



Lower Thames Crossing

Review of Design Refinement Consultation

On behalf of **Thurrock Council**



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Executive Summary

Introduction

1. Highways England is applying for a Development Consent Order (DCO) to construct and operate the Lower Thames Crossing (LTC) which is approximately 14.3 miles (23 km) of new road connecting the existing road network from the A2/M2, south-east of Gravesend, to the M25, to the north of North Ockendon. The scheme incorporates two 2.6 mile (4.3 km) tunnels under the River Thames and associated modifications to the M25, A2 and A13, and fee flowing charging systems.
2. The scheme is classified as a Nationally Significant Infrastructure Project (NSIP) therefore consent will be sought via a Development Consent Order (DCO) under the Planning Act 2008 (PA 2008) and the Planning Inspectorate (PINS) will consider the application on behalf of the Secretary of State for Transport. Highways England programme is to submit to the DCO application in September 2020.
3. At the end of 2018, Highways England presented its 'Statutory Consultation Scheme' for the proposed LTC. A series of design changes was the subject of a Supplementary Consultation exercise which ended in April 2020 and now, a further round of design refinement is the subject of non-statutory consultation, being undertaken virtually, from 14 July to 12 August 2020.
4. This report has been prepared for Thurrock Council to provide a review of the material presented as part of the Design Refinement Consultation exercise. Its purpose is to identify areas of concern, potentially significant issues and identify areas of further work required to be carried out by Highways England in order to allow the scheme to be properly and proportionately assessed.
5. Overall, the Council has continued to actively engage with Highways England however, based upon the consultation material available, and as with the Supplementary Consultation (January 2020) material, the information presented by Highways England is deficient in the detail required for stakeholders, including the Council, to provide an informed response to the proposed design changes and the wider scheme. Moreover, progress on the environmental and health impact assessment work has been slow such that the Council is likely to be unable to engage meaningfully with Highways England on the potential effects of the scheme and the effectiveness of any mitigation proposals prior to the planned submission of the DCO application this September.

Design Refinement Consultation Scheme

6. Highways England commenced its Design Refinement Consultation exercise on 14 July 2020, ending on 12 August 2020. Within Thurrock, the proposed design refinements are:
 - Tilbury area - northern tunnel landscaping and maintenance road refinements. Realignment of two footpaths and an option for a shared path on Muckingford Road providing improved connectivity between Chadwell St Mary and East Tilbury. Water supply utility work to provide water to the construction sites and TBM and, other utility diversion works.
 - A13/A1089 - two changes to the A13 merges and the removal of a false cutting between the A128 Brentwood Road and Hoford Road. Two separate woodland areas identified off Baker Street at the A13/A1089 that Highways England is looking to make accessible to the public. Proposed minor change to the alignment of the watercourse diversion before the A13 junction. Removal of the new footpath connection under the A13 and the open space to the north of the A13. Realignment of the proposed shared path for walkers, cyclists and horse riders between Green Lane and Stifford Clays Road. Relocation of the Gammonfields traveller site. Movement of some of the overhead cables at the corner of Hornsby Lane and Foxes Green underground.

Proposed permanent compound east of Orsett Cock roundabout, along Stanford Road. Additional land required for overhead electricity distribution cable diversion works north of Heath Place and for multi-utility works in the area off Mill Lane. Multi-utility diversion extension along the B188 High Road, towards Orsett.

- LTC/M25 - new maintenance access track and multi-utilities diversion north of the Thames Chase Forest Centre, resulting in reduced woodland compensation. Watercourse diversion within the Wilderness, resulting in reducing woodland planting. Watercourse diversion, removal of earthworks and the introduction of a retaining wall to avoid encroachments into the Ockendon landfill site. Relocation of construction site 13. Relocation of footpath 136 and realignment of footpath 252. Reconfiguration of land required for multi-utility works. Utility diversion works between Ockendon Road and St Mary's Lane via the B186 and other works around the B186 North Road. Works in the Mardyke area for National Grid maintenance access.
7. Highways England's Design Refinement Consultation materials can be found at the following link: <https://lowerthamescrossing.consultationonline.co.uk/>

Adequacy of Consultation - the Council's Comments on the Consultation Process

8. The Council considers there to be significant issues and challenges associated with undertaking another consultation exercise so soon after the end of the Supplementary Consultation in April 2020 and which is being held during the time of the Covid-19 global pandemic and the summer holiday period.
9. The Council is concerned that directly affected residents and the wider community will be at a disadvantage in meaningfully engaging with this 'virtual' Design Refinement Consultation, that this consultation is being unnecessarily rushed by Highways England and that there is significant risk of consultation fatigue and higher priority matters posed by Covid-19. Given that this consultation will be online only, there are concerns that certain vulnerable groups may be underrepresented, particularly those with limited access to the internet or difficulties in downloading large documents.
10. Whilst Highways England has acknowledged stakeholder concerns regarding the length and timing of the consultation, the programme has not been amended.
11. There are also concerns about the adequacy of the consultation materials and an over-reliance on the preliminary environmental information publish for statutory consultation in December 2018, which combine to make the whole consultation exercise a challenge for members of the public and other stakeholders.

Review Findings and the Council's Position

12. The aim of the review is to identify potential issues arising from the construction and operation of the proposed LTC, as updated by the Design Refinement Consultation Scheme, which are likely to be of concern to the Council as a 'host authority'. The review considers only the design refinements in Thurrock.
13. A re-cap of the Council's principal areas of concern relating to the LTC scheme and specific comments relating to the design refinements are set out in the report. These are:
- **Emerging Local Plan and its interface with the proposed LTC** - the proposed LTC does not make provision for, and is inconsistent with, the housing and development potential for Thurrock and the aspirations for the Borough and for the wider South Essex area as set out in Thurrock's emerging Local Plan and South Essex Joint Strategic Plan. To this end, the

Council will require on-going and transparent updates from Highways England on both the construction and operational programme for each phase of the LTC.

- **Design Quality** - Highways England appears not to meet its own brief and policy and also fails to meet the design expectations set out in the National Design Guide and the National Planning Policy Framework. The Council's design officers will liaise with LTC design team to review the emerging mitigation for landscape, ecology, cultural heritage and Non-Motorised Users, seeking to deliver outcomes that are beneficial to the local community.
- **Highway Design and Safety** - the Council continues to have significant concerns in relation to the potential impacts and effects of the LTC on the operation of the road network in Thurrock and adjoining areas, which are not resolved or responded to in the Design Refinement Consultation.
- **DCO Application Boundary, LTC scheme and EIA Scope** – the DCO application area is approximately 55% larger than that at the EIA scoping stage in October 2017 and there have been a number of material changes to the scheme design since that time. This presents questions around the adequacy of the EIA scoping exercise and the Council is requesting that an updated Scoping Opinion is sought from the Secretary of State.
- **Specific Comments on the Design Refinement Consultation Scheme**
 - **Environmental impacts** – there are significant information gaps and the potential for under reporting of potential impacts. The increase in the area cover by the application combined with the changes to the LTC scheme since the EIA Scoping Opinion was published in Autumn 2017 are likely to give rise to new or altered likely significant environmental effects.
 - **Code of Construction Practice (CoCP)** - there is a reliance on the CoCP to deliver appropriate mitigation during the construction phase however, to date, the Council has received only a working draft CoCP which does not provide any details of the mitigation measures proposed. In addition, the Council has yet to receive the Register of Environmental Actions and Commitments (REAC) which forms a critical part of the CoCP in understanding the proposed mitigation.
 - **Effects on people and communities** - no working draft Health and Equalities Impact Assessment (HEqIA) has been shared with the Council to date and it is not included in this consultation. It has therefore been very difficult to comment on the potential health impacts or any proposed mitigation measures however matters relating to deprivation and mental health issues have been raised with Highways England.
 - **Highway design and safety** - the proposed design refinements to the merge layout designs between LTC, A13 and A1089 are likely to be of little consequence to the operation of the road network in Thurrock. The interchange between LTC/A13 and the Orsett Cock roundabout is inadequate and would be unsafe, where traffic is required to merge and weave too close to the Orsett Cock junction. The designs included in the consultation material do not reflect the change in layout at the Orsett Cock junction, that is currently being constructed, to increase the size of the roundabout circulation and to alter the alignment of the A13 off-slips and the widening of the A13 through link. The proposed layout presented by Highways England does not geometrically align with those changes and does not create a workable solution with sufficient capacity for the current or predicted demand at the junction.
 - **Mitigation proposals: noise barriers** - Highways England proposes 15 new noise barriers in Thurrock, which range from 1 to 6m in height. Little information, other than the location and length, is provided therefore the Council is seeking details from Highways England to determine the likely efficacy as well as potential visual impacts of the barriers on those communities which will be directly affected.

- **Mitigation proposals: landscape and ecological mitigation** - little land has currently been set aside for mitigation along most of the route and there is a reliance on embankments and false cuttings to provide most of the visual screening. Detail regarding planting along these features has not been provided. The Council is seeking to be the approving authority for any DCO Requirements relating to ecological and landscape mitigation proposals.
- **NMU** - the design refinements to the NMU network have largely marginal net effects on the effectiveness of the proposed NMU network. The removal of the prospective connection below the A13 between Stifford Clays Road and Long Lane is an omission as it reduces the increased permeability of the NMU network north to south across the A13. The NMU strategy must now concentrate on high quality provision along the Baker Street to Stanford Road corridor, linking to the National Cycle Network on that road and to provide high quality NMU facilities along Stifford Clays Road.
- **Utility diversions** - the overall land take relating to the electricity and gas diversions still appears to be excessive and the Council is requesting that this is reviewed, and the utility companies challenged further, in order to rationalise the land take wherever possible.
- **Residents and businesses** – whilst the number of properties within the application boundary has decreased from 270 to 150, this is still a high number of affected residents and local businesses. The 70 residential and business properties within the boundary that do not need to be purchased will be affected in relation to property values, difficulties re-mortgaging homes together with direct and indirect environmental impacts. There is evidence that the former is already affecting properties in the Borough. These matters have been raised with Highways England together with the potential effects on mental health.
- **Traveller community at Gammonfields** - Highways England efforts to find a suitable relocation site for the traveller community at Gammonfields are acknowledged. It is understood that further design and mitigation work is needed, and the potential environmental and health impacts of the scheme and proposed relocation must be considered in the assessment work for this site and community which experiences inequalities in health and wellbeing.
- **Transport modelling** - the Council has identified and raised a number of concerns around transport modelling, although to date, Highways England has not provided evidence to reassure the Council or to address these matters.
- **LTC programme and technical engagement** - the Council remains concerned about the adequacy of technical engagement to date and the time available to allow a period of meaningful technical review and engagement prior to the submission of the DCO application, currently programmed for September 2020. These concerns have been exacerbated by the challenges experienced by the Council in relation to the Covid-19 pandemic. This remains a considerable concern to the Council as it limits the time in which suitable and appropriate measures to mitigate and to compensate for the adverse effects of the scheme can be explored and agreed with Highways England. These concerns have been raised regularly with Highways England and the Planning Inspectorate through the course of the pre-application process.

Recommendations and Next Steps

14. As noted in the Council's response to the Statutory Consultation (December 2018) and Supplementary Consultation (January 2020) exercises, the nature of the DCO process is to

encourage close and meaningful engagement with the promoter as the design process proceeds in the pre-application stage.

15. Highways England is requested to undertake further technical engagement with the Council prior to the submission of the DCO application in order to address the Council's concerns. The Council wish to see progress in relation to resolving aspects of the LTC scheme which would have a direct bearing on the Council and its communities should consent for the scheme be granted. These aspects would comprise, but are not limited to, setting a timetable and action plan to address:
- the concerns raised by the Council in this and earlier consultation responses, including the aspirations set out in the emerging Local Plan and delivering sustainable local growth;
 - mitigation for the likely economic costs to the Borough;
 - The delivery of a scheme of exemplar design, lasting legacy and securing local benefits; and
 - agreeing relevant draft DCO Requirements, Statement of Common Ground and s106 draft Heads of Terms.
16. Concerns about the time available to enable a period of meaningful technical review and engagement prior to the submission of the DCO application are set out above. The Council would therefore wish to seek clarity on Highways England's programme and activities up to submission, recommending that the DCO submission date is reviewed and revised so that Highways England can take full account of the responses set out in all consultation responses received to date and thereafter engage effectively with principal stakeholders prior to the DCO application submission.

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Acronyms and Abbreviations

CEMP	Construction Environmental Management Plan
CoCP	Code of Construction Practice
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
HEqIA	Health and Equalities Impact Assessment
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
JSP	Joint Strategic Plan
LTAM	Lower Thames Area Model
LTC	Lower Thames Crossing
LVIA	Landscape and Visual Impact Assessment
MHCLG	Ministry of Housing, Communities and Local Government
NPPF	National Planning Policy Framework
NSIP	Nationally Significant Infrastructure Project
PA 2008	Planning Act 2008 (as amended)
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PRoW	Public Right of Way
RaSA	Rest and Services Area
REAC	Register of Environmental Actions and Commitments
TBM	Tunnel Boring Machine

1 Introduction

1.1 Overview

- 1.1.1 Highways England is applying for a Development Consent Order (DCO) to construct and operate the Lower Thames Crossing (LTC) which is approximately 14.3 miles (23 km) of new road connecting the existing road network from the A2/M2, south-east of Gravesend, to the M25, to the north of North Ockendon. The scheme incorporates two 2.6 mile (4.3 km) tunnels under the River Thames and associated modifications to the M25, A2 and A13, and fee flowing charging systems.
- 1.1.2 As this scheme is classified as a Nationally Significant Infrastructure Project (NSIP), consent will be sought under the Planning Act 2008 (PA 2008). This means that the Planning Inspectorate (PINS) will consider the application on behalf of the Secretary of State for Transport and make a recommendation as to whether the scheme should be granted consent. Highways England's programme is to submit to the DCO application in September 2020.
- 1.1.3 At the end of 2018, Highways England presented its 'Statutory Consultation Scheme' for the proposed LTC. A series of design changes was the subject of a Supplementary Consultation (January 2020) exercise which ended in April 2020 and now, a further round of design refinement's is the subject of non-statutory consultation, being undertaken virtually, between July and August 2020.
- 1.1.4 This document has been prepared by Stantec for Thurrock Council ('the Council'), working with Council officers, to provide a review of the material presented as part of Highways England's Design Refinement Consultation (July 2020) exercise. The purpose of this document is to highlight potentially significant issues arising from the proposed LTC, and the proposed design refinements, and to identify areas of further work required to be carried out by Highways England in order to allow the scheme to be properly and proportionately assessed.
- 1.1.5 For clarity, the latest iteration of the proposed LTC scheme, as presented in the Design Refinement Consultation material, is referred to in this document as the 'Design Refinement Consultation Scheme'.

1.2 Responding to Highways England's Design Refinement Consultation (July 2020)

- 1.2.1 Under the Planning Act 2008 (PA 2008), Highways England has a duty to consult, among others, local authorities and the local community about the emerging proposals in the period prior to the submission of the DCO application (the pre-application process). Highways England also has a duty under section 49 of the PA 2008 to take account of the responses to consultation as it develops the scheme, before submitting the DCO application.
- 1.2.2 As this document is based on the Design Refinement Consultation Scheme, the comments and recommendations presented in this report are subject to change as the scheme design evolves. It should be noted that no formal feedback has been received from Highways England on previous consultation responses made by the Council, or technical engagement, to demonstrate how the scheme design has addressed comments made to date. As such, this document does not supersede any of the comments submitted by the Council to Highways England as part of the Statutory Consultation and Supplementary Consultation (January 2020) exercise, or subsequent correspondence between the Council and Highways England, and it should be read in conjunction with these documents.

- 1.2.3 It is anticipated that the Council will submit further representations should a DCO application be accepted by PINS, on behalf of the Secretary of State.

1.3 Document Structure

- 1.3.1 This document is structured as follows:

- Chapter 2 – Adequacy of Consultation - the Council's Comments on the Consultation Process
- Chapter 3 – The Design Refinement Consultation (July 2020) Scheme
- Chapter 4 – Principal Areas of Concern
- Chapter 5 – Review of Environmental Impacts Update
- Chapter 6 – Review Findings and Next Steps

2 Adequacy of Consultation – the Council’s Comments on the Consultation Process

2.1 Overview

- 2.1.1 In May 2020 Highways England informed local authorities that it intended to undertake a further round of consultation relating to additional design refinements ahead of submitting its DCO application for the LTC scheme in September 2020. On 27 May 2020 Highways England issued a document setting out a draft of its approach for events and publicity for the Design Refinement Consultation (July 2020), which it proposed to launch on 30 June 2020. On 9 June 2020 the Council responded with a number of queries and comments relating to Highways England’s proposed approach to the Design Refinement Consultation process.
- 2.1.2 This chapter sets out the concerns raised by the Council in relation to Highways England’s timing and approach to the Design Refinement Consultation (July 2020), and consultation undertaken to date, in particular in relation to the adequacy of this consultation exercise for the varied communities in Thurrock who are directly and indirectly affected by the LTC scheme.

2.2 The Design Refinement Consultation Exercise

Timing

- 2.2.1 The Council considers that there are significant issues and challenges associated with undertaking another consultation exercise so soon after the recent Supplementary Consultation (January 2020) and during the time of the Covid-19 global pandemic.
- 2.2.2 Whilst Highways England has acknowledged stakeholder concerns regarding the length and timing of this Design Refinement Consultation, the programme has not been amended. Furthermore, it is generally good practice, if providing a consultation during an extended holiday period (Christmas, Easter or summer school holidays (mid-July to end August)), that the consultation period be extended to accommodate annual leave arrangements so as to seek to maximise stakeholder engagement.

Approach

- 2.2.3 The Council is concerned that not only will directly affected residents and the wider community be at a disadvantage in meaningfully engaging with the ‘virtual’ Design Refinement Consultation, for example, due to lack of ability to hold ‘in person’ exhibitions, view notices in public locations, inspect hard copies of vital, complex documents and plans, but also that this consultation is being unnecessarily rushed by Highways England and there is significant risk of consultation fatigue. Given that this consultation will be online only, certain vulnerable groups may be underrepresented and those most affected unable to access the online materials i.e. ageing population, people with poor health, limited access to the internet or bandwidth for downloading large documents. This means that the consultation material will not reach everybody. This is discussed further in para 2.2.7 et seq. below.
- 2.2.4 It is considered that the public will again need to gain a rapid understanding of what is a highly complex scheme but on this occasion it is during a period when there are higher priority matters and concerns affecting people’s health, wellbeing and in many cases, their ability to work resulting in significant personal and financial challenges. As a consequence of this, the Council has taken a decision to postpone any consultations of its own until there is more certainty.

Adequacy of consultation materials

2.2.5 The Council is concerned about the adequacy of the consultation materials and the ability of stakeholders to influence the design proposals. The following comments are made, at this stage, with regard to the material presented in the Design Refinement Consultation (July 2020) which is likely to be confusing to members of the public and other stakeholders, a large number of whom are unlikely to have any familiarity with reviewing plans or large technical documents or who are unfamiliar with the earlier consultation exercises and style of documents:

Missing information:

- Several of the utility diversion proposals are not shown in the Map Books. This has made the review of these design refinements difficult, particularly in understanding the potential impacts of the changes.
- No environmental assessment work is provided for Design Change 23: 'Tilbury watercourse' and Design Change 29: 'Changes to two A13 merge layouts'. The justification within the Environmental Impacts Update is limited and states: "Please refer to Map Book 1: General Arrangements to view this information in more detail.", however, no detail is provided.
- Design Change 34 'Permanent gas pipeline compound at Stanford Road', the Environmental Impacts Update refers to the noise-sensitive receptors in Orsett, however the proposed compound is adjacent to Southfields and not Orsett. It is not clear if this is a typographical error or if the assessment is incorrect.

The presentation and explanation of complex technical material:

- Presentation - the consultation material is presented in a confusing manner and is challenging to read. Various numbers within different documents do not align, for example:
 - Page 15 of the Guide to Design Refinement Consultation, presents design refinements (located within Thurrock) as:
 - 3. Northern tunnel entrance;
 - 4. Route near Tilbury;
 - 5. A13/A1089;
 - 6. In the vicinity of the Mardyke; and
 - 7. LTC/M25.
 - Subsequent pages of the Guide to Design Refinement Consultation present design refinements in the following three areas (located within Thurrock):
 - Tilbury Area (13 design changes);
 - A13/A1089 area proposals (18 design changes); and
 - LTC/M25 area proposals 14 design changes).
- The design change numbers and design change titles presented in the Guide to Design Refinement Consultation do not correlate with the information in the Environmental Impact Update. For example, see Table 2.1 below:

Table 2.1: Example illustrating inconsistencies across consultation documents

	Design Refinement Consultation material	
	Guide to Design Refinement Consultation	Environmental Impact Update
Example design refinement	<p>6. A new indicative alignment to connect water supply from the Linford borehole to the TBM and construction site</p> <p>and</p> <p>7. A new indicative alignment to connect water supply from a local water main to the TBM and construction site</p>	<p>24. New water supply from the Linford borehole and a local water main.</p>

- Map orientation – the north arrow in the Map Books does not generally point due north when viewing the map online as a pdf which gives rise to difficulties when reviewing plans. This is compounded by the consultation exercise being carried out solely online which means that the public will have limited means to print out plans and re-orientate them to make them easier to view. This matter has been raised repeatedly in the past and whilst it has been acknowledged as an issue it has not been addressed by Highways England.
- Environmental Impacts Update, for Noise and Vibration it states "*Construction effects would be controlled through the CoCP and a CEMP. As set out in the PEIR, best practical means would be followed (detailed in Table 13.15)*". This cross reference is made 45 times in the document, but Table 13.15 is not reproduced to assist the reader who may be unfamiliar with the PEIR document.

2.2.6 Understanding the information presented in the Design Refinement Consultation (July 2020) is time consuming and challenging, especially using only online tools. This is likely to be much more confusing to members of the public who may not be familiar with reviewing technical plans or large documents.

Community interest and vulnerable groups

2.2.7 It is not clear how interest groups have been supported to make a contribution to the online-only consultation. Community interest groups are likely to represent their wider membership; the majority of voluntary sector organisations active in Thurrock represent social care needs, including vulnerable residents and cross cutting protected characteristics (according to the Equalities Act 2010). The Office for National Statistics (ONS) reports that those within this group of protected characteristics are typically a higher proportion of internet non-users who would therefore not have adequate access to this consultation exercise.

2.2.8 As an example, there is an 'Easy Read Guide to Design Refinement Consultation' in the Design Refinement Consultation material which can only be accessed online. In order to submit a response to the consultation, this document navigates the reader to the standard online consultation which is not easy to read. It is considered that someone who requires an easy read document would also require an easy read version of the consultation response

questions. This is not available and would therefore discriminate against a protected group of residents/stakeholders. This is exacerbated by the problem that most within this group are typically within the high rate of internet non-users.

- 2.2.9 Overall, the capacity of Thurrock's voluntary sector to support communities to respond will be severely constrained at this time when their priority is supporting residents through the Covid-19 pandemic, including the over 10,000 residents shielding due to being clinically extremely vulnerable.

Responding to comments made at previous consultation exercises

- 2.2.10 It is unclear how matters raised by the local community in Thurrock, during the recent Supplementary Consultation (January 2020) exercise (which ended in April 2020), have been addressed by Highways England in its approach to the Design Refinement Consultation, particularly relating to:

- Extending the consultation period owing to the complexity of, and ability to understand, the scheme and the proposed changes;
- Increasing the number of deposit locations;
- Providing plans in a more legible and user-friendly format.

- 2.2.11 In relation to the matter of consultation fatigue, the Council was disappointed that none of the matters raised in its Statutory Consultation response were addressed in the information provided for its Supplementary Consultation (January 2020) exercise, nor have these matters been addressed or responded to in full as part of the 'ongoing technical engagement' that Highways England is now undertaking.

Reporting preliminary environmental effects

- 2.2.12 The PEIR used for the Statutory Consultation contained only high-level information on potential environmental effects, particularly in relation to (the lack of) traffic information and related noise and air quality impacts. Information contained in the PEIR was found to be lacking in many areas, as set out in table 7.1 of the Council's response to Statutory Consultation (December 2018). The traffic modelling output presented in the PEIR did not include sufficient detail to understand the potential impacts of the Statutory Consultation Scheme on the local networks as well as on residents, businesses and designated environmental areas in the Borough. The Council is concerned that the output of an unvalidated model has been used to feed into 'topic' assessments such as noise, air quality, health impacts. The Council is resorting to carrying out a validation exercise itself.
- 2.2.13 Due to the extent of the scheme changes and assumed progress with the EIA since Jan 2019, a greater level of detail (for example, in relation to traffic flow information with related noise and air quality assessments where available) for the entire scheme should have been made available at this stage (addressing Supplementary Consultation and Table 7.1 comments) and this consultation should have invited comments on the whole scheme, having regard to the new information available, not simply the design changes. This would enable the Council to undertake an informed consideration of potential effects of the scheme as a whole.

LTC programme and technical engagement

- 2.2.14 The Council remains concerned about the adequacy of technical engagement to date and the time available to enable a period of meaningful technical review and engagement to be undertaken prior to the submission of the DCO application, currently programmed for September 2020. These concerns have been exacerbated by the challenges experienced by the Council in relation to the Covid-19 pandemic. The Council's endeavours to work

collaboratively with Highways England continue to be at the mercy of what appears to be a rolling project programme in which, for example, new consultation is introduced at relatively short notice. These concerns have been raised regularly with Highways England and the Planning Inspectorate through the course of the pre-application process.

- 2.2.15 The timing of this engagement means that the Council is under the pressure of a compressed programme, that is to say that, by withholding information which could have been reviewed and agreed upon earlier in the pre-application process, Highways England has compressed the time in which the Council can meaningfully inform the scheme design prior to the submission of the DCO application.
- 2.2.16 This remains a considerable concern to the Council as it limits the time in which suitable and appropriate measures to mitigate and to compensate for the adverse effects of the scheme can be explored and agreed with Highways England.

2.3 MHCLG Guidance

- 2.3.1 Whilst there is no statutory requirement for Highways England to provide a point by point response to the Council's Statutory Consultation response until it submits the DCO application (which will include a Consultation Report setting out, in particular, details of how it has had regard to the consultation responses from its stakeholders under Sections 37 and 49 of the Planning Act 2008) the MHCLG Guidance makes clear at Paragraph 115 that "*applicants should be able to demonstrate that they have acted reasonably in fulfilling the requirements of the Planning Act including in taking account of responses to consultation and publicity*" and at Paragraph 69 that consultation should be "*followed up by confirmation of the approach as proposals become firmer*".
- 2.3.2 As part of the engagement and discussions with Highways England, including LTC Task Force meetings, the Council has requested that as much of the LTC scheme should be in cut and cover tunnel or false cutting in order to minimise significant environmental effects on the local community. The Design Refinement Consultation Scheme now removes some of that false cutting, with limited explanation. This is also true of the design of the Mardyke Viaduct, on which the Council made the following representation in the Supplementary Consultation (January 2020) "*...however, the scheme has reverted back to a broadly similar design as presented at Statutory Consultation in spite of the fact that all parties recognised that there was a better alternative.*" (Paragraph 4.3.3. Review of Supplementary Consultation Documents, March 2020).
- 2.3.3 The Council would therefore seek an early response from Highways England on how it has taken into account the feedback received on earlier rounds of consultation. This would have avoided the need for the Council to re-state its principal areas of concern and focus on matters related specifically to the Design Refinement Consultation exercise.

- 2.3.4 Further, the Guidance states that involvement of local communities can bring significant benefits to all parties by “...*helping local people understand the potential nature and local impact of the proposed project, with the potential to dispel misapprehensions at an early stage*”. It is considered that the local community may think it is unclear how any views raised at Statutory Consultation (December 2018) and Supplementary Consultation (January 2020) have been taken into account thus far and therefore feel it necessary to repeat those concerns, detracting from the ability of this consultation exercise to gather clear views specific to the proposed Design Refinement Consultation Scheme.
- 2.3.5 The Council has previously raised concerns on the lack of meaningful technical engagement and Highways England’s compressed programme. The Council has not received a response on the issues raised at Supplementary Consultation (January 2020), nor does this Design Refinement Consultation address those issues.

3 The Design Refinement Consultation Scheme

3.1 Introduction

- 3.1.1 This chapter describes the Design Refinement Consultation Scheme and the evolution of the LTC scheme design since the EIA Scoping exercise in 2017.
- 3.1.2 The material which comprises Highways England’s Design Refinement Consultation (July 2020) is available to be viewed and downloaded at the following link during the consultation period: <https://lowerthamescrossing.consultationonline.co.uk/>

3.2 Evolution of the LTC Scheme Design

- 3.2.1 Table 3.1 sets out the LTC scheme design at Statutory Consultation scheme (December 2018), Supplementary Consultation (January 2020) and Design Refinement Consultation scheme (July 2020), as outlined within consultation documents.
- 3.2.2 The underlined text indicates features which were either altered or removed since Statutory Consultation (December 2018).

Table 3.1 - History of consultations and scheme design

Statutory Consultation scheme – December 2018	Supplementary Consultation – January 2020	Design Refinement Consultation scheme – July 2020
<p>Non-statutory consultation relating to the proposed LTC route options was undertaken by Highways England between 2013 and 2016. Following the announcement of the Preferred Route in 2017, Highways England undertook further design and assessment work and, at the end of 2018, presented its Statutory Consultation Scheme which comprised:</p> <ul style="list-style-type: none"> ▪ approximately <u>14.5 miles (23 km)</u> of new motorway connecting to the existing road network from the A2/M2 to the M25; ▪ two 2.5 mile (4 km) tunnels under the River Thames, one southbound and one northbound; 	<p>The scheme has evolved since Statutory Consultation (December 2010) and a series of design changes were published:</p> <ul style="list-style-type: none"> ▪ Increase in length of tunnels, now 2.6 miles (4.3 km) and corresponding decrease in length of new road, now approx. 14.3 miles (23 km); ▪ Changes to the M2/A2 junction and local link roads; ▪ Relocating the southern tunnel entrance approximately 350 metres to the south; ▪ Removal of the Rest and Services Area (RaSA); 	<p>Following Highways England Supplementary Consultation held earlier this year Highways England has further developed the design of the LTC which has resulted in a number of design refinements, which are described in detail in Chapter 5 below.</p> <ul style="list-style-type: none"> ▪ approximately 14.3 miles (23km) of new roads connecting the tunnel to the existing road network ▪ three lanes in both directions, apart from the southbound connection between the M25 and A13, where it would be two lanes, and around junctions ▪ technology providing lane control and variable speed limits up to 70mph ▪ upgrades to the M25, A2 and A13 where it connects to those roads

Statutory Consultation scheme – December 2018	Supplementary Consultation – January 2020	Design Refinement Consultation scheme – July 2020
<ul style="list-style-type: none"> ■ three lanes in both directions with a maximum speed limit of 70 mph; ■ modifications to the M25, A2 and A13, where the Lower Thames Crossing connects to the road network; ■ <u>a new Rest and Services Area (RaSA) at the Tilbury Junction (East Tilbury);</u> ■ <u>new structures and changes to existing structures</u> (including bridges, buildings, tunnel entrances, viaducts, and utilities such as electricity pylons) along the length of the new road; and ■ a free-flow charging system, where drivers pay remotely, similar to that at the Dartford Crossing 	<ul style="list-style-type: none"> ■ Removal of the previously proposed junction at Tilbury; ■ Relocating the route between Tilbury and the A13 junction approximately 60 metres north-east; ■ Changes to a number of slip roads at the junction between the LTC, A13, A1089 and A1013; ■ Removal of one southbound running lane between the M25 and A13 junction; ■ Changes to the structures over the Mardyke River, Golden Bridge Sewer and the Orsett Fen Sewer; ■ Changes to the southbound link from the M25 to the LTC; and ■ Changes to the layout of junction 29 of the M25. 	<ul style="list-style-type: none"> ■ new structures and changes to existing ones including bridges, viaducts and utilities such as electricity pylons ■ two 2.6-mile (4.3km) tunnels crossing beneath the river, one for southbound traffic, one for northbound traffic ■ a free-flow charging system, where drivers do not need to stop but pay remotely, similar to that at the Dartford Crossing ■ traffic regulation measures that include prohibiting use by pedestrians, low-powered motorcycles, cyclists, horse riders and agricultural vehicles ■ provision of environment mitigation and replacement of special category land

4 Principal Areas of Concern

4.1 Introduction

4.1.1 This chapter sets out the Council's principal concerns relating to the proposed LTC scheme together with specific comments and concerns relating to the design refinements presented in the Design Refinement Consultation (July 2020). The areas discussed comprise:

- Emerging Local Plan;
- Design Quality;
- Highway Design and Safety;
- DCO Application Boundary, LTC Scheme and EIA Scope;
- Specific Comments on the Design Refinement Consultation Scheme;
 - Environmental Impacts and CoCP
 - Effects on People and Communities
 - Highways Design and Safety
 - Mitigation Proposals: Noise Barriers
 - Mitigation Proposals: landscape and ecological mitigation
 - Non-Motorised Users
 - Utility Diversions
 - Residents and businesses
 - Traveller community at Gammonfields
 - Transport modelling
 - TC programme and technical engagement

4.1.2 The design changes and material presented by Highways England to date do not materially alter the Council's in-principle objection to the scheme which, it is considered, will give rise to substantial adverse significant effects upon Thurrock.

4.2 Emerging Local Plan

4.2.1 As set out in the response to Supplementary Consultation (January 2020), the Council is in the process of preparing a Local Plan which will meet all the Borough's future needs over the anticipated plan period to 2040. Over the course of the next two to three years over which the Council will be progressing that plan through Regulation 18 and Regulation 19 stage consultations, the Council will need to assume that:

- the alignment of the LTC will not change significantly;
- the LTC is granted Development Consent;
- the LTC will accommodate Thurrock's strategic growth aspirations along the corridor.

4.2.2 To mitigate the risks to the emerging Local Plan, the Council continues to adopt the approach of a 'Plan within a Plan' to ensure that should any of the above assumptions not come to fruition, it will not prejudice Thurrock's future spatial strategy. To this end, it remains the case that the Council will require on-going and transparent updates from Highways England on both the construction and operational programme for each phase of the LTC.

4.2.3 As set out in the responses to Statutory Consultation (December 2018) and Supplementary Consultation (January 2020), the LTC scheme could jeopardise both housing and economic

growth in Thurrock and wider South Essex. The key to resolving this is a mechanism to support/enable future growth. However, this was not presented in the Design Refinement Consultation. Consequently, the one of the main objectives of the proposed LTC to support and enable growth in sustainable locations continues to be missed.

4.3 Design Quality

4.3.1 Contrary to Highways England's policy on Design Quality there are currently no measures to ensure that anything more than a standard highway will be realised, rather than exemplar in infrastructure design. Highways England appears not to meet its own brief and policy and also fails to meet the design expectations set out in the National Design Guide and the NPPF. There appears to be a significant gap between the original aims and objectives of the scheme, including the input from a Design Panel, and how these will be met.

4.3.2 It is essential that the LTC design team liaises with the Council's design officers to review the emerging landscape, ecology, cultural heritage and NMU mitigation and try to deliver something that is beneficial to local people. This will also shape the wider legacy projects and ensure that they are meaningful, appropriate, well considered, and most importantly have the stewardship of the local people and the Council so that they exist into the future.

4.4 Highway Design and Safety

4.4.1 Regarding highway design and safety, the design changes proposed within this consultation are likely to have limited further effect on the operation of the network in Thurrock. However, the Council continues to have significant concerns in relation to the potential impacts and effects of the LTC proposals on the operation of the road network, in Thurrock and adjoining areas, which are not resolved or responded to in the Design Refinement Consultation (July 2020). The Council's concerns have been expressed regularly in both meetings with Highways England and through the Council's consultation responses. The Design Refinement Consultation scheme does not change the Council's position.

4.4.2 No further detail has been provided regarding the tunnel design and safety. The Council continues to have concerns in relation to the tunnel's operation, including procedures for dealing with accidents and emergencies. The Design Refinement Consultation scheme does not change the Council's position.

4.5 DCO Application Boundary, LTC Scheme and EIA Scope

4.5.1 In its response to both the Statutory and Supplementary consultation (January 2020) exercises, the Council raised concerns relating to significant changes in the area covered by the DCO application. The Application Boundary has been reduced as part of the Design Refinement Consultation (July 2020) although it is still considerably larger than that at the EIA scoping stage of the scheme, as demonstrated below. The following data have been generated from GIS data supplied by Highway England.

- 2017 EIA Scoping - 12.76 km²
- 2019 Statutory Consultation (December 2018) - 20.08 km²
- 2020 Supplementary Consultation (January 2020) - 26.21 km²
- 2020 Design Refinement Consultation (July 2020) - 22.91 km²

4.5.2 The Council's position remains as stated in its Supplementary Consultation (January 2020) response in that it is unclear whether the scope of each EIA topic assessment has been reviewed and/or updated as a result of the changes in the application area and the LTC

scheme, no evidence is presented in support of this and that an updated Scoping Opinion be sought.

4.5.3 It is acknowledged that there is a need to retain flexibility in designing major infrastructure schemes, however the significant increase in application area, which has increased by some 55% since EIA scoping stage, compounded by the material changes to the LTC scheme which have taken place since scoping, lead to the conclusion that Highways England's October 2017 EIA Scoping Report was submitted prematurely and at a point in time where there was too much uncertainty about the design of the scheme. Therefore, a new Scoping Opinion should be sought based on the most recent LTC proposals, to ensure adequacy of the Environmental Statement. As noted in Paragraph 4.9 of PINS Advice Note 7: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements, states that '*...Applicants should consider carefully the best time to request a scoping opinion. In order to gain the most benefit, Applicants should consider requesting the opinion once there is sufficient certainty about the design of the Proposed Development and the main design elements likely to have a significant environmental effect*'

4.5.4 The Council's request for an update to the formal scope of the EIA, is further supported by DMRB guidance (DMRB LA 103 Revision 1 3. Scoping and the project lifecycle, Jan 2020) which states that '*scoping shall be repeated where there are material changes:*

- *in the physical characteristics and/or location of the project;*
- *in the environmental assessment assumptions e.g. the construction or design year; and*
- *in the level of understanding of the current state of the environment (baseline scenario)'.*

4.6 Specific Comments on the Design Refinement Consultation Scheme

4.6.1 This section sets out comments relating to the LTC as in presented in the Design Refinement Consultation Scheme.

Highway design and safety

4.6.2 The amendments to the merge layout designs between LTC, A13 and A1089, proposed through this Design Refinements Consultation (July 2020), are likely to be of little consequence to the operation of the road network in Thurrock. The interchange between LTC/A13 and the Orsett Cock roundabout is inadequate and would be unsafe, where traffic is required to merge and weave too close to the Orsett Cock junction. The designs included in the consultation material do not reflect the change in layout at the Orsett Cock junction that is currently being constructed to increase the size of the roundabout circulation and to alter the alignment of the A13 off-slips and the widening of the A13 through link. The proposed layout put forward by Highways England does not geometrically align with those changes and does not create a workable solution with sufficient capacity for the current or predicted demand at the junction

4.6.3 The Council's specific concerns are:

- **Absence of justification for the need and layout of the LTC interchange with A13, A1089 and the Orsett Cock roundabout:** the current layout is convoluted and flawed and brings very little connectivity to Thurrock whilst sterilising significant sections of land. Highways England needs to respond to the Council's position that there is no fundamental justification for the interchange. Irrespective of that justification, the design as it stands, has numerous direct and indirect impacts on the junctions of Orsett Cock and The Manorway. These impacts have not been mitigated

within the designs and are not responded to in the proposed design refinements and on-going engagement materials. The consequential impacts are being evidenced through the transport modelling, which the Council continues to review as information is released by Highways England. In summary the impacts are:

- Local traffic can only access the LTC from the A13 / A1014 junction, either from A1013 Stanford Road or A13. This would result in an increase in traffic movements at those junctions and increase movements on the local road network.
 - Complex slip road alignments are confusing and provide an unsafe interface with the Orsett Cock junction. The issues here are identified as having significant impact with traffic coming from the LTC north and south and A1089.
 - The interchange does not provide for access to A1089 from the LTC to A1089 southbound or A13 westbound, resulting in traffic diverting to A13 eastbound to Orsett Cock junction or The Manorway.
 - The design does not respond to the current layout of the Orsett Cock junction or the widened A13 at that interchange.
 - Modelling evidence has not been provided to demonstrate that the interchange is required to facilitate development and the recent determination of the Port of Tilbury application and that of DP World were the subject of improvements to the Orsett Cock junction which have been implemented.
 - Highways England has not responded to the emerging proposals by the developer of the London Resort proposal to provide 2,500 parking places at the Port of Tilbury, with an associated river crossing. That proposal will attract significant traffic movements to the A1089 corridor which are currently not provided for from the LTC.
 - Impacts are not limited to the A13, Orsett Cock and The Manorway junctions. Other associated roads such as Stanford Road are also affected which will also require mitigation, covering not only impacts on delays, severance and safety but also increased wear and tear which would be an increased burden on the Council.
- **The impacts on A13 / A1014 Manorway interchange:** junction capacity is significantly impacted by movements from the LTC proposals at the A13 interchange. The traffic models continue to be reviewed but the impacts appear to be from traffic u-turning to return to gain access to the A1089 southbound. A significant proportion of traffic using The Manorway and the A13 interchange are heavy goods vehicles accessing and leaving the London Gateway Port and the ill-conceived proposed LTC interchange with A13 will add further to that demand, including u-turning vehicles accessing the Port of Tilbury via A1089. Further to this consideration the emerging Free Port agenda may increase the impacts on the network.
 - **Loss of connectivity from A128 southbound onto A1089:** currently, traffic movements from A128 to A1089 are via Orsett Cock roundabout onto A13 then joining A1089. This link is lost and would result in traffic having to divert eastbound to A13 / A1014 junction to return through the Orsett Cock interchange. This diversion increases that journey by circa 6.5km and an additional 10mins off peak or 18mins during network peak periods.
 - **Absence of A13 westbound traffic connection to the LTC:** traffic travelling westbound on A13 has no access to the LTC north or south without diverting south to

join A1089 and turn at the congested Asda Roundabout (which Highways England predicts will be over capacity by 2026) or at A13 / A1014 The Manorway junction (which is a significant traffic impact and increase in journey times as identified above).

- **Impacts on connectivity within Thurrock:** connectivity in the north and south of the Borough, both to and across the LTC corridor, is extremely poor and does not support the Council's growth strategy. For example, the proposed design refinement at the Muckingford Road over-bridge would not meet the objectives of strong connectivity within the area and must be revisited. Highways England has not responded on the issue of connectivity.
- **Public Transport connectivity opportunities not met:** the objective of the LTC scheme to facilitate public transport connectivity across the River Thames between Thurrock and Kent, cannot be met in its current configuration. The linkages to the LTC, within Thurrock and Gravesham, do not allow for effective access such that bus services would be unviable.
- **Absence of an Incident Management Plan:** an incident management plan for the LTC and associated connections remains to be set out by Highways England and is of significant concern to Thurrock, including the impacts incidents would have on the local road network as well as the safety of Thurrock's residents and demands on the emergency services within Thurrock.
- **No evidence of an HGV Management Strategy:** a management strategy for redirecting over-height vehicles from the LTC prior to the tunnel and also for managing the increased propensity for HGV drivers to seek locations for breaks or over-night stays must be set out by Highways England with suitable mitigation provided.
- **Haul roads and construction access impacts on local roads and management:** the Application Boundary includes a number of extensions into the local road network, assumed to be associated with anticipated haul routes and access corridors. Highways England must substantiate the reasoning for these sections of the development boundary and set out the intended controls on those streets. The Council will object to the diminution of management and control over these streets including the co-ordination of maintenance and statutory undertakers works. Routes that are to be the subject of increases in traffic for construction vehicles or workforce travel must be protected and mitigation provided to maintained and repair those roads as needed. The effects on non-motorised users must also be mitigated.

Mitigation proposals: noise barriers

4.6.4 As part of the Design Refinement Consultation Scheme, Highways England has included new noise barriers, with a total of 15 in Thurrock, as follows:

- four new barriers are proposed in the Tilbury area proposals ranging from 1 m to 2 m in height;
- eight new barriers in the A13/A1089 area proposals ranging from 1 m to 6 m in height. It is noted that proposed false cuttings have been removed in the A13/A1089 area proposals despite the Council's requests at Statutory Consultation (December 2018) and Supplementary Consultation (January 2020) that the height of the LTC scheme is kept as low as possible with cut and cover and false cuttings. Information should be provided to demonstrate that receptors do not experience significant adverse impacts as a consequence;
- three new barriers in the LTC/M25 area proposals ranging from 1 m to 2 m high in height.

- 4.6.5 In order to determine the efficacy and effect of the proposed noise barriers, the Council requires the following information for each noise barrier location:
- noise levels before and after the implementation of the proposed barriers at the affected receptors.
 - details of the receptors affected and the assessed sensitivity, for example, are these dwellings, hospitals, schools, ecological receptors, or other sensitive uses? Typical cross sections showing the barriers at these sensitive locations would greatly assist.
 - level of significance after the implementation of the barriers, how this has been derived and how these effects will be monitored, once operational.
 - if significant effects remain after the implementation of the barriers, details should be provided with regards to why higher barriers (or other alternative design mitigation) were not installed or alternative mitigation measures proposed.
 - confirmation of whether the proposed barriers are reflective or absorptive and why they have been specified as such.

4.6.6 It is noted that majority of the proposed noise barriers are not more than 1m high and that barriers of this height are likely only to partially attenuate noise from road traffic sources at ground floor level for the receptors and unlikely to be effective at first floor level. Highways England should provide the rationale for proposing 1m high noise barriers.

4.6.7 The likely visual impacts (together with and cross sections, as described above) on the local community of these barriers, which in some cases are very high, should also be presented as there is a potential for a negative visual impact and an enhanced sense of segregation. The Council, therefore, seeks the inclusion of a DCO Requirement for noise mitigation proposals to be included in the draft DCO, and for the Council to be the approving authority.

Mitigation proposals: landscape and ecological mitigation

- 4.6.8 Map Book 1: General Arrangements, within the Design Refinement Consultation material, shows the areas that are available along the route for landscape and ecology mitigation. It is noted how little land has been set aside for mitigation along most of the route and the reliance on embankments and false cutting to provide most of the visual screening. Detail regarding planting along these features has not been provided.
- 4.6.9 During early meetings with environmental organisations there was a common desire to see ecological mitigation focussed into larger sites rather than scattered in smaller parcels that will be restricted as to the species they can support and difficulty in maintaining in the long term. The General Arrangement Plans (Map Book 1) appear to indicate a reliance on small sites. Furthermore, the legend within Map Book 1: General Arrangements refers to many of the mitigation sites as 'proposed' or 'potential'; the Council is therefore concerned that these sites could be further reduced. Without sight of the results of the LVIA and ecological surveys it is not possible to determine whether the mitigation that has been put forward will be adequate.
- 4.6.10 The plans do show some potential for some larger scale provision close to Coalhouse Fort and near the Mardyke Viaduct. In addition, the open space compensation for Blackshots Nature Park has also been shown immediately to the west of this site. It is essential that the Council has the opportunity to work with Highways England to shape how these areas, in particular, are brought forward. The Council, therefore, seek the inclusion of a DCO Requirement for ecological and landscape mitigation proposals to be included in the draft DCO, and for the Council to approve the details.

- 4.6.11 There are features, particularly the balancing ponds, along the route which are shown as engineered structures and have not been integrated into the landscape design. While it has been stated that these are indicative there is a concern that these will be presented as the final designs.

Non-Motorised Users

- 4.6.12 The proposed amendments to the Non-Motorised User (NMU) network have largely marginal net effects on the effectiveness of the proposed NMU network. The removal of the prospective connection below the A13 between Stifford Clays Road and Long Lane is an unfortunate omission as it reduces the increased permeability of the NMU network north to south across the A13. The NMU strategy must now concentrate on high quality provision along the Baker Street to Stanford Road corridor, linking to the National Cycle Network on that road, and to provide high quality NMU facilities along Stifford Clays Road.
- 4.6.13 The Council's response on the Supplementary Consultation Scheme (January 2020), particularly relating to connections along North Road and Muckingford Road has yet to be addressed. The detail of the proposed NMU strategy has not been provided and it is not possible to make an informed response on the proposals until that detail is provided. This point has been made at Supplementary Consultation (January 2020) and is still valid.

Utility diversions

- 4.6.14 The following specific comments and observations are made:
- The required utility diversions and protection works are not shown on Map Book 1: General Arrangement or Map Book 2: Land Use Plans. This makes the review of the utility diversions difficult without sight of what works are proposed to be undertaken. Additionally, it is noted that, in general, and specifically in the A13/A1089 area, more land for utility works is proposed to be used for temporary and permanent possession than set out at Supplementary Consultation (January 2020). It would be expected that the land take would be rationalised and reduced following the earlier consultation exercise, the comments received, and the associated work undertaken to address potential impacts on the area.
 - Water diversions and new supply routes are not shown on Map Book 1: General Arrangement or Map Book 2: Land Use Plans. It is therefore difficult to fully understand the issues associated with the water supply for new tunnel boring machine (TBM) from the Linford borehole and local water main reinforcement. It is noted that the work and upgrades to the existing water network will have a significant effect on the road network at Tilbury. It is suggested that any measures to avoid this are investigated further. It is also requested that any land take is reduced to the minimum required to complete the work
 - The overhead electricity distribution cable diversion works north of Heath Place do not appear to be shown on Map 1: General Arrangement or Map 2: Land Use Plans in the location identified on page 57 of the LTC Guide to Design Refinement Consultation document. It is therefore difficult to comment on this design refinement.
 - The permanent acquisition of land for the gas pipeline compound at Stanford Road appears to be significant at the location shown off the A1013 at Southfields. A review of this land is requested to ensure that all land is required for the facility. It is noted that 'Southfields' is incorrectly identified as 'Orsett' on Map Book 1: General Arrangement and Map Book 2: Land Use Plans sheet 13a. The installation site is also adjacent to existing homes. A review of the proposed location is requested in order to find a more suitable location away from residents.

- Routes for the undergrounding of overhead electricity distribution cables at the corner of Hornsby Lane and Foxes Green cannot be seen on Map Book 1: General Arrangement or Map Book 2: Land Use Plans in the location identified on page 57 of the LTC Guide to Design Refinement Consultation document. It is therefore not possible to review or comment.
- The additional working area for multi-utility construction at Mill Lane does not appear to be shown on the General Arrangement or Land Use Plans in the location identified on page 57 of the LTC Guide to Design Refinement document.
- Reconfiguration of land is proposed for multi-utility works in the location identified on page 57 of the LTC Guide to Design Refinement document. However, routes for the proposed works cannot be seen on Map Book 1: General Arrangement or Map Book 2: Land Use Plans. It is therefore not possible to review or comment.
- The gas diversion shown in the area south of Ockendon (Map Book 1: General Arrangement or Map 2: Land Use Plans Sheet 16a and 17) shows considerable temporary land take for the gas diversion works. It is requested that this land take is rationalised further.
- Routes for either the Ockendon Road Sewer diversion works, or the B186 North Road multi-utility diversion works cannot be seen on Map Book 1: General Arrangement or Map Book 2: Land Use Plans in the location identified on page 57 of the LTC Guide to Design Refinement Consultation document. Therefore, no comment is possible regarding the increase in land required.
- In the Mardyke area it is unclear as to why such a large area of land for the overhead electrical lines is being acquired permanently (Map Book 1: General Arrangement or Map Book 2: Land Use Plans Sheet 14 and 15). It is requested that the land take in this area is rationalised with regards to temporary possession. It is also queried as to whether it is considered normal for such a large area to be needed for access purposes.

4.6.15 Generally, a clearer identification of utility diversions or protection works on the consultation plans would allow for a more detailed and accurate review of the proposed design refinements. Highways England should address this immediately. The overall land take relating to the electricity and gas diversions still appears to be excessive and it is requested that this is reviewed, and the utility companies challenged further, in order to rationalise the land-take wherever possible.

4.7 Environmental Impacts

4.7.1 Chapter 5 provides a detailed review and comments relating to the potential environmental effects of each design refinement as presented in the Design Refinement Consultation material. Table 4.1 sets out general, project wide, concerns on a topic by topic basis.

Table 4.1 – Project wide environmental concerns

Environmental Statement (ES) topic chapter	Commentary
Air Quality	In terms of Air Quality, the Environmental Impacts Update is somewhat repetitive for each design change. This being that in terms of construction, the preliminary assessment of effects presented in the Preliminary Environmental Information Report (PEIR) is unaffected by the change. In terms of operation it is stated that it is not expected that

Environmental Statement (ES) topic chapter	Commentary
	<p>the design change would alter the adverse operational air quality effects reported in the PEIR. The proposed design change therefore appears to make no attempt in addressing the adverse impacts presented in the PEIR and operational air quality impacts are still predicted as adverse.</p> <p>The Environmental Impacts Update states that “<i>mitigation measures would be incorporated as set out in the PEIR and managed through the CoCP and a CEMP</i>”. No details of the proposed measures have been provided and so the Council’s concerns raised at Supplementary Consultation (January 2020) remain. To date, the Council has received only a working draft of the CoCP which does not provide any details of the mitigation measures proposed. Also, the Council has yet to receive the Register of Environmental Actions and Commitments (REAC) which forms a critical part of the CoCP.</p> <p>The Environmental Impacts Update states that modelling has been undertaken to identify the adverse effects associated with construction vehicle movements. It is understood that Highways England intends to present this data to the Council in August 2020. The Council continues to be concerned by Highways England’s compressed programme. Any amendments that may be required as an outcome of this technical consultation are unlikely to be incorporated in the scheme given the programmed DCO submission date of September 2020.</p>
Noise and Vibration	<p>Construction effects are proposed to be controlled through mitigation measures set out in the Code of Construction Practice (CoCP) and a Construction Environmental Management Plan (CEMP), however, to date, no details of the proposed measures have been provided.</p> <p>In order to determine the efficacy of the proposed noise barriers, the Council requires further information as set out in Section 4.6</p>
Cultural Heritage	<p>In the Environmental Impacts Update report, the ‘Expected Effects’ for Cultural Heritage do not take account of Built Heritage or the setting of heritage assets, instead concentrating almost exclusively on below ground archaeology. The lack of a suitably qualified and experienced Built Heritage specialist from Highways England to provide input into documents such as this has been a significant barrier to progressing this topic assessment throughout the pre-application consultation. Whilst a Built Heritage specialist has now been appointed there remains a lack of detail regarding Built Heritage which needs to be resolved prior to the DCO submission.</p> <p>Across cultural heritage there is a concern that the Built Heritage Assessment is still at an early stage and the Desk Based Assessment which forms the basis for the cultural heritage chapter of the ES was criticised by all heritage stakeholders. There is concern that cultural heritage will not have been appropriately considered by the programmed DCO submission date.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the Code of Construction Practice (CoCP) and a Construction Environmental Management Plan (CEMP), however no</p>

Environmental Statement (ES) topic chapter	Commentary
	<p>details of the proposed measures have been provided and this will need to be detailed rather than high level.</p> <p>Design changes 53-57 are not adequately detailed or assessed for any meaningful comments to be provided. These elements are concerning and would be RAG scored as Red.</p>
Landscape and Visual	<p>Without the results of the LVIA it is not possible to consider what level of mitigation is required. There is limited detail about the overall appearance of major structures, such as the viaducts, which makes the assessment difficult.</p> <p>Through the early part of 2019, Highways England dedicated several design workshops to a design narrative for its proposals, seeking to provide, a longer, higher and better designed Mardyke Viaduct. However, the scheme reverted back to a broadly similar design presented at Statutory Consultation (December 2018). In its the Supplementary Consultation response, the Council questioned why earlier design refinements for the Mardyke Viaduct were dropped when Highways England had stated that they were visually much better and other stakeholders, including the Design Council, recognised that it was a better alternative. This point has still not been addressed by Highways England.</p> <p>The plans supplied provide little detail regarding planting and how it relates to ecological enhancement.</p>
Terrestrial biodiversity	<p>The results of the ecology surveys have not been received so it is not possible to assess whether the proposed mitigation is adequate or appropriate. It is understood that work is ongoing to finalise all aspects of the mitigation. Given the locations of the larger mitigation areas the Council would wish to be involved in the discussions regarding their development.</p>
Road drainage and the water environment	<p>There are numerous Areas of Critical Drainage (AoCD) that intersect the route of the LTC scheme that may be affected both during construction and operation (Inc. AoCD001 – AoCD009 and AoCD0012 – AoCD0014). A number of these coincide with areas within the 10% most deprived, based on the Index of Multiple Deprivation and these ‘at risk’ communities should be prioritised in terms of protection from increased flood risk.</p> <p>The Environmental Mitigations surrounding flood risk are largely steered toward ‘Coastal flooding’ rather than Pluvial, Groundwater and Ordinary Watercourse flooding. This is only acceptable if a sound SuDS Strategy is delivered to mitigate against the negative impacts of the scheme and is shown to be effective.</p> <p>The Thurrock Water Cycle Study (2009) identifies both the River Mardyke and River Thames as suffering from Water Quality issues and encourages use of Sustainable Drainage Systems (SuDS) in new development to ensure that this issue is not exacerbated, hence the need to ensure the LTC scheme delivers a sound SuDS Strategy as it will be largely discharging into this catchment area.</p>

Environmental Statement (ES) topic chapter	Commentary
	<p>The Thurrock Water Cycle Study also identifies 'Water Source Protection Zones (WSPZ)' along the proposed route and this should be considered if infiltration is the primary discharge location. If run-off is not treated to an appropriate level in advance of it reaching this point, there is a risk of introducing contaminants into the WSPZ. The Environment Agency (EA) would need to be consulted further on this.</p> <p>The Landscape Strategy does indicate a number of attenuation ponds located along the route of the LTC and these features would need to be designed to restrict flows to the 1 in 1yr or equivalent Greenfield Rates and the storage must accommodate the 1 in 100yr +40% Climate Change allowance event. The pipe network would need to be designed not to surcharge in the 1 in 1yr Return Period and not to flood in the 1 in 30yr Return Period. These features would need to be accessible for maintenance and ideally set in a way that would maximise delivery of Water Quality, Amenity and Biodiversity benefits.</p> <p>It would need to be ensured that any SuDS features are adopted and maintained to ensure that deterioration does not impact flood risk and water quality over time. It would be assumed that Highways England would adopt and maintain these features but the Council would need to have some indication of what arrangements would be in place to accommodate this.</p> <p>Details should be provided on how Flood Risk and Water Quality would be managed throughout the construction process.</p> <p>The scheme crosses various Ordinary Watercourses and Section 23 Land Drainage Act Consent or DCO equivalent would need to be sought to have these diverted/ culverted. In terms of design standards, it would be expected that these are designed in accordance to the latest edition of CIRIA's Culvert, Screen and Outfall Manual (C786), along with the Environment Agency guidance on peak river flow climate change uplifts.</p> <p>It would be useful, if this information is available, to have a schedule of locations where the scheme crosses Ordinary Watercourses and if these are proposed to be diverted/ culverted. As well as a schedule of drainage system outfall points and their proposed discharge rates for review.</p>
Geology and soils	The Council would expect to be the approving authority for any remediation strategy within its administrative boundary, as required.
Material and waste	Further engagement is required to agree the detail of measures to handle, store and transport materials and waste, which will be secured in the COCP and CEMP.
People and communities	Without sight of the HEqIA it is not possible to consider the potential health impacts for Thurrock's communities and therefore what implications these design changes might have on this. It is also not possible to understand how the HEqIA is influencing the design of the route and the proposed mitigation.

Environmental Statement (ES) topic chapter	Commentary
Climate change	It appears that carbon modelling to understand the scheme's contribution to climate change and human health impacts is ongoing. The scope and details of this modelling and any subsequent assessment should be shared with the Council.
CoCP	<p>There is a heavy reliance on the CoCP to deliver appropriate mitigation during the construction phase. As indicated above, to date, the Council has received only a working draft of the CoCP which does not provide any details on the mitigation measures proposed. It should also be noted that, as a precedent, the working practices used for Highways England's ongoing survey work, which has given rise to adverse impacts on the local residents, provide little confidence in Highways England's ability to deliver effective mitigation.</p> <p>Also, the Council has yet to receive the Register of Environmental Actions and Commitments (REAC) which forms a critical part of the CoCP in understanding the proposed mitigation.</p>

4.8 Effects on People and Communities

Health and Equalities Impact Assessment

- 4.8.1 The Council remains concerned that, without seeing the Health Equalities Impact Assessment (HEqIA), it is not possible to consider what the overall health impacts are for Thurrock's communities and therefore the implications of the design refinement. It is also not possible to understand how the HEqIA is influencing the design of the LTC route and the proposed mitigation.
- 4.8.2 The adverse environmental impacts set out in the above table will have a direct effect on people and communities, particularly in respect of potential health impacts. As no preliminary HEqIA is included in this consultation and, to date, has not been shared with the Council, it is not possible to comment on the potential health impacts nor any proposed mitigation measures. Some examples of potential concerns are set out in the following paragraphs.

Noise barriers

- 4.8.3 As referred to above, there is a significant number of noise barriers being erected in the Borough as a result of noise assessment outcomes and the visual impact of these noise barriers on local communities should be assessed. There is no information on material or design of the proposed noise barriers as described in Section 4.6 above. In relation to effects on health and well-being, the barriers give rise to an enhanced sense of segregation. However, in the absence of elevation drawings, it is difficult to understand what these effects could be.

Residents and businesses

- 4.8.4 Although it is noted that the number of properties within the application boundary has decreased from 270 to 150, this is still a high number of affected residents and local businesses. Of the 70 residential and business properties within the boundary that do not need to be purchased, they will be greatly affected. Impacts such as a potential decrease in property value combined with an environmental impact could also carry significant health

concerns. The Council has evidence of this already affecting people in the Borough and would be keen to discuss further with Highways England.

Traveller community at Gammonfields

- 4.8.5 Highways England's efforts to find a suitable relocation site for the traveller community at Gammonfields is acknowledged. It is understood that further design and mitigation work is needed and the Design Refinement Consultation information states that "...[HE] will continue to engage with our stakeholders to refine this proposal". Understanding the potential environmental and health impacts of the scheme and proposed relocation must be considered in the assessment work in this group which experiences inequalities in health and wellbeing outcomes and it must be ensured that these inequalities will not be widened by this change.

4.9 EIA Scope

- 4.9.1 The Council requires that the EIA includes a full assessment of the environmental impacts of the LTC on transport and movement within the Borough. The proposed People and Communities chapter does not analyse the impacts on driver safety, network delays and severance. It is also unlikely to analyse fully the potential impacts on non-motorised users – such as severance, delay and fear and intimidation.

4.10 Transport Modelling

- 4.10.1 An ongoing process of technical reviews has been undertaken during Statutory Consultation (December 2018), Supplementary Consultation (January 2020) and regular engagement with Highways England. Through the course of this process a number of concerns have been identified and raised although, to date, Highways England has not provided evidence to reassure the Council on, or to address, these matters and so they remain outstanding at Design Refinement Consultation (July 2020). The principal concerns comprise:
- **Local road validation within the Lower Thames Area Model (LTAM)** – this is the model used to test the LTC DCO and it has not been validated against observed traffic levels on the local roads, with the exception of the A13 and A126. Highways England has confirmed that this remains the case within the most recent DCO base case model review, but the Local Model Validation Report has yet to be provided. In the absence of local network validation by Highways England, the Council is resorting to carrying out a validation exercise itself.
 - **Rat-running on the local roads** - as a result of no direct access from the LTC to Grays and the Port of Tilbury, journey times are quicker travelling from the south of the River Thames via the LTC than the Dartford Crossing to Grays and the Port of Tilbury, therefore the local network will be used. These routes are not designed to carry strategic traffic, including LGVs and HGVs, to the Port of Tilbury or to accommodate an increase in traffic. No mitigation is proposed. Highways England has included theoretical banned links within the model, restricting port traffic in the most recent modelling, which affects routes via Chadwell St Mary, however, concerns still remain about the methodology applied and the practical implementation and operation of enforcement and hence the realism of these modelling adjustments.
 - **Unmitigated junction capacity issues** - the DCO forecast models show significant increases in traffic and consequential delays at points within the network, specifically at Orsett Cock, The Manorway roundabout and Asda Roundabout. No mitigation measures are proposed by Highways England. The Council is considering options for mitigation where it believes impacts are not being mitigated and the mitigation should be provided by Highways England.

- **The omission of the A13 widening around Orsett Cock and the changes to the layout of that interchange** – these changes are not reflected within the modelling. The Council has been informed that Highways England has undertaken sensitivity tests which demonstrate that including these changes result in limited impact on network performance. These sensitivity tests were requested on 1 July 2020, but to date have not been provided by Highways England. On the information currently available, the Council does not accept that the absence of these changes will have limited impact on theoretical performance or the physical design of the proposals. Furthermore, the Council has been informed that transport modelling is to be carried out for the construction period impacts, with particular reference to the effects on the A13, Orsett Cock and The Manorway interchanges.
- **Allowing for growth in Thurrock** – the Council has expressed its concern with the way in which LTC severs and sterilises opportunities for growth and does not provide opportunities for connectivity across or to the LTC corridor. The Council has requested that Highways England reflect, in its transport modelling, opportunities to provide future access and reduce severance to the growth areas emerging through the Local Plan process, but this provision has yet to be confirmed. Concern remains regarding the potential impacts of the LTC on the growth areas, particularly at Tilbury, with no direct connection from the LTC to the national port and with the existing capacity issues along the A1089 trunk road. The impact on the emerging Local Plan has not been modelled or mitigated.
- **Tilbury Link Road** - the option to deliver this link has been currently ruled out by Highways England but no evidence of any modelling of this link has been provided. Given that the existing A1089 (trunk road) access is a key constraint to growth at this National Port (Port of Tilbury), the opportunity to deliver a new access from the LTC appears an omission. Funding has been allocated to develop a Business Case for the Tilbury Link Road within RIS2, but this will not be progressed in the near future as it is currently a low priority for Highways England. The prospect for the Tilbury Link Road is directly linked to the proposal of the LTC and of the future capacity of the Asda Roundabout.
- **Sensitivity testing and uncertainty** - the Council has previously requested sensitivity or option tests, but these have not been provided. In the light of the recent publication the TAG 'Appraisal and modelling strategy: route map of modelling in uncertain times', the Council would request additional sensitivity testing is undertaken to assess the changing environment (economic growth and uncertainty), transformational impact and levelling up, and environmental impacts, as well as the potential effects of the emerging Local Plan (reflecting the planned housing and job numbers). The Council has formally requested (16 April 2020) further model runs from Highways England. This review of any sensitivity tests could directly inform the assessment of the concerns expressed in this response.
- **Programme** – Highways England has yet to provide a programme for completion of the Local Plan scenario model run alongside LTC. This work is progressing, however, there is no indication of a programme for this to be completed. The results (and other runs requested on 16 April 2020) are needed to be able to make informed representation on the impact of LTC.

4.10.2 In summary, the documents, tasks and responses on which the Council has yet to receive a response are as follows:

- Response to (and other) runs requested on 16 April 2020;

- The additional connectivity and A13 widening checks and junction mitigation sensitivity tests requested on 1 July 2020;
- The DCO Local Model Validation Report;
- The DCO Forecast Model Report; and
- Construction Traffic Modelling.

5 Review of Environmental Impacts Update

5.1 Overview

5.1.1 This chapter sets out the findings of the review of Highways England's Environmental Impacts Update. The review findings are presented in tables with a commentary. The comments are summarised in Table 5.2 at the end of this chapter.

5.2 Review Documents

- Environmental Impacts Update;
- Guide to Supplementary Consultation (January 2020);
- Map Book 1: General Arrangements;
- Map Book 2: Land Use Plan; and
- Map Book 3: Engineering Plans.

5.3 Review Approach

Principal steps

5.3.1 The following steps have framed the review of the environmental information presented in the Environmental Impacts Update (July 2020):

- Step 1 - Review the information presented in the Environmental Impacts Update, Guide to Design Refinement Consultation and Map Books. Undertaken by Stantec and Council officer team;
- Step 2 - Consider potential environmental effects of the 'Design Refinements Consultation' design changes and proposed mitigation and whether the information presented is adequate; and
- Step 3 - Describe any further information which would be expected prior to Highways England concluding their assessment, including details already raised at Statutory Consultation and Supplementary Consultation (January 2020) and expected final (mitigated) design.

5.3.2 No comments have been made on Marine Biodiversity. The Council would defer to the views of Natural England, the Marine Management Organisation and the Environment Agency for matters relating to Marine Biodiversity.

RAG rating

5.3.3 The RAG rating was used by the review team to classify the potential environmental effects of the proposed design changes. The RAG rating is as follows:

- **Red** = needs addressing immediately/requires amendment prior to DCO submission (due to gaps, missing information and inconsistencies);
- **Amber** = further work with Thurrock Council required prior to DCO submission
- **Green** = satisfactory. No action required.

5.4 Tilbury Area

Design change overview

5.4.1 Northern tunnel landscaping and maintenance road refinements. Realignment of two footpaths and an option for a shared path on Muckingford Road providing improved connectivity between Chadwell St Mary and East Tilbury. Water supply utility work to provide water to the construction sites and TBM and, other utility diversion works.

Comments on the environmental effects

Table 5.1: Comments on the environmental effects associated with the proposed Tilbury area design refinements (C = construction phase, O = operational phase)

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Key Environmental Concerns on Design Change
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
18. Northern tunnel entrance landscaping proposals																					<p>A new landform is proposed at the northern tunnel entrance with footpaths leading up to an elevated look out point. The landform design would be created using excavated material from the tunnel.</p> <p>The Environmental Impacts Update states that there are likely to be potentially adverse noise impacts during the construction phase due to proximity of noise sensitive receptors. It is necessary to understand which noise sensitive receptors are likely to have adverse noise impacts and therefore what further mitigation or construction techniques need to be explored.</p> <p>It is unclear what the benefits are of Design Change 18 on the view from Coalhouse Fort as the Environmental Impacts Update states that “<i>There would be no significant change to the assessment reported in the PEIR</i>”. However, the potential Landscape and Visual impacts as stated in the Environmental Update, state “<i>There would be a slight benefit to the nature of the effects reported in the PEIR</i>”. Therefore, it would appear there are some inconsistencies on the likely benefits of the landscaping proposal at the northern tunnel entrance.</p> <p>No further detail has been provided regarding the overall height of the landform and visualisations showing how it would look and feel in the immediate and wider landscape are not clear. It is questioned whether these new dirt landform platforms are really needed, when there are already adequate viewpoints over the Thames without the need to create ‘elevated viewpoints’ which could impede views from further afield. What is the benefit to the local environment or local communities in Tilbury?</p> <p>The Council previously issued comments to Highways England on the Review of North Portal Landscape Restoration Proposals (May 2020), which stated: “<i>Further design engagement is required with the Council prior to submission of the DCO application to consider not only the design of the portal structures and the immediate proposed park but also how it relates to Coalhouse Fort, the ecological mitigation area, DHL Land and the rights of way and opportunities for improved public access.</i>”</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Key Environmental Concerns on Design Change
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
	Yellow	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Red	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	<p>There has been no further feedback from Highways England and therefore, these concerns remain, and further engagement is required.</p> <p>There is limited information presented in the consultation documents with regards to the nature and quality of the open space, such as the proposed footpaths connecting open space with heritage and ecological assets in the area. There are opportunities to ensure that the area is integrated with the wider ecological mitigation areas</p> <p>It is unclear how the landscape design has dealt with the heritage impact in the landscape and visual section. The present proposal will provide a clear view of the military assets on both sides of the Thames, although will potentially have a negative impact on visual links between Tilbury and Coalhouse Fort. A detailed assessment of the beneficial and negative impacts should be undertaken at the earliest opportunity. It will also have a significant impact on the view of Thurrock's coast and its traditional grazing marsh and dispersed military structures.</p> <p>It is important to note that some areas of Tilbury already suffer from adverse air pollution and are home to some of Thurrock's most vulnerable populations. The construction is identified as having the potential to affect air quality because of dust emissions and the emissions from non-road mobile machinery and construction vehicle movements. It is stated that modelling has been undertaken to identify any adverse effects on air quality associated with construction vehicle movements, but it does not mention any modelling (or mitigation) of potential affects from dust emissions.</p> <p>The Council would seek clarity as to whether there is the potential here for significant dust nuisance. If so, these implications are of concern. This is dependent on the scale of this proposal for which there is insufficient detail to make an assessment.</p> <p>The Council would request more detailed proposals on the extent and scale of the new raised platform. If this work covers a significant area/ height, then the Council thinks it appropriate for Highways England to provide air quality modelling specific to this proposal (and not just those associated with construction vehicle movements which would be managed differently via the CEMP).</p> <p>Furthermore, within the people and communities' section it is stated 'we are continuing to assess the impact of the project in relation to the proposed change to develop mitigation measures and lessen negative impacts'. Highways England should provide further details in this regard i.e. what are they continuing to assess, when will this be complete and when will the Council get to see this information.</p>
19. Northern tunnel entrance layout	Yellow	Yellow	Red	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Red	Red	Yellow	Yellow	The design change to move the maintenance road closer to the LTC route alignment is a welcomed addition in terms of shortening the

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Key Environmental Concerns on Design Change
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
																					<p>culvert length, however, it is unclear how this “reduces the potential effects on the water quality and physical character of this and linking watercourses.”</p> <p>The Council would support any reduction in the length of the culvert; however insufficient information has been provided regarding its overall design to be able to determine whether the proposed change would have any meaningful effect on its potential to be used by water voles, fish and eels. The Water Vole Mitigation Handbook records evidence of water vole using culverts up to 35m in length. The diameter and design of the culvert is however a key limiting factor. More detail is required before the Council can support the assertion that the culvert will not be a permanent barrier to these animals.</p> <p>The noise impacts stated within the Environmental Update Report states “We do not expect there to be material differences to the potential construction works noise effects as described in the PEIR”. However, Design Change 18, predicts significant adverse impacts. This is confusing considering the two design changes (18 and 19) are geographically adjacent to each other. Further review of the likely noise impact due to construction should be undertaken by Highways England.</p> <p>There is likely to be “some disruption to the existing use of routes for walkers, cyclists and horse riders in the vicinity of the project, resulting in an adverse effect” (People and communities, Environmental Impact Update). It is unclear which route Highways England is referring to, what the mitigation will be, if the routes will be reinstated after construction or if there are temporary diversions to keep paths connected. Further information is required.</p> <p>Although the construction section suggests there is low potential in regard to cultural heritage, as the early prehistoric deposits in this area are likely to be deeply buried then this is incorrect. There is land fill and land raising, however this will require removal in the area of the tunnel entrance, so it is essential to have a detailed understanding of the deposits present, their significance, and the impact of construction. There is considerable concern regarding the geo-archaeological, palaeolithic and other specialist reports that are still to be completed in this area. These will be important for LTC be able to provide an informed ES regarding the impact of the tunnel entrance.</p>
20. Realignment of footpath 61																					<p>The revised design to re-align footpath 61 is a welcomed addition, as this is likely to result in less land take and therefore, less disruption.</p> <p>Journey time has been reduced compared to the Supplementary Consultation (January 2020) proposal to re-align footpath 61. However, recreational, leisure and enjoyment of the footpaths need to be considered as well as journey times.</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Key Environmental Concerns on Design Change
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
	Yellow	Red	Yellow	Red	Red	Red	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Yellow	Yellow	Green	Green	<p>Furthermore, consideration should be given to the likely operational impacts (for example, air quality, noise and visual) of re-aligning the footpath closer to the LTC alignment.</p> <p>Footpath 61 connects East Tilbury with a historic route named Coal Road (footpath 58 and 63). The design change makes little difference to the harm caused by severing this route. It would be less harmful for Coal Road to continue on its current alignment underneath the LTC rather than create a new PROW diversion to the south. This would work well in conjunction with the current proposed alteration to footpath 61. Opportunities to retain the alignment of the historic route should be considered at the earliest opportunity.</p>
21. Realignment of footpath 200	Yellow	Red	Yellow	Red	Green	Green	Yellow	Red	Green	Green	Green	Green	Green	Green	Green	Green	Yellow	Red	Green	Green	<p>The proposed realignment of footpath 200 is now proposed closer to the LTC alignment which is likely to have an impact on visual, noise and air quality operational impacts, especially as the route gradually rises to cross the railway line.</p> <p>Journey time has been reduced compared to the Supplementary Consultation (January 2020) proposal to re-align footpath 61. However recreational, leisure and enjoyment of the footpaths need to be considered as well as journey times.</p>
22. Muckingford Road realigned and widened	Yellow	Red	Yellow	Red	Yellow	Yellow	Yellow	Red	Yellow	Green	Green	Yellow	Green	Green	Green	Green	Red	Red	Green	Green	<p>The recognition to provide a bridge crossing at Muckingford Road which has landscaped abutments to disguise the impact is welcome, however, the current proposal is insufficient to provide adequately for a strong corridor between the east and west of LTC for the current communities and future communities. NMU connectivity across the LTC corridor is fundamental and must be incorporated but so must a high-quality connection for road based public transport and other vehicles. The bridge deck over LTC must be widened to allow for these requirements.</p> <p>The associated system of NMU connections along Muckingford Road should be comprehensive and not provide a disjointed facility. Any structure would need capacity/ spare ducts for future utility crossings. To unlock growth and development, ease of connectivity to the existing network is a necessity.</p> <p>The proposed noise barrier (2m high by 200m long) is a welcomed addition for the properties located along the existing Muckingford Road (east of the LTC route) to reduce the likely operational noise impacts. However, it is unclear if there is a beneficial impact as stated in the Environmental Impacts Update, as noise impacts are unlikely to change. Further information on noise levels and likely impacts should be provided by Highways England. Furthermore, it would be helpful to understand the detail (material) of the noise barrier to review potential further visual impacts.</p> <p>The area surrounding Muckingford Road is considered to be tranquil. The LTC would pass through this area with Muckingford Road raised over the LTC as an embankment/green bridge. There is a further</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Key Environmental Concerns on Design Change
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
	Yellow	Yellow	Yellow	Red	Yellow	Yellow	Yellow	Red	Yellow	Green	Green	Yellow	Green	Green	Green	Green	Red	Red	Green	Green	<p>visual impact from the proposed noise barrier of which there is no detail provided, i.e. material. Visualisation should be provided.</p> <p>Sheet 10 of Map Book 1: General Arrangements identifies a pond located close to residential properties. Careful design, layout and orientation should be considered to not cause undue flood risk to nearby receptors.</p> <p>Further information is required to understand the increase in the construction area in such a tranquil location.</p> <p>The visual impact of this upon heritage receptors needs to be established as soon as possible to allow for meaningful mitigation to be designed into the scheme prior to DCO submission.</p>
23. Tilbury watercourse	Red	Red	Red	Red	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	<p>No assessment has been undertaken for Tilbury Watercourse - design change 23. It is assumed there would be some level of construction activity to re-establish the existing watercourse and therefore an environmental assessment should be conducted.</p> <p>The Environmental Impacts Update signposts the reader to review the information in more detail within Map Book 1: General Arrangements. However, no detail is presented.</p> <p>The Council seeks clarity on the location of the proposed watercourse and further information on how the watercourse will be re-established. It is unhelpful to only state "Please refer to Map Book 1: General Arrangements to view this information in more detail."</p> <p>From a review of Google Earth it can be depicted the likely location of the dried-out watercourse. This watercourse looks like well-established grassland habitat and therefore the Council would assume this is to be included as a loss in area of habitat within the ecology assessment.</p> <p>The potential impact on the below ground archaeological deposits need to be defined prior to the DCO submission.</p>
24. New water supply from the Linford borehole and a local water main	Red	Green	Red	Green	Yellow	Green	Red	Green	Red	Green	Red	Green	Green	Green	Green	Green	Red	Yellow	Yellow	Yellow	<p>The proposed new water supply from Linford borehole and a local water main does not appear to be displayed on the Map Books or the interactive map as part of the Consultation exhibition. Therefore, it is challenging to understand the principles of this design change.</p> <p>However, it can be assumed that this refers to design change numbers 6 and 7 within the Guide to Design Refinement Consultation. This demonstrates the disconnections between the information presented within the Consultation documents.</p> <p>Newly proposed construction activity as part of the water supply work is located close to sensitive receptors, such as, residential properties and a scheduled monument. The Environmental Impact Update does not reflect in the assessment that further construction work and potential new impacts are likely.</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Key Environmental Concerns on Design Change
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
	Red	Green	Red	Green	Yellow	Green	Red	Green	Red	Green	Red	Green	Green	Green	Green	Green	Red	Yellow	Yellow	Yellow	It is likely that that harm will be caused to the setting of heritage assets during construction. Without further information it is not possible to determine if there are opportunities to minimise against and minimise harm through the design process.
25. Potential upgrade of the existing water network	Red	Green	Red	Green	Yellow	Green	Red	Green	Red	Green	Red	Green	Green	Green	Green	Green	Red	Yellow	Yellow	Yellow	<p>The location of Design Change 25 is unclear. It can be assumed that this refers to design change number 9 within the Guide to Design Refinement Consultation. This demonstrates the disconnections between the information presented within the Consultation documents.</p> <p>Newly proposed construction activity as part of the water supply work is located close to sensitive receptors, such as, residential properties and a scheduled monument. The Environmental Impact Update does not reflect in the assessment that further construction work and potential new impacts are likely.</p> <p>The Environmental Impact Update states, “<i>The inclusion of this diversion would increase the extent of habitat loss used by protected species compared with that reported in the PEIR. Although adverse, it is considered unlikely this would lead to a change in the assessment’s significance level in this area</i>”. Therefore, further mitigation needs to be provided to compensate the continued significant adverse impact.</p> <p>Whilst the exact location and nature of works is unclear, it is likely that Tilbury Fort will need to be considered a receptor for these works, particularly during construction phase.</p> <p>Archaeological features or sites impacted will need to be defined as part of the DCO process.</p>
26. Multi-utilities provision to the construction site and northern tunnel entrance	Red	Green	Red	Green	Red	Green	Red	Green	Red	Green	Red	Green	Green	Green	Green	Green	Red	Yellow	Yellow	Yellow	<p>As part of these proposed utility works, the application boundary has been extended within this area. As a result of these utility works there is a large area of land that becomes inaccessible due to the configuration of the boundary. It is unclear if any access will be retained for the building or users of the land.</p> <p>It is assumed that the inaccessible area is not included in the total development boundary size, however this is a false positive as the area will be redundant and not usable for the duration of the works.</p> <p>The exact nature of the work required is unclear and this may have an impact on designated assets, and the potential for the disturbance of below ground archaeological features.</p>

5.5 A13/A1089 area

Design change overview

5.5.1 Two changes to the A13 merges and the removal of a false cutting between the A128 Brentwood Road and Hoford Road. Two separate woodland areas identified off Baker Street at the A13/A1089 that Highways England is looking to make accessible to the public. Proposed minor change to the alignment of the watercourse diversion before the A13 junction. Removal of the new footpath connection under the A13 and the open space to the north of the A13. Realignment of the proposed shared path for walkers, cyclists and horse riders between Green Lane and Stifford Clays Road. Relocation of the Gammonfields traveller site. Movement of some of the overhead cables at the corner of Hornsby Lane and Foxes Green underground. Proposed permanent compound east of Orsett Cock roundabout, along Stanford Road. Additional land required for overhead electricity distribution cable diversion works north of Heath Place and for multi-utility works in the area off Mill Lane. Multi-utility diversion extension along the B188 High Road, towards Orsett.

Comments on the environmental effects

Table 5.2: Comments on the environmental effects associated with the proposed A13/A1089 area design refinements (C = construction phase, O = operational phase)

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
27. A13/A1089 landscaping proposals and water course diversion	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Red	Red	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Yellow	Yellow	Yellow	Yellow	<p>As part of the woodland planting proposals at the A13/A1089 junction, Highways England has identified two separate woodland areas off Baker Street that would potentially be made accessible to the public.</p> <p>The proposed accessible woods would be too small to be sustainable for this use. It would be many years before the trees were sufficiently large to be robust enough to withstand disturbance or to screen the adjacent roads. They would have poor amenity due to noise and air quality constraints.</p> <p>The operational landscape assessment within the Environmental Impacts Update states that “a full assessment will be included in the ES supported by representative photomontages (photomontages).” Therefore, no evidence has been presented in this Consultation which confirms or otherwise the likely significant landscape and visual effects related to the scheme’s operation.</p> <p>The Environmental Impacts Update states “nearby, we are proposing a minor change to the alignment of the watercourse diversion, before the A13 junction, to align with suggested landscape refinements in this area.” It is unclear where this proposed watercourse diversion is within the Map Books.</p> <p>The nature and importance of the archaeological deposits present will need to be defined prior to the submission of the DCO.</p>
28. Removal of a false cutting	Red	Red	Red	Red	Red	Yellow	Yellow	Yellow	Red	Red	Red	Red	Green	Green	Green	Green	Red	Red	Yellow	Yellow	<p>The design change removes the false cutting between Brentwood Road and Hoford Road, due to the location of an existing watercourse. A retaining wall is now proposed in between the farm buildings and the LTC route, however it is not confirmed whether the design change removes mitigation.</p> <p>The Environmental Impacts Update also states that noise and vibration continues to be assessed and considered and will be reported in the ES. Therefore, no evidence has been presented in the Design Consultation which confirms, or otherwise, the likely significant effects related to noise and vibration.</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
																					<p>This design change reduces the amount of watercourse being diverted when compared to Supplementary Consultation Scheme. The Environmental Impacts Update states for biodiversity that <i>“the inclusion of the watercourse diversion increases the potential for construction effects on the local wildlife that navigates through this channel.”</i> The Environmental Impacts Update then states that <i>“mitigation has been updated and designed appropriately and proportionately with the aim of maximising opportunities to increase the area’s biodiversity value”</i> but fails to provide the details of the updated mitigation.</p> <p>It is unclear whether the setting of the scheduled monument of the Causewayed enclosure has been considered as part of this change. The removal of the false cutting has the potential to increase impact on the setting of the monument.</p>
29. Changes to two A13 merge layouts																					<p>Two changes are proposed to the A13 merges.</p> <ol style="list-style-type: none"> 1. The flood protection bund/false cutting shown to the western side of the A13 westbound/A1089 northbound slip road at Supplementary Consultation stage has been replaced with cutting. 2. Where the slip road from the Orsett Cock roundabout joins the A13 westbound, woodland planting removed. <p>No assessment has been undertaken for Design Change 29. The Environmental Impacts Update states <i>“There would be no change in the nature of effects or mitigation measures reported in the PEIR.”</i></p> <p>The proposed modifications do not alter the Council’s position in regard to the A13/LTC/A1089/Orsett Cock interchange. The Council continues to oppose it in principle.</p> <p>The archaeological deposits impacted within this area needs to be defined and their significance identified.</p>
30. Amendments to shared paths in the A13/A1089 area																					<p>The new footpath connection under the A13 and the open space to the north of the A13 proposed at Supplementary Consultation (January 2020) has been removed. Consequently, there is no longer a path proposed through the Crop Mark Complex Scheduled Ancient Monument, which is welcomed.</p> <p>The Council does however question whether Highways England has looked into any alternatives to replace the footpath connection that is no longer being progressed?</p> <p>The proposed shared path proposed for walkers, cyclists and horse riders between Green Lane and Stifford Clays Road is now proposed slightly closer to the LTC to avoid impacting farmland. This is likely to have an impact on visual, noise and air quality operational impacts. The Environmental Impacts Update states <i>“We are continuing to assess the impact of the project in relation to the proposed change to develop</i></p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
																					<p><i>mitigation measures and lessen negative impacts.</i>" Therefore, no evidence has been presented in the Consultation material which confirms or otherwise the likely significant effects on non-motorised users related to noise and vibration.</p> <p>The Environmental Impacts Update states that <i>"The nature of the effects would be similar to those reported in the PEIR, i.e. a major negative landscape change and a major to moderate negative change in the view for a range of visual receptors."</i> The Environmental Impacts Update fails to acknowledge what the visual sensitive receptors are.</p>
31. Traveller site relocation																					<p>Design Change 31 proposes to relocate the traveller site to a new site immediately to the west of its current location. It would be in close proximity to the slip roads connecting to the LTC northbound and the overhead electricity distribution cables. The Environmental Impacts Update states that noise and vibration continue to be assessed and considered and will be reported in the ES. Therefore, no evidence has been presented in the Consultation material which confirms or otherwise the likely significant effects related to noise and vibration.</p> <p>The Environmental Impacts Update states that as a result of the site moving close to the overhead electricity distribution cables, <i>"there would be a slight negative change in the nature of the effects reported in the PEIR, i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors."</i> The report fails to acknowledge the location of the visual receptors which are likely to experience a change.</p> <p>In terms of people and communities, the Environmental Impacts Update states that Highways England is continuing to assess the impact of the project in relation to the proposed change to develop mitigation measures and lessen negative impacts. Therefore, no evidence has been presented in the Design Consultation which confirms or otherwise the likely significant effects related to people or communities.</p> <p>The Council is concerned that the impacts of the new road layout on this community has not yet been fully assessed in terms of additional noise from the new road layout and accessibility and also consultation with the traveller community. This is a vulnerable group which needs to be identified in the HEqIA and it must be ensured that the health inequalities that travellers experience are not further widened by the changes to their environment.</p> <p>The new location lies on known archaeological deposits. A full assessment of these will be required to define their significance and extent to allow for appropriate mitigation strategies to be submitted within the DCO.</p>
32. Multi-utility diversion extension along the B188 High Road																					<p>Design Change 32 proposes the construction work to be located closer to noise-sensitive receptors in Orsett and the Environmental Impacts Update states that there is the potential for temporary adverse effects within the vicinity of the construction works in relation to noise and vibration. Mitigation of the potential construction impacts is heavily reliant on the</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
																					<p>CoCP. The Council has yet to receive the Register of Environmental Actions and Commitments (REAC) which forms a critical part of the CoCP in understanding the proposed mitigation.</p> <p>The 'Springfield style enclosure and Iron Age enclosures south of Hill House, Baker Street' Schedule Ancient Monument is shown on Sheet 13b of Map Book 1 and Sheet 4 of the 10k General Arrangements maps but is not shown on Sheet 14a. This makes it difficult to assess the effect of the utility diversion in this location. The full design and level of impact needs to be assessed. Even if the Scheduled Monument area were avoided there are likely to be significant deposits in the remainder of the field.</p> <p>There is likely to be "some disruption to the existing use of routes for walkers, cyclists and horse riders in the vicinity of the project, resulting in an adverse effect." (People and communities, Environmental Impact Update). It is unclear which route Highways England is referring to, what the mitigation will be and if the routes will be reinstated after construction. Further information is required.</p>
33. Moving overhead electricity distribution cables underground																					<p>Design Change 33 involves moving some of the overhead cables at the corner of Hornsby Lane and Foxes Green underground to accommodate for the LTC route.</p> <p>The cultural heritage section of the Environmental Impacts Update states that there would be an increase in the construction working area around Heath Place. However, the increase in the construction working area around Heath Place has been assessed under Design Change 35. Highways England to please confirm Design Change 33 has been assessed appropriately in relation to cultural heritage.</p> <p>The Environmental Impacts Update states that there "would be a slight benefit to the nature of the effects reported in the PEIR, i.e. a major negative landscape change and a major negative to moderate negative change in the view for a range of visual receptors." However, the Environmental Impacts Update lacks information to explain why there is likely to be a beneficial change.</p> <p>The potential impact upon a listed building to the north has not been considered.</p>
34. Permanent gas pipeline compound at Stanford Road																					<p>A permanent gas pipeline compound is proposed to the east of Orsett Cock Roundabout at Stanford Road within an area of 35 metres by 35 metres, to be used for operation and maintenance purposes.</p> <p>Southfields is labelled as Orsett on Map Book 1 General Arrangements Plan Sheet 13a.</p> <p>Also, the Environmental Impacts Update refers to the noise-sensitive receptors in Orsett, however the proposed compound is adjacent to Southfields and not Orsett. Highways England to clarify if this is an incorrect cross reference or the assessment has not been conducted for construction and operational impacts to sensitive receptors in Southfields.</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
																					<p>In terms of operational landscape and visual, the Environmental Impacts Update states “the addition of the compound would result in a slight worsening to the nature of the visual effects reported in the PEIR, i.e. a moderate to major negative change in the view for a range of visual receptors.” It then states that “mitigation proposals continue to reflect those outlined in the PEIR” but does not confirm what measures are to be implemented in this location to mitigate the potential impact upon the residential properties to the south of this design change.</p> <p>This will directly affect known archaeological deposits. The extent and significance of these heritage assets needs to be defined as part of the submission of the DCO thus informing any mitigation strategy and CoCP.</p>
35. Additional land for overhead electricity distribution cable diversion works																					<p>Design Change 35 would result in an increase in land take and would increase the extent of habitat loss compared to that presented at the Supplementary Consultation (January 2020). However, no detail on the extent of the habitat loss has been provided in the Consultation material.</p> <p>Design Change 35 would add to the nature of effects reported in the PEIR in relation to terrestrial biodiversity. The Environmental Impacts Update states that “although adverse, it is considered unlikely this would lead to a change in the assessment’s significance level in this area” and “this does not change the mitigation described in the PEIR” but no details of mitigation in have been provided. Highways England to provide further mitigation to compensate for further adverse impacts.</p> <p>In relation to cultural heritage, the Environmental Impacts Update states that there would be an increase in the construction working area around Heath Place (Grade II) which increases the potential for adverse effects on setting and archaeological remains reported in the PEIR, especially given that this location is known for buried archaeology. Furthermore, the Environmental Impacts Update states that “mitigation of impacts on archaeological remains would be managed through the CoCP, following the approach outlined in the PEIR.” This has the potential to impact the site of the Orsett Causeway enclosure, potentially further eroding the setting of this Scheduled Monument.</p> <p>In relation to landscape and visual considerations, the Environmental Impacts Update states “there would be a slight benefit to the nature of the effects reported in the PEIR, i.e. a major negative landscape change and a major negative to moderate negative change in the view for a range of visual receptors.” However, the Environmental Impacts Update lacks information to explain why there is likely to be a beneficial change.</p>
36. Additional working area for multi-utility construction																					<p>With regards to Design Change 36, the Environmental Impacts Update states that “some additional land, from what was shown at Supplementary Consultation (January 2020), would be required off Mill Lane. This is for multi-utility works in this area, which includes permanent access that may be required by the utility provider for future maintenance.”</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
																					<p>The location of Design Change 36 is unclear, this make the review challenging and therefore the information provided is inadequate. Highways England to confirm the location of the additional land take. This lies immediately adjacent to a scheduled monument where we have been recommending a reduction in work area since the identification of a pipeline corridor in this area. The Scheduled monument does not form the full extent of the archaeological area, which as a minimum extends across the whole field. The extent of the additional works neds to be clearly defined and assessed.</p>

5.6 LTC/M25 area

Design change overview

5.6.1 New maintenance access track and multi-utilities diversion north of the Thames Chase Forest Centre, resulting in reduced woodland compensation. Watercourse diversion within the Wilderness, resulting in reducing woodland planting. Watercourse diversion, removal of earthworks and the introduction of a retaining wall to avoid encroachments into the Ockendon landfill site. Relocation of construction site 13. Relocation of footpath 136 and realignment of footpath 252. Reconfiguration of land required for multi-utility works. Utility diversion works between Ockendon Road and St Mary's Lane via the B186 and other works around the B186 North Road. Works in the Mardyke area for National Grid maintenance access.

Comments on the environmental effects

Table 4.3: Comments on the environmental effects associated with the proposed LTC/M25 area design refinements (C = construction phase, O = operational phase)

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
37. Reduced woodland compensation north of the Thames Chase Forest Centre	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red	Green	Green	Green	Green	Red	Yellow	Green	Green	<p>The Environmental Impacts Update states that a new maintenance access track and a multi-utilities diversion is proposed north of Thames Chase Forest, however the visual detail provided in Sheet 19 of Map Book 1 General Arrangements is inadequate and illegible on a digital version making it difficult for the reader to locate the proposed maintenance access areas and multi-utilities diversions.</p> <p>It is unclear from Sheet 19 of Map Book 1 General Arrangements if the woodland compensation has reduced, as suggested by Highways England, or removed completely towards the north of Thames Chase Forest. Clarification from Highways England is required. Furthermore, there is no reference to the reduction of Flood Compensation Area in this area and whether there are any new direct/indirect effects as a result of this.</p> <p>Sheet 19 of Map Book 1 General Arrangements also identifies a potential receptor site for the translocation of protected species in the location where the woodland compensation was previously proposed. It is unclear which species these sites are designed for and if the site layout, size and orientation is appropriate. It is recommended that the Council and Highways England maintain dialogue to seek agreement about the mitigation proposed towards the north of Thames Chase Forest.</p> <p>The potential impact upon the Grade II listed building immediately to the west is not clear.</p>
38. Reduced woodland planting within The Wilderness	Green	Yellow	Yellow	Yellow	Green	Green	Yellow	Red	Red	Red	Yellow	Yellow	Green	Green	Green	Green	Yellow	Yellow	Green	Green	<p>Although the statement that biodiversity mitigation proposed in this area has been "updated and designed appropriately and proportionately with the aim of maximising opportunities to increase the area's biodiversity value" is welcomed, the evidence of this in the Environmental Impacts Update, Guide to Design Refinement Consultation and Map Book 1 General Arrangements is limited. For example, despite a pond being proposed towards the south of The Wilderness, this design change would result in a loss of woodland planting and a receptor site for translocation of protected species as previously proposed at Supplementary Consultation (January 2020). Further evidence is required from Highways England.</p> <p>The reduction in planting has not been quantified meaning that it is not possible to determine the potential significance of the landscape and biodiversity effects.</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
	Green	Yellow	Yellow	Yellow	Green	Green	Yellow	Red	Red	Red	Yellow	Yellow	Green	Green	Green	Green	Yellow	Yellow	Green	Green	<p>The noise barrier presented in the Guide to Design Refinement Consultation is a welcomed addition in this area. However, it is unclear if the introduction of this mitigation measure has been considered in the noise assessment for Design Change 38 as the findings state “we do not expect there to be material differences”. Further information on noise levels should be provided. Moreover, it not clear if the visual impacts from the introduction of a noise barrier in this area has been considered. Further evidence is required from Highways England.</p> <p>It is unclear if the watercourse diversion proposed within The Wilderness has been considered in the Environmental Impacts Update findings at this location. Further information is required to identify whether there are any new direct/indirect effects as a result of this design change.</p>
39. Modifications at Ockendon landfill (south of the Lower Thames Crossing)	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Yellow	Red	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Yellow	Green	Green	<p>Design Change 39 would result in a reduction of land take towards the southern and western boundaries of Ockendon Landfill and, therefore, has the potential to reduce some of the effects on archaeological remains within this area. Although this change is welcomed, it is important to note that the Council’s previous comments raised at Statutory Consultation (December 2018) and Supplementary Consultation (January 2020), in relation to Cultural Heritage within this area, remain valid. The Environmental Impacts Update also fails to report on any potential effects from the increased land take towards the northern boundary of Ockendon Landfill.</p> <p>Furthermore, it is unclear if this design change considers the visual impacts from the introduction of the proposed six metre high by 200 metres long retaining wall. The Environmental Impacts Update states that there is no “material change to the assessment reported in the PEIR”. An additional review of the visual impacts should be conducted and a detailed description of the mitigation proposals “updated at this location” should be reported.</p> <p>Although not having a direct impact on known heritage assets there is the potential for impact on the setting of the Scheduled Monuments to the south. A 6m high wall will be a significant feature in the landscape and the setting of the monuments needs to be assessed and defined prior to submission</p>
40. Relocation of construction site 13	Yellow	Yellow	Red	Yellow	Red	Green	Yellow	Yellow	Red	Yellow	Red	Yellow	Yellow	Yellow	Green	Yellow	Red	Yellow	Yellow	Yellow	<p>The relocation of construction site 13 would result in an increase in land take compared to that presented at the Supplementary Consultation (January 2020). The Environmental Impacts Update states that the increase in land “could add to the nature of effects reported in the PEIR” and “increase the potential for adverse effect” in relation to terrestrial biodiversity, existing users of the footpath, road drainage and the water environment and cultural heritage. However, the lack of information presented within the Design Refinement Consultation (July 2020) materials makes it difficult to understand the potential impacts.</p> <p>Furthermore, the Environmental Impacts Update states that there would be no significant change to the noise and vibration assessment reported in the PEIR. However, this design change would result in construction site 13 being relocated 200 metres closer to the Grade II listed Groves Cottages (a noise sensitive receptors). Further information is required.</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O		
																						This site has been relocated partially on heritage grounds due to the presence of a Roman cemetery. However, the revised location will still require assessment at this stage to define its impact on below ground deposits and their significance.
41. Relocation of footpath 136																						As part of this design change, footpath 136 would be moved approximately 40 metres west to avoid a gas pipeline compound. The Environmental Impacts Report states that this design change would increase the journey distance for walkers, cyclists and horse riders crossing the LTC at this location. The Environmental Impacts Update then states that “we are continuing to assess the impact of the project in relation to the proposed change to develop mitigation measures and lessen the negative impacts”. Therefore, no evidence has been presented in the Design Consultation which confirms or otherwise the likely significant effects related to people or communities Furthermore, there is no reference to the reduction of woodland planting to the east of footpath 136 that was presented at the Supplementary Consultation (January 2020) and whether there are any new direct/indirect effects as a result of this to landscape and visual, health and terrestrial biodiversity.
42. Realignment of footpath 252																						As part of this design change, footpath 252 would be realigned on the western side near Dennis Road to provide access to a farm. The Environmental Impacts Update states that the realignment of footpath 252 increases the potential for adverse effects on archaeological remains, biodiversity, groundwater and existing routes for walkers, cyclists and horse riders during construction. Clarification and assurances are sought on the proposed construction methods and mitigation measures in this area.
43. Proposed reconfiguration of land required for multi-utility works																						The land required for utility works in this area has increased since statutory consultation. There is the potential for an increase in adverse effects on archaeological remains, groundwater and people and communities as a result of this design change during construction. The Environmental Impacts Update states that mitigation measures would be managed through the CoCP. However, to date, the Council has only received a working draft of the CoCP which does not provide any details on the mitigation measures proposed. Further information it required. Map Book 1 General Arrangements identifies an increase in woodland planting in this area since Supplementary Consultation (January 2020), which is a welcomed addition.
44. B186 North Road multi-utility diversion works																						As part of this design change, some of the above and below-ground multi-utilities within the vicinity of the B186 North Road would need to be diverted to accommodate the proposed LTC route. However, the information presented within the Design Refinement Consultation (July 2020) materials lacks the detail to understand the proposed design change and, therefore, the likely potential impacts. For some environmental topics, including; road drainage and the water environment; geology and soils; and biodiversity, the Environmental Impacts Update states that the increase in land take during construction as a result of this design change “could add to the nature of effects reported in the PEIR” and “increase the potential for adverse effect” but no further information or specific mitigation measures are provided.

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
																					<p>The Environmental Impacts Update states that there are likely to be potential adverse noise impacts during the construction phase due to proximity of noise sensitive receptors. It would be helpful to understand which noise sensitive receptors are likely to have adverse noise impacts so appropriate mitigation or construction techniques can be explored.</p> <p>Some of the overhead electricity distribution cables might need to be placed underground to avoid the proposed route. However, it is unclear if this additional design refinement has been considered in the Environmental Impacts Update and any new potential construction impacts. Further information should be provided to the Council prior to the DCO submission.</p>
45. Ockendon Road sewer diversion works																					<p>The Environmental Impacts Update states that <i>“there would be a slight increase in the construction working area, which increases the potential for adverse effects on archaeological remains reported in the PEIR”</i>. It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets during the diversion works.</p> <p>The Environmental Impacts Update states that mitigation of impacts on archaeological remains would follow the approach set out in the PEIR. However, as previously mentioned in the Council’s responses to Highways England’s Statutory Consultation and Supplementary Consultation (January 2020), the mitigation measures presented were too generic and not effective in mitigating specific adverse effects. Therefore, for Highways England to rely on the information presented in the PEIR during this consultation is inadequate and does not address the Council’s concerns.</p> <p>It is concerning that the Environmental Impacts Update does not explicitly confirm whether there are any new direct or indirect effects on the nearby Grade I and Grade II listed buildings, considering the application boundary appears to be in closer proximity to these assets. The Environmental Impacts Update also fails to confirm any new direct or direct effects on the setting of the Conservation Area, considering the application boundary is now within this area. Further consideration of the potential historic environment impact is required.</p> <p>Furthermore, the Environmental Impacts Update states that there are likely to be potential adverse noise impacts during the construction phase due to proximity of noise sensitive receptors. It would be helpful to understand which noise sensitive receptors are likely to have adverse noise impacts so appropriate mitigation or construction techniques can be explored.</p> <p>Despite the location of the diversion works to Clay Tye Farm, the Environmental Impacts Update makes no reference to the small permanent electricity substation proposed off Clay Tye Road. It is therefore assumed that the proposed substation has not been included within the environmental assessment. It is also unclear from Map Book 1 General</p>

Design change	Air quality		Noise and vibration		Cultural heritage		Landscape and visual		Terrestrial biodiversity		Road drainage and the water environment		Geology and soils		Material and waste		People and communities		Climate		Comments
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	
																					Arrangements the location of the proposed substation. Further information is required.
46. Works in the Mardyke area for National Grid maintenance area																					As part of this design change, National Grid would require access from Green Lane for the maintenance of its overhead electricity transmission cables on a permanent basis. The Environmental Impacts Update states that there would be no significant changes to the assessment of effects reported in the PEIR. However, it is unclear if the increase in land take required for the works is reflected within the assessment contained in Environmental Impacts Update and whether there are any new direct/indirect effects as a result of this.

6 Recommendations and Next Steps

6.1 Recommendations and Next Steps

- 6.1.1 As noted in the Council's response to the Statutory Consultation (December 2018) and Supplementary Consultation (January 2020) exercises, the nature of the DCO process is to encourage close and meaningful engagement with the promoter as the design process proceeds in the pre-application stage.
- 6.1.2 Highways England is requested to undertake further technical engagement with the Council prior to the submission of the DCO application in order to address the Council's concerns. The Council wish to see progress in relation to resolving aspects of the LTC scheme which would have a direct bearing on the Council and its communities should consent for the scheme be granted. These aspects would comprise, but are not limited to, setting a timetable and action plan to address:
- the concerns raised by the Council in this and earlier consultation responses, including the aspirations set out in the emerging Local Plan and delivering sustainable local growth;
 - mitigation for the likely economic costs to the Borough;
 - The delivery of a scheme of exemplar design, lasting legacy and securing local benefits; and
 - agreeing relevant draft DCO Requirements, Statement of Common Ground and s106 draft Heads of Terms.

6.2 LTC Programme

- 6.2.1 Concerns about the time available to enable a period of meaningful technical review and engagement prior to the submission of the DCO application are set out above. The Council would therefore wish to seek clarity on Highways England's programme and activities up to submission, recommending that the DCO submission date is reviewed and revised so that Highways England can take full account of the responses set out in all consultation responses received to date and thereafter engage effectively with principal stakeholders prior to the DCO application submission.

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