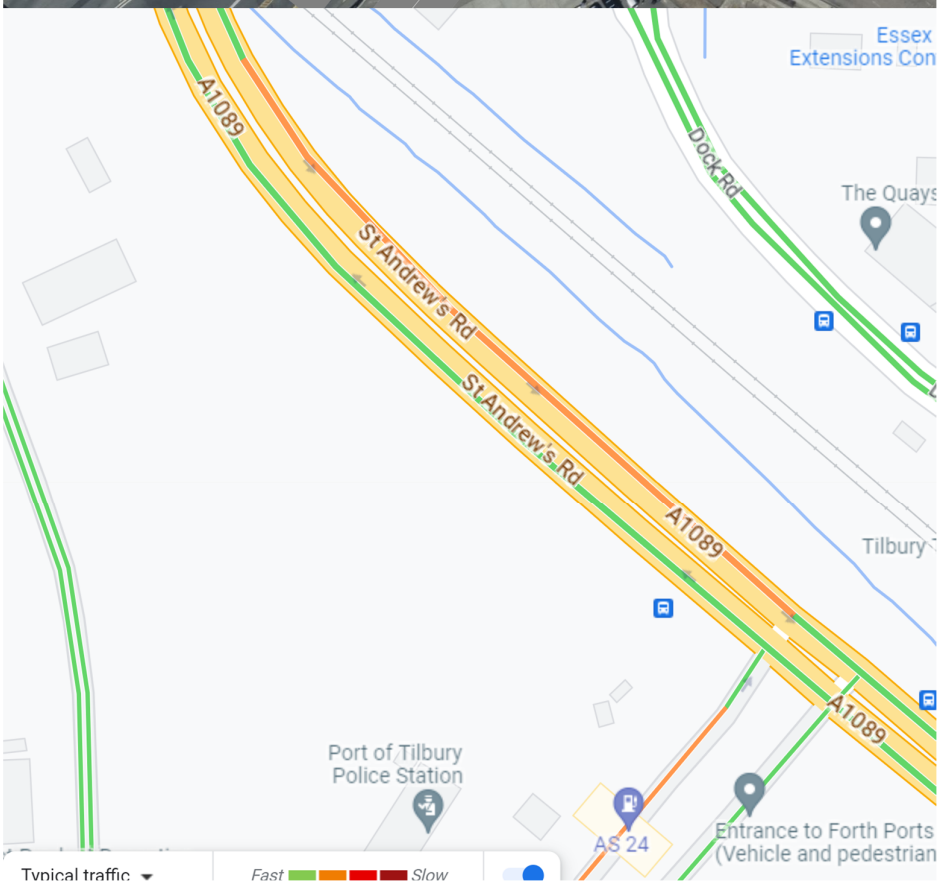
Nr	Network Objects	Issue	RAG
12	Reduced speed areas	In the AM model reduced speed areas 91 and 92 assign speeds for vehicle type 51 (cars) and not to vehicle 10 (cars). Veh type 51 is not assigned to any vehicle compositions or matrices (not in use).	
13	Reduced speed areas	Reduced speed area is missing on A1089 SB, s/o ASDA roundabout (link 7).	
14	Reduced speed areas	Reduced Speed Areas should be coded on the westbound, south-westbound and southbound exits of the ASDA roundabout. 	
15	Reduced speed areas	Reduced speed areas should be coded on all exits of the Amazon warehouse access roundabout.	

Nr	Network Objects	Issue	RAG
			
16	Reduced speed areas	It is good practice to consider that buses and HGVs navigates bends and roundabouts with a slower speed than cars and LGVs. This is not considered in the model and vehicles are assigned the same speed on bends regardless of the vehicle type – see example below. 	
17	Reduced speed areas	Reduced speeds on bends are applied to Cars, LGVs and HGVs, but not to Buses. Buses run without slowing down on bends or when driving through roundabouts.	
18	Priority rules	Priority rules 194 37-1 and 37-2 are set as lights vs lights in the PM model, and not as light vs all vehicles. Effectively cars and LGVs entering the ASDA roundabout from the north in the PM model will not yield to HGVs and Buses driving on the circulatory carriageway.	

Nr	Network Objects	Issue	RAG
19	Traffic signals	It is noted that the signalised pedestrian crossing was implemented but was not placed under operation when the base year model was developed. Correctly, it is coded in the base year model, but it is not activated. As a result, the operation of the traffic signals could not be checked. Modellers working on future models will need to establish pedestrian traffic demand and ensure that the operation of the pedestrian signalised crossing is representative.	
20	Traffic signals	The used 'urban motorised' driving behaviour defines the driving behaviour of vehicles in the model, including (but not limited to) the behaviour of reacting to traffic signals. The parameters in the 'Reduced safety distance close to a stop line' section influences vehicles driving through the stop line, and - as default – allows a more assertive behaviour, driving close to the vehicle in front, and allowing keeping a reduced headway distance. This behaviour is correctly replicating the *fear of being stuck in the next red* and hence rushing through the stop line, and it is creating an overly aggressive behaviour when modelled at pedestrian crossings on roundabout arms. These factors do not just have an impact on the following distance, but also impacting the gap acceptance parameters 100 metres before and after the stop line, even if the traffic signals are not activated, and can increase throughput by over 12%. It is suggested that the 'Factor' is changed at signalised pedestrian crossings from 0.6 to 1.0 to eliminate the impact of the signalised pedestrian crossing on the operation of the roundabout – see below	
21	Detectors	The signalised pedestrian crossing is set up with *vehicle actuation,* and therefore to be dependent on pedestrian demand. Detectors to monitor vehicular traffic are set up on the approaches to the junction. The detector lengths are set to 11 metres from one and 25 metres from another direction. Justification is required for this discrepancy and how detector placement has reflected on site observations.	
22	Nodes	Nodes in this model should be set for either *dynamic assignment* and/or *evaluation* purposes. This should result in a concise system of nodes, located at diverge points and at the end of the links (for dynamic assignment) and around junctions (for evaluation). The function of a number of nodes (e.g. 766, 768 and 780) are not clearly understood, but while they are redundant they are not having an impact on the operation of the model. Two nodes (773 and 775) however are set for *evaluation* purpose, and therefore will have an impact on the delay results on the Amazon warehouse access roundabout node. These two nodes should not be set for evaluation.	

Nr	Network Objects	Issue	RAG
			
23	Edge closures	Edge closures are set differently in the AM and in the PM models. In the AM model edge 67 is closed and 103 is open, while in the PM, edge 67 is open and 103 is closed. Edge closures should not be different between peak hour models.	
24	Pedestrian demand	Pedestrian demand is zero in the base year model. As understood, this is the signalised crossing has not been activated.	
25	Public transport lines and stops	Several public transport routes are set up in the model with details on departure time. The model area comprises two set of bus stops on Dock Road, which are not modelled – see figure below.	

Nr	Network Objects	Issue	RAG
			
26	Queue evaluation	Queue counters are set for the ASDA roundabout, but it would be good practice to monitor queues at the Amazon warehouse access roundabout as well.	
27	Amazon warehouse access	The access to the warehouse has a limited speed of 10 mph and the property is gated with a barrier and security check, 25 metres from the entry to the roundabout. This gating is not reflected in the modelling.	
28	Forth Port access	The Forth Port access is not modelled in detail. It is modelled as an unrestricted two-lane access and unrestricted single lane egress. Based on aerial map views the port operates a barrier and police check, which is limiting the throughput of this lane. Typical traffic shows 200 metres long queue on the southbound approach to the junction in the 7.00 – 8.00 AM peak hour. While it is not believed that queuing HGVs from the north would interfere with the operation of the ASDA roundabout in the base year models, further clarification is needed whether • The operation of the Forth Port access is expected to change in future years (increasing or decreasing capacity at the gating) • Whether the traffic demand is expected to be increased significantly (beyond the expected background traffic growth) due to the operation or further development of the port. The Forth Port access (and the junction on A1089) is not modelled suitably for traffic appraisal and should not be evaluated without the more accurate representation of the port access barriers and police check.	

Nr	Network Objects	Issue	RAG
		 	

Nr	Network Objects	Issue	RAG
29	LMVR	The issued LMVR has no issue control, and it cannot be seen who has created, checked or authorised the release of this document.	
30	LMVR	Queue calibration is not a major part of model validation, as the collection of data is subjective, and any conclusions based simply on queue lengths would be doubtful. Queue data however should be used to support the model validation process. Queue data – to a certain extent – should reflect the state of the model and it should correlate to journey time observations. For more robust evidence on journey time validation, we suggest the presentation of queue comparison in the LMVR.	
31	LMVR	Table C3 in Appendix C incorrectly shows 0% difference for journey time one, which should be 13%.	
32	LMVR	WebTAG Unit M3.1 Paragraph 3.3.12 says that the flow and GEH criteria should be applied on both link flows and turning movements. It also says the comparison should be presented for cars and all vehicles. Considering the high proportion of HGVs in the model we suggest the model validation should be presented for light, heavy and all vehicles separately.	

4. Summary

4.1. This review of the ASDA roundabout base model has focused on the model submitted by the Applicant at D3. This covers the AM and PM peak VISSIM models and the accompanying LMVR.

4.2. The RAG outlines many key areas that still remain a concern to the Council and as such should be updated by the applicant within the next issue of the model prior to model agreement by the Council.

4.3. The Council considers it is a requirement that all the identified issues are rectified to create a robust model that can be used as suitable evidence for the assessment of the impact of LTC on the Council's road network.

Appendix B Transport for London's Modelling Guidelines Version 4.0

3.4 Transport Modelling Hierarchy

Transport modelling operates at various levels of detail and scale, from large regions that may cover an entire city or country down to single junctions. The hierarchy in scale of these modelling levels is illustrated below in **Figure 3**:

- Deterministic modelling covers the smallest area, from a single junction to a group of linked junctions;
- Microsimulation modelling covers areas from a few junctions to a whole corridor or town centre; and
- Tactical and Strategic modelling may cover similar spatial areas (for example the whole of Greater London) however tactical models look at shorter timescales and are often cordoned to focus on specific regions, whereas strategic models consider traffic patterns across the city and commuter catchment area up to 30 years ahead.

Data exchange usually operates between different levels of modelling to promote analytical consistency, and is described further in section **A3.4.5**.

3.4.1 Deterministic Modelling

Deterministic modelling, also known as local modelling or junction modelling, can cover areas ranging from a single junction to a group or 'region' of junctions with linked signal timings. This level of modelling focuses in detail on the capacity of individual stoplines and junctions, and the interaction between them. The use of the word deterministic to describe these models relates to the fact that given identical starting conditions the outputs will be the same every time the model is run, meaning the results are pre-determined.

The key feature of deterministic modelling when compared to other types is that it can be used to optimise signal timings. Settings are entered as in on-street junction controllers, so these models can be used for designing and optimising methods of control at junctions and the results can be applied directly. The focus on individual junctions allows quick option testing of modifications to geometric layout and signal staging design, and the interactions between junctions with linked signal timings can also be tested.

3.4.2 Microsimulation Modelling

Microsimulation models can cover an area from a few junctions to an entire corridor or town centre. The size of a model is normally restricted by data requirements and the model run times allowed by current levels of computing capabilities.

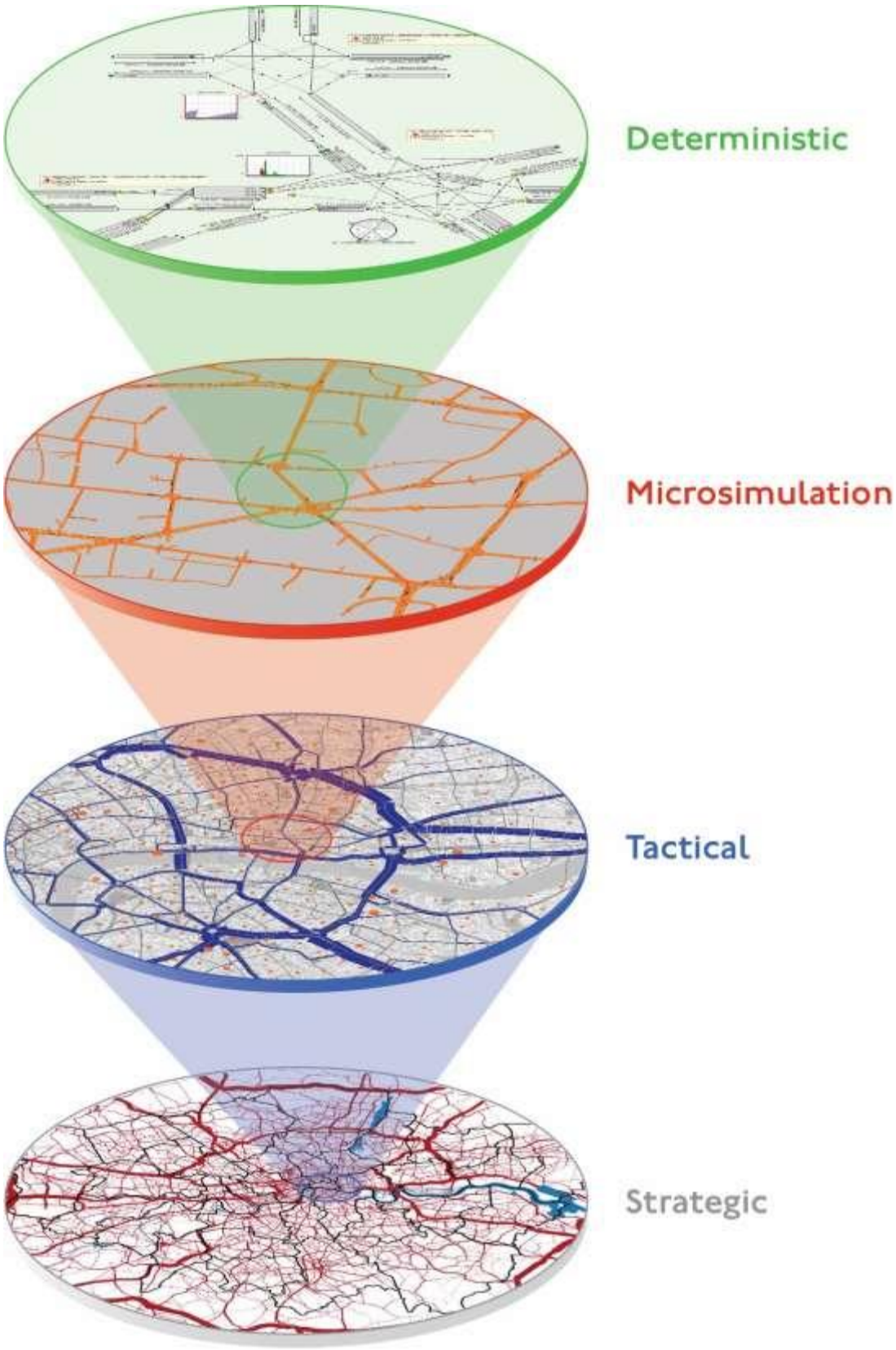


Figure 3: Transport modelling hierarchy

Microsimulation modelling simulates the movements and reactions of individual vehicles, cyclists and pedestrians using behaviour models. It uses randomisation of elements such as vehicle inputs to produce variable model runs which replicate the variability of the real world. The outputs from microsimulation consist of the average of results from a number of model runs.

Due to this modelling of individual vehicles, microsimulation is able to reproduce dynamic phenomena such as queuing behaviour and blocking back through junctions, and the impact of parking or incidents upon the network. It can also represent signal control features such as demand dependency and bus priority using detectors and vehicles / pedestrians in the model.

At TfL, microsimulation models can typically be connected to a simulated version of the same traffic control system which is used to operate the signalised junctions in London. This means that any signal control strategy which can be applied to the street can be accurately modelled, which gives the highest level of realism.

3.4.3 Tactical Modelling

Tactical models consider how vehicles will use the available road network in a relatively short time horizon, predicting up to 5 years ahead[7]. They cover large areas and use aggregated flow values and road / stopline capacities to understand how changes to the road network will affect route choice, speeds and congestion. These models can be used at an early stage in scheme assessment for optioneering and are also used to inform final flow patterns in a chosen design. Mode choice behaviour is not explicitly modelled, however the effect of mode choice can be reflected at tactical level using outputs from strategic travel demand models.

Along with strategic modelling (section **A3.4.4**), tactical models are usually built in macroscopic modelling software, which is based on aggregate flows and capacities, as described above. More recently, it has been possible to use a more detailed model than macroscopic, where individual vehicles are simulated but without the complex behaviours and interactions of microsimulation. This type of modelling is called mesoscopic. It is not widely used at TfL at the time of publishing, although its uses are being investigated.

7 Shortest term of demand input provided by City Planning is 5 years, which is why M&V tactical models work in 5 year intervals. With any term longer than this confidence levels decrease and is less useful for operational purposes.

The Operational Network Evaluator (ONE) model is a tactical model that is developed and maintained by M&V. It is used to conduct operational assessments to indicate the impact of short-term changes on the network and is usually commissioned to support major development schemes. The model covers Greater London and is used to predict global traffic reassignment and congestion impacts due to local network changes. Assessing the implications of local network changes, such as improvements to junction layout or signal timings, requires detailed transport network representation and assignment methods capable of replicating congestion effects. At the time of publishing, the ONE model represents AM and PM peak periods.

3.4.4 Strategic Travel Demand Modelling

Strategic travel demand models are trip demand models which consider multiple future years, often predicting demand on the road network up to 30 years ahead. They cover a large area, typically a whole city or more, and are informed by models which predict population growth, land use and employment change. In TfL, they are used to support planning and help make key investment decisions.

TfL's strategic demand model, Model of Travel in London (MoTiON), uses economic and travel behaviour assumptions and planned transport investment to forecast the total number of trips made, what mode they will use, their travel times and to determine crowding and congestion. It covers all of Greater London and also has zones across the country to account for trips into and through London. This model is built and used by TfL's City Planning Strategic Analysis team[8], and so is not covered in detail in these Guidelines. Integrated into MoTiON are the following assignment models:

- London Highway Assignment Model (LoHAM), a traffic assignment model covering the whole of London which models the routes drivers choose and the associated congestion and delay impacts;
- Railplan, a public transport model for predicting the modes and routes customers choose; and
- Cynemon, which predicts cyclist routes and journey times.

Strategic travel demand is modelled at an aggregate level of detail. Traveller demand is usually defined in person trips and is derived from demographic census data, observed trip making behaviour from surveys and, more recently, anonymised mobile phone and vehicle satellite navigation data. The outputs of these models, traffic demand matrices, are passed to tactical models.

8 http://content.tfl.gov.uk/londons-strategic-transport-models.pdf

3.4.5 Model Integration

Although each level of modelling can be carried out independently, in practice this is rarely the case when producing models for schemes in London. Information is usually shared between modelling levels in order to inform model development, share data and improve the reliability of the results. This is often an iterative process to ensure consistency in model data across different software platforms. As shown in **Figure 4**, there are a number of interactions involved in most modelling projects. The coloured components represent areas covered in these Guidelines.

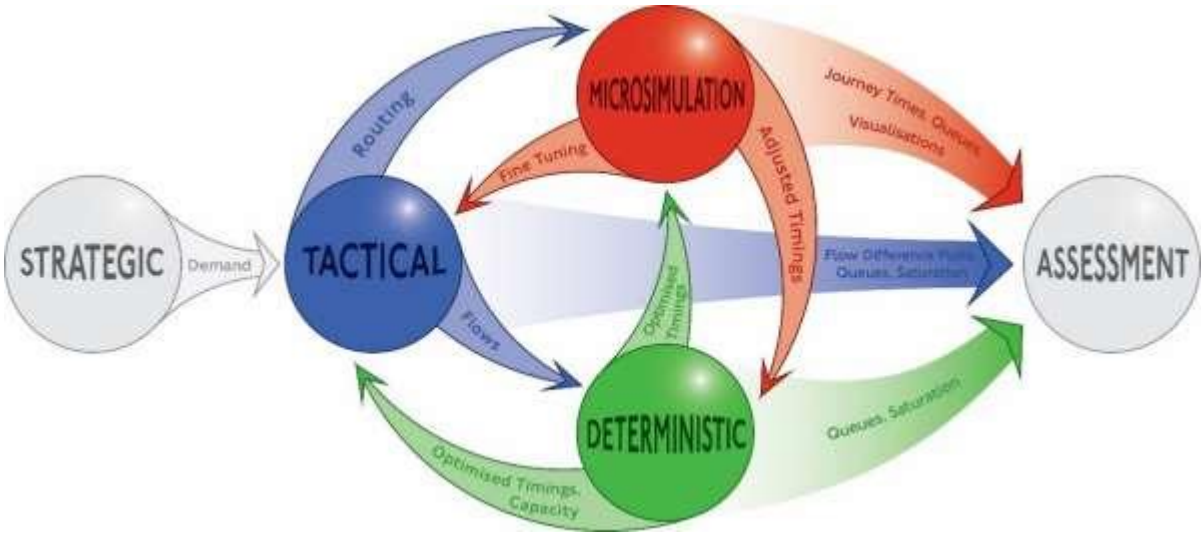
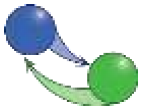
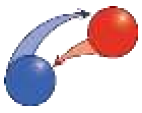


Figure 4: Interactions between different types of modelling

Strategic to Tactical – Strategic travel demand modelling supplies demand, in the form of traffic demand matrices, to tactical models. Usually these matrices do not change during a project, however, the recent emphasis on active travel modes such as cycling has led to increased use of modelling involving shifts between modes. Future scheme modelling may involve an adaptive demand approach where there are significant changes to the network.



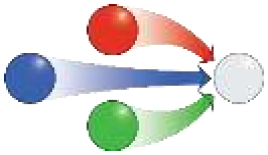
Tactical to Deterministic – Tactical models produce flow data for the Future / Proposed scenario. Deterministic junction models are optimised using these flows as inputs. Optimised signal timings and stopline capacities from deterministic models are then fed back to update the tactical model. This iterative process stops when neither flows nor timings change significantly.



Tactical to Microsimulation – Tactical models provide routing information to microsimulation models, usually in both Base and future scenarios, as they produce end-to-end routes which cannot

be observed on street. End-to-end routing is preferred in microsimulation as it allows vehicles to anticipate their route choice at the same point as they would on street which leads to more realistic behaviour on the approaches to junctions. Since microsimulation models involve individual vehicles and data is collected over sections of road, it is easier to see if the routing is causing any obvious problems such as excessive queuing, missing banned turns or anomalous behaviour at gyratories. Any tweaks or refinements can be passed back to improve the tactical model. These are one-time transfers of data and do not usually iterate unless the issues are significant. The aim is to get the best from each model, bearing in mind the differences in software. Significant changes in signal timings can also be fed back from microsimulation to tactical, although these usually come from deterministic models as described above.

Deterministic to Microsimulation – Deterministic and microsimulation models share signal timings. Optimised signal timings are transferred from deterministic models and used as a starting point in microsimulation models. Any adjustments made in the microsimulation models, as well as timings from any traffic management strategies, can be transferred back to deterministic models to derive capacity and saturation results.



Assessment –Results from the Proposed deterministic, microsimulation and tactical models are comapared against the validated Base or Future Base model results to assess the benefits and impacts of a scheme and influence a decision-making process. The modelling results are fully analysed, as appropriate to the level of modelling used, to inform any decision making and design revisions. Where appropriate, this assessment forms part of the SIR (section **A4.6.1**).