



Lower Thames Crossing
Review of Statutory Consultation Documents

Thurrock Council Document Reference – Appendix A

On behalf of **Thurrock Council**



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	Name	Position	Signature	Date
Prepared by:				
Reviewed by:	Sarah Matthews	Director	[SM]	03-12-2018
Approved by:	Dermot Scanlon	Director	[DS]	03-12-2018
For and on behalf of Peter Brett Associates LLP				

Revision					Approved

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Appendix A – Review of LTC PEIR

Executive Summary

Introduction

1. Highways England's (HE) latest proposals for the Lower Thames Crossing (LTC) were published for formal consultation on 10 October 2018. The consultation period closes on 20 December 2018. The Consultation Scheme comprises:
 - a bored tunnel crossing under the River Thames east of Gravesend and Tilbury;
 - a new motorway north of the river which will join the M25 between junctions 29 and 30;
 - a new road south of the river which will join the A2 east of Gravesend;
 - a new Rest and Services Area (RaSA) at the Tilbury Junction (East Tilbury);
 - new structures and changes to existing ones (including bridges, buildings, tunnel entrances, viaducts, and utilities such as electricity pylons) along the length of the new road;
 - Junctions, proposed at the following locations:
 - a new junction with the A2 to the east of Gravesend;
 - a new junction east of Tilbury (to access the proposed RaSA);
 - a modified junction with the A13/A1089 in Thurrock;
 - a new junction with north-facing slip roads on the M25 between junctions 29 and 30.
2. HE proposes that the scheme would include a *'free-flow charging system, where drivers pay remotely, similar to that at the Dartford Crossing'*.
3. If granted consent, HE envisages that construction of the scheme would commence in 2021 with an opening year of 2027.
4. Consent for the project is being sought under the Planning Act 2008 (PA 2008) and, if approved, a Development Consent Order (DCO) will be granted to construct and operate the project. Under this consent process, HE has a duty to consult, among others, local authorities and the local community about the emerging proposals prior to the submission of the DCO application. HE also has a duty to take account of the responses to consultation as it develops the Consultation Scheme further before submitting the DCO application.
5. This report has been prepared for Thurrock Council to provide a review of the Consultation Scheme and related statutory consultation documents. Its purpose is to identify areas of concern, potentially significant issues and suggest areas of further work required by HE, in order to assist the Council in preparing its response to the LTC statutory consultation exercise.

6. Overall, the Council has been actively engaging with Highways England however, based upon the consultation material available, the Consultation Scheme proposals appear contrary to important national and strategic policy tests. Due to deficiencies in the available information, particularly on the option appraisal and likely impacts, it is recommended that the Council should reserve an entitlement to supplement or modify its consultation response in light of additional information which is likely to be forthcoming.

Consultation materials

7. Some 42 separate items have been presented by HE as part of this formal consultation exercise. These include the 'Case for the Project', the 'Approach to Design, Construction and Operation', and the 'Preliminary Environmental Information Report'. The latter is one of the key documents in the consultation exercise as it provides preliminary environmental information on the Consultation Scheme so that consultees are able to develop an informed view of its likely significant environmental effects.

Review process

8. The review of the consultation materials seeks to 'test' the consultation scheme's performance in the following areas:
 - National and strategic policy – the performance of the Consultation Scheme against national and strategic policies as well as HE's scheme objectives;
 - Design elements – the performance of specific design elements of the Consultation Scheme tested against provision in the emerging Local Plan and wider aspirations for growth in Thurrock and the South Essex Region;
 - HE's proposals and assumptions made for construction phase logistics and utilities diversions;
 - Health and environmental effects as reported in the PEIR;
 - DCO process and adequacy of consultation.
9. This report concludes with recommendations for next steps in the engagement process with the HE team and the Planning Inspectorate.

Review findings

10. On the basis of the consultation information provided, including the information set out in the Preliminary Environmental Information Report (PEIR), the following conclusions and recommendations to HE are presented in this report:
 - i. The Consultation Scheme does not meet several of the national and HE's strategic policy tests and scheme objectives, particularly relating to option testing, the delivery of economic growth and achieving sustainable local growth (chapters 4 and 5);
 - ii. The Consultation Scheme 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 the emerging Local Plan (chapters 3 and 5);
- iii. There are specific design elements of the Consultation Scheme (chapter 5) which require modification and/or further consideration by HE in order to contribute to meeting the Government's and LTC's policy and scheme objectives. These are:
 - a. Re-instatement of the Tilbury Link Road into the Consultation Scheme;
 - b. Options for alternative sites inside and outside the Borough for the proposed Rest and Services Area (RaSA) proposed in East Tilbury;
 - c. Reconfiguration of the A13 connections: Orsett Cock junction, A13 widening works and Manor Way junction, and the alignment of Rectory Road;
 - d. Alternative design options for the treatment of the crossing through the Mardyke Valley to reduce potential adverse environmental effects;
 - e. Alternative design options for the treatment of the viaduct over the Tilbury Loop Line to reduce potential adverse environmental effects;
 - f. Consideration and assessment of suitable alternative locations for the Traveller site at Gammon Field which will be affected by the LTC;
 - g. Proposed physical design mitigation to address potential adverse effects on the Borough's residents eg bunds, cut and cover tunnels or lowering vertical alignment particularly where it is close to residential areas.
 11. It is considered that the information contained in the consultation materials and the consultation undertaken with HE to date do not satisfactorily explain the options tested which give rise to the configuration of the Consultation Scheme (chapter 5). The traffic modelling output available as part of the consultation materials does not include the results of any option testing and has insufficient detail to understand the impacts of the Consultation Scheme on the local networks as well as residents, businesses, open countryside and designated environmental areas in the Borough.
 12. Health and Environmental effects: in relation to the information presented in the PEIR, there are significant information gaps and potential under reporting of potential impacts, such that the effects of the scheme have not been and cannot be properly considered. Further engagement is required, particularly in relation to the assessment of health impacts (chapter 7).
 13. Construction effects: whilst it is acknowledged that the information relating to the construction phase and the proposed off-site and on-site enabling works are still at an early stage, it is recommended that the Council actively engages with the HE design team to ensure that the areas of potential concern, highlighted in this report, can be appropriately addressed by the team as the scheme design and assessment work progresses. Areas for further engagement are listed in the report (chapter 6).
 14. DCO process and EIA scoping: it is considered that the recent changes to the application boundary and the scheme made since the EIA Scoping Opinion was issued are likely to give rise to new or altered likely significant environmental effects. It is recommended that the Consultation Scheme should undergo a further scoping exercise to ensure that all potential likely significant environmental effects are

identified and that any Scoping Opinion will reflect the scheme for which consent is being sought (chapter 8).

15. The nature of the DCO process is to encourage close and meaningful engagement with the promoter as the design proceeds. A programme of engagement with HE is suggested (chapter 9) as one of the next steps in the process, which should cover the following key areas:
- Emerging Local Plan and delivering growth;
 - Option testing/traffic modelling;
 - Treatment of northern portal;
 - Specific aspects including: Tilbury Link Road, Junctions, Motorway Rest Area, passive provision for potential future development;
 - Health and environmental impacts;
 - Construction phase works and effects, including off- and on-site enabling works, and related mitigation (including the Code of Construction Practice); and
 - Securing local benefits.

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
ASELA	The Association of South Essex Local Authorities
AQMA	Air Quality Management Area
CEMP	Construction Environmental Management Plan
COCP	Code of Construction Practice
CRTN	Calculation of Road Traffic Noise
CTMP	Construction Travel Management Plan
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
FRA	Flood Risk Assessment
HE	Highways England
HIA	Health Impact Assessment
IAQM	Institute of Air Quality Management
IEMA	Institute of Environmental Management and Assessment
JSP	Joint Strategic Plan
LOAEL	Lowest observed adverse effect level (noise criterion)
LTC	Lower Thames Crossing
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
MHCLG	Ministry of Housing, Communities and Local Government
NNNPS	National Networks National Policy Statement
NPPF	National Planning Policy Framework
OHL	Overhead Line
PA 2008	Planning Act 2008

PEI	Preliminary Environmental Information
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PRoW	Public Right of Way
RaSA	Rest and Service Area
RIS	Road Investment Strategy
SHMA	Strategic Housing Market Assessment
SOAEL	significant observed adverse effect level (noise criterion)
SRN	Strategic Road Network
TBM	Tunnel Boring Machine
WFD	Water Framework Directive
WHO	World Health Organisation

1 Introduction

1.1 Overview

1.1.1 Highways England's (HE) latest proposals for the Lower Thames Crossing (LTC) were published for formal consultation on 10 October 2018. The consultation period closes on 20 December 2018. The Consultation Scheme comprises:

- a bored tunnel crossing under the River Thames east of Gravesend and Tilbury (Location C);
- a new motorway north of the river which will join the M25 between junctions 29 and 30 (Route 3); and
- a new road south of the river which will join the A2 east of Gravesend (the Western Southern Link).

1.1.2 As the LTC is classified as a Nationally Significant Infrastructure Project, consent for the project will be sought under the Planning Act 2008 (PA 2008). This means that the Planning Inspectorate will consider the application and make a recommendation to the Secretary of State for Transport. If approved, a Development Consent Order (DCO) will be granted to construct and operate the project.

1.1.3 Under the PA 2008 DCO application process, HE 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. HE also has a duty to take account of the responses to consultation as it develops the Consultation Scheme further before submitting the DCO application.

1.2 Purpose of this report

1.2.1 This report has been prepared for Thurrock Council (the 'Council') to provide a review of the LTC Consultation Scheme and related statutory consultation documents published by HE on 10 October 2018. The purpose of both the review and this report is to highlight potentially significant issues and assist the Council in preparing its response to the LTC statutory consultation.

1.2.2 The review seeks to identify those areas which are of concern to the Council as a statutory consultee and any potential deficiencies within the Consultation Scheme and related materials as presented by HE. It is based on an assessment of the October 2018 consultation material and is therefore subject to change as the LTC design and assessment progresses. This report has been prepared by an experienced consultant team supplemented by comments from Council officers, as appropriate.

1.3 Review findings and the Council's position

1.3.1 On the basis of the consultation information provided, including the information set out in the Preliminary Environmental Information Report (PEIR), the following conclusions and recommendations are presented in this report:

- a. The Consultation Scheme does not meet several of the national and HE's strategic policy tests and scheme objectives, particularly relating to option testing, the delivery of economic growth and achieving sustainable local growth (see chapters 4 and 5);
- b. The Consultation Scheme 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 the emerging Local Plan (see chapters 3 and 5);
- c. There are specific design elements of the Consultation Scheme which require modification and/or further consideration by HE in order to contribute to meeting the Government's and LTC's policy and scheme objectives (see chapter 5). These are:
 - i. Re-instatement of the Tilbury Link Road into the Consultation Scheme;
 - ii. Options for alternative sites inside and outside the Borough for the proposed Rest and Services Area (RaSA) proposed in East Tilbury;
 - iii. Reconfiguration of the A13 connections: Orsett Cock junction, A13 widening works and Manor Way junction, and the alignment of Rectory Road;
 - iv. Alternative design options for the treatment of the crossing through the Mardyke Valley to reduce potential adverse environmental effects;
 - v. Alternative design options for the treatment of the viaduct over the Tilbury Loop Line to reduce potential adverse environmental effects;
 - vi. Consideration and assessment of suitable alternative locations for the Traveller site at Gammon Field which will be affected by the LTC;
 - vii. Proposed physical design mitigation to address potential adverse effects on the Borough's residents eg bunds, cut and cover tunnels or lowering vertical alignment particularly where it is close to residential areas.
- d. It is considered that the information contained in the consultation materials and the consultation undertaken with HE to date do not satisfactorily explain the options tested which give rise to the configuration of the Consultation Scheme (see chapter 5). The traffic modelling output available as part of the consultation materials does not include the results of any option testing and has insufficient detail to understand the impacts of the Consultation Scheme on the local networks as well as residents, businesses, open countryside and designated environmental areas in the Borough.
- e. Specific comments relating to potential effects of the Consultation Scheme and the DCO (and EIA) process are:
 - i. Health and Environmental effects: in relation to the information presented in the PEIR, there are significant information gaps and

potential under reporting of potential impacts, such that the effects of the scheme have not been and cannot be properly considered. Further engagement is required, particularly in relation to the assessment of health impacts (see chapter 7);

- ii. Construction effects: whilst it is acknowledged that the information relating to the construction phase and the proposed off-site and on-site enabling works are still at an early stage, it is recommended that the Council actively engages with the HE design team to ensure that the areas of potential concern, highlighted in this report, can be appropriately addressed by the team as the scheme design and assessment work progresses (see chapter 6);
- iii. DCO process and EIA scoping: it is considered that the recent changes to the application boundary and the scheme made since the EIA Scoping Opinion was issued are likely to give rise to new or altered likely significant environmental effects. It is recommended that the Consultation Scheme should undergo a further scoping exercise to ensure that all potential likely significant environmental effects are identified and that any Scoping Opinion will reflect the scheme for which consent is being sought (see chapter 8).

1.3.2 The nature of the DCO process is to encourage close and meaningful engagement with the promoter as the design proceeds. A programme of engagement with HE is suggested (see chapter 9) as one of the next steps in the process, which should cover the following key areas:

- Emerging Local Plan and delivering growth;
- Option testing/traffic modelling;
- Treatment of northern portal;
- Specific aspects including: Tilbury Link Road, Junctions, Motorway Rest Area, passive provision for potential future development;
- Health and environmental impacts;
- Construction phase works and effects, including off- and on-site enabling works, and related mitigation (including the Code of Construction Practice); and
- Securing local benefits.

1.4 Report structure

1.4.1 This report is structured as follows:

Part 1 – The Consultation Scheme

- Chapter 2 describes the Consultation Scheme, lists the material which HE is consulting upon and sets out the indicative programme for the project;

Part 2 – Strategic Context

- Chapter 3 describes the strategic importance of Thurrock and the south Essex region, providing the development planning context in which the LTC will be set;

Part 3 – The Policy Context and Compliance

- Chapter 4 sets out the LTC’s policy context and scheme objectives and considers how the Consultation Scheme performs against the relevant national and strategic policies and objectives;

Part 4 – Reviewing and Testing the Consultation Scheme

- Chapter 5 considers the specific design elements proposed for the Consultation Scheme and how these perform against policy and objectives as well as the development planning context set out in Chapter 3;
- Chapter 6 considers the approach to construction, logistics and utility diversions required for the Consultation Scheme;
- Chapter 7 provides a review of the information contained in the PEIR;
- Chapter 8 examines the DCO process and the adequacy of consultation;

Part 5 - Recommendations and Next Steps

- Chapter 9 sets out the recommendations and suggested next steps for further engagement with the HE design team.

2 The Consultation Scheme

2.1 The Lower Thames Crossing Consultation Scheme

2.1.1 Non-statutory public consultation was undertaken in 2013, 2014, and in 2016 on the route options. Following the announcement of the Preferred Route in 2017, HE has undertaken further work to prepare the Consultation Scheme upon which it is now consulting. Details of the Consultation Scheme can be found at the following link: <https://highwaysengland.co.uk/lower-thames-crossing-home/>.

2.1.2 As described in the LTC consultation material (PEI Summary), the Consultation Scheme comprises:

- approximately 14.5 miles (23km) of new motorway connecting to the existing road network from the A2/M2 to the M25;
- two 2.5-mile (4km) tunnels, one southbound and one northbound;
- three lanes in both directions with a maximum speed limit of 70mph;
- improvements to the M25, A2 and A13, where the Lower Thames Crossing connects to the road network;
- a new Rest and Services Area (RaSA) at the Tilbury Junction (East Tilbury);
- new structures and changes to existing ones (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.

2.1.3 Junctions are proposed at the following locations:

- a new junction with the A2 to the east of Gravesend;
- a new junction east of Tilbury (to access the proposed RaSA);
- a modified junction with the A13/A1089 in Thurrock;
- a new junction with north-facing slip roads on the M25 between junctions 29 and 30.

2.1.4 The consultation material continues, stating that '*...the main road between the A2 and the M25 would be 3 lanes in both directions, using technology for lane control and variable speed limits. There would be no hard shoulders but there would be hard strips, motorway vehicle restrictions, emergency refuge areas and a rest and service area. Modern safety measures and construction standards will be used with technology to manage traffic and provide better information to drivers:*

- variable message signs on gantries to display travel information, hazard warnings and both advisory and mandatory signage to drivers;

- CCTV cameras to manage and investigate incidents, monitor onsite activities, protect assets, gauge network usage and prevent and detect crime;
- above ground traffic detectors to control automatic traffic management systems (like variable speed limits) and to collect data on traffic flows;
- Existing side roads affected by the route will be reconnected to ensure that existing communities and public rights of way remain connected. In most locations, the affected side roads would go over the new route' (Section 2, Preliminary Environmental Information Summary).

2.2 Consultation materials

2.2.1 The documents which comprise HE's consultation can be viewed and downloaded at this link: <https://highwaysengland.citizenspace.com/ltc/consultation/>. The material available at this link is as follows:

1. Your Guide to Consultation
2. Consultation Response form
3. Information leaflet
4. Consultation events leaflet
5. Case for the Project
6. Approach to Design, Construction and Operation
7. Preliminary Environmental Information Summary
8. Preliminary Environmental Information Report
9. Preliminary Environmental Information Report – Appendices
10. Preliminary Environmental Information Report Figures - Chapter 2 Project Description
11. Preliminary Environmental Information Report Figures - Chapter 6 Air Quality
12. Preliminary Environmental Information Report Figures - Chapter 7 Cultural Heritage
13. Preliminary Environmental Information Report Figures - Chapter 8 Landscape
14. Preliminary Environmental Information Report Figures - Chapter 9 Terrestrial Biodiversity
15. Preliminary Environmental Information Report Figures - Chapter 11 Geology and Soils
16. Preliminary Environmental Information Report Figures - Chapter 12 Materials
17. Preliminary Environmental Information Report Figures - Chapter 10 Marine Biodiversity
18. Preliminary Environmental Information Report Figures - Chapter 13 Noise and Vibration
19. Preliminary Environmental Information Report Figures - Chapter 14 People and Communities
20. Preliminary Environmental Information Report Figures - Chapter 15 Road Drainage and Water Environment
21. Map - Environmental Constraints
22. 2017 Environmental Impact Assessment - Scoping Report
23. 2017 Environmental Impact Assessment - Scoping Report Appendices
24. Environmental Impact Assessment - Scoping Report Appendices A – G
25. Environmental Impact Assessment - Scoping Report Appendix F (PART 1)

26. Environmental Impact Assessment - Scoping Report Appendix F (PART 2)
27. 2017 Environmental Impact Assessment - Scoping Opinion
28. Traffic Forecasts Non-Technical Summary
29. Traffic Forecasting Report
30. Traffic Forecasting Report Appendix
31. Map Book 1 - General Arrangements
32. Map Book 2 – Land Use Plans
33. Map Book 3 - Engineering Plans
34. Map - General Arrangement of Whole Scheme
35. Map - Large Scale General Arrangements
36. Map - Land Use Plan
37. Your Property and Blight
38. Your Property and Compulsory Purchase
39. Your Property and Discretionary Purchase
40. Statement of Community Consultation (SoCC)
41. Section 47 Notice
42. Section 48 Notice

Preliminary Environmental Information Report (PEIR)

- 2.2.2 One of the key documents in the review exercise has been the Preliminary Environmental Information Report (PEIR). The purpose of this is for the applicant [HE] to provide preliminary information on the Consultation Scheme so that consultees are able to develop an informed view of its likely significant environmental effects. Regulation 12(2) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) defines preliminary environmental information as “*information referred to in regulation 14(2) which:*
- a. *has been compiled by the applicant; and*
 - b. *is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development).”*
- 2.2.3 Further details on the intended purpose and contents of a PEIR are provided in Planning Inspectorate Advice Note 7: *EIA: Process, Preliminary Environmental Information, and Environmental Statements*.
- 2.2.4 Chapter 7 and Appendix A provide a review of the information contained in the PEIR.

2.3 Project programme

2.3.1 The consultation materials set out the indicative timetable for the LTC, set out in Table 2.1.

Table 2.1: indicative timetable for LTC

Stage	Indicative timetable
Development Consent Order application submitted	2019
Examination	2020
Consent (if granted)	2021
Construction phase	2021 onwards
Opening year	2027

3 The Strategic Importance of Thurrock and the South Essex Region

3.1 Introduction

3.1.1 Thurrock Council's adopted Core Strategy sets out, as an objective the delivery of 18,300 homes¹ and 21,000 jobs in the period between 2009-26. Thurrock's Economic Growth Strategy (2016) identifies five key components as being necessary to deliver employment and broader economic growth in the borough, namely:

- Strategic employment sites;
- Business spaces and premises;
- Quality access infrastructure, including road and rail linkages that facilitate effective movement of goods and people;
- Refreshed town centres; and
- Housing.

3.1.2 The Consultation Scheme has direct impacts on three of these key components in terms of:

- prejudicing the delivery of strategic employment sites (see para 3.2.6 et seq);
- compromising the ability to meet the need for new housing in Thurrock and the wider sub region in a sustainable manner (see para 3.3.12 et seq); and
- not providing the quality of access infrastructure needed in Thurrock to support these economic ambitions (for example, see section 5.3 relating to the removal of the Tilbury Link Road from the LTC scheme).

3.1.3 As a consequence, Thurrock's economy will continue to underperform and the aspirations for new necessary housing and improvements to its town centres will not be realised; nor will the market conditions necessary to viably deliver the quality of business space and premises envisaged.

3.1.4 In February 2014, the Council made the decision to bring forward a new Local Plan, the reasons for this being:

- 'The need for a more up-to-date statutory planning framework to coordinate the delivery of the Council's ambitious growth strategy for Thurrock
- The revocation of the East of England Plan and the requirement for local planning authorities to undertake a fresh assessment of their future development needs

¹ CSTP1 Strategic Housing Provision

- The need for the Council to identify a deliverable five-year housing land supply and bring forward more sites for development to support economic growth
- A need to consider the possible impacts of a decision by Government on the route and location of the proposed Lower Thames Crossing'

3.1.5 Supporting housing delivery and economic growth in Thurrock are central pillars of this emerging plan; and the scale of that growth represents a step-change in Thurrock's ambitions. The South Essex Strategic Housing Market Assessment (SHMA, 2017) which identified an objectively assessed housing need of 1,381 dwellings per annum; this represents over a third of identified needs across the whole South Essex housing market area. This includes a significant upward adjustment of 307 dwellings per annum to support economic growth in the Borough and underlines how the growth ambitions for Thurrock's economy are interlinked with housing growth.

3.1.6 However, progress on this new Local Plan has already been significantly delayed by the uncertainty created by the LTC, particularly given the changes in terms of the land affected directly by the route, the alterations in alignment and removal of junctions on the route. This places the Council at risk of failing to meet the requirements of the NPPF in terms of not having a five-year housing land supply and failing the new delivery test. The latter point is already confirmed by MHCLG and underscores the impact the LTC has already had on Thurrock's ability to meet housing needs, even in the short term. In the absence of an adopted up-to-date plan, this places Thurrock at risk of being unable to resist applications for unplanned development in unsustainable locations

3.1.7 In addition to the new Local Plan, Thurrock also forms part of the Association of South Essex Local Authorities (ASELA) which has committed to bringing forward a Joint Strategic Plan (JSP) to cover the period to 2038; the first round of consultation on the JSP is planned for spring 2019. While the JSP will not allocate specific sites and these will be brought forward through the new Local Plan, it will identify a range of broad strategic locations and priorities for new development and infrastructure delivery. However, the scale of growth to be allocated to Thurrock through the JSP is closely influenced by the extent which the LTC supports rather than prejudices those strategic locations.

3.2 Thurrock's economy and the role of the LTC

3.2.1 The Thurrock economy is worth £2.9 billion² and the Council is committed to growing this and closing the relative underperformance, in productivity terms, against the rest of South Essex. Within the wider South Essex economy, the Borough is an important driver in the retail and warehousing, and transport and logistics sectors, which are highlighted as key growth sectors going forward. Transport and logistics growth is driven by the key ports of Tilbury, Purfleet and London Gateway. The Port of Tilbury is identified in Core Strategy Policy CSSP2 as part of the Tilbury key strategic economic hub; realising the potential beneficial effects the LTC could have on the Port is therefore a critical consideration.

² South Essex Economic Development Needs Assessment (2017) Table 5

- 3.2.2 Development plan policy gives explicit support to the expanded role of Tilbury. Core Strategy Policy CSTP17 (Strategic freight movement and access to ports) enshrines the Council's support for the logistics and freight sectors including "...*facilitating a shift to rail freight and freight carried on the River Thames ... [by] promoting the use of rail and water borne freight facilities by supporting the development of appropriate infrastructure*".
- 3.2.3 The significance of the alignment of the LTC and the junctions on the Council's wider portfolio of employment sites is captured in the Economic Development Needs Assessment (2017). As well as providing an alternative strategic road link for existing and allocated sites to connect into, there is potential for the LTC to allow additional future employment sites along the new road; but that "...*in order to realise this opportunity the appropriate local junctions and connections must be provided so that existing and new sites can access the network, without which the positive influence of this new road infrastructure will be severely limited*"³.
- 3.2.4 The Needs Assessment's review of employment sites⁴, particularly in relation to the Port of Tilbury, confirms that investment is needed to improve the stock quality, including sites at:
- Thames Industrial Estate (14.4ha): this is identified as requiring significant intervention to attract new employment occupiers; and
 - Thurrock Park (21.4ha); this is noted to have vacancies within the site which might require medium- to long-term support to address to ensure that the site is fulfilling its potential for B8 (warehousing and distribution) port-related activities.
- 3.2.5 Beyond port-related activities, an important part of the Council's ambitions is to diversify the economy so that it is less dependent on a relatively narrow range of sectors, without compromising growth within those core sectors of transport and logistics and retail and warehousing. For this to be realised, the Council's ambitions are focused on increasing the supply of viable economic development land. This is not achieved by the Consultation Scheme.

Effects of the Consultation Scheme

- 3.2.6 The Consultation Scheme does not provide appropriate local junctions and connections at strategic locations in the Borough that capitalise on local areas of significant employment growth. The lack of provision of the Tilbury Link Road is an example where, rather than creating additional opportunities, the effect is to sterilise development land and reduce the potential for growth. This is discussed in greater detail in section 5.3 below.
- 3.2.7 The consequence of this missed opportunity to invest will be that the Council's ability to grow and diversify its economy will not be supported by the Consultation Scheme and the higher-skilled and higher-wage sectors which currently do not play a major role in its economy will continue to locate elsewhere in South Essex and the wider South East.

³ Para. 9.67

⁴ Table 35

3.3 Supporting housing growth in the Borough

- 3.3.1 Based on the South Essex Strategic Housing Market Assessment (SHMA, 2017), an objectively assessed housing need of 1,381 dwellings per annum is identified; this represents over a third of identified needs across the whole HMA⁵. This includes a significant upward adjustment of 307 dwellings per annum to support economic growth in the Borough. The Government's recently published standard method for assessing local housing need⁶ confirms a requirement for the Borough of 1,023 dwellings per annum. The NPPF confirms that this is the minimum number of homes.
- 3.3.2 The forecast housing need in the Borough accounts for more than a quarter of housing growth across the wider South Essex⁷ area. The Borough's strategic location straddling the two travel-to-work areas of London and Southend confirms how this forecast housing growth is needed to support not only the growth of the Borough's economy but also the wider South Essex and London economies.
- 3.3.3 The adopted Core Strategy identifies the Thurrock Urban Area⁸ as 'the main focus for growth for new housing, employment and associated development'⁹ and for the period to 2021, Policy CSSP1 allocates modest growth at Chadwell St Mary (390 homes) and a portion of 580 homes at East Tilbury. However, to support the significantly higher level of growth required by the NPPF and in the context of limited supply of allocated land, the Council is aware that the emerging development plan must allocate substantial land for housing.
- 3.3.4 In principle, the LTC presents, along its route, an opportunity to support and enable growth in sustainable locations, particularly in East Tilbury, Chadwell St Mary and South Ockendon that have come forward from the recent call for sites. However, this is premised on the appropriate alignment of the LTC and, critically, access. The Consultation Scheme does not accommodate this and instead severely limits the scale of potential housing growth that could be delivered.
- 3.3.5 These figures of potential homes affected by the LTC are estimates and can only be estimates because of the lack of uncertainty over the detail of the LTC. Certainty and detail is critical for Thurrock to be able to undertake the necessary work to understand the exact implications for these key locations. For this reason, engagement with Highways England on potential improvements to the route is essential to not only ensure that Thurrock's new Local Plan complies with the NPPF's requirement that it should be positively prepared, but also so that Thurrock's role in the wider JSP is not fundamentally changed by it moving from potentially helping other South Essex authorities meet their housing needs but instead needing to export housing to elsewhere.

⁵ Comprising Basildon Borough, Castle Point District, Rochford District, Southend-on-Sea Borough and Thurrock

⁶ Planning Practice Guidance Reference ID: 2a-002-20180913

⁷ Calculated against either the SHMA 2017 (South Essex HMA comprises Basildon, Castle Point, Rochford, Southend-on-Sea, Thurrock) or using the Government's standard method set out in the PPG for the Association of South Essex Local Authorities (ASELA) which comprises all the HMA authorities and Brentwood Borough.

⁸ Includes Chadwell St Mary

⁹ Para. 5.98

East Tilbury

- 3.3.6 Delivering growth at East Tilbury is particularly important because of the potential that this growth has to support wider regeneration to overcome severance issues and improve access to shopping, services and key community uses, including a secondary school. However, providing these uses, some of which are very space hungry, requires land but the supply of land is more constrained by the alignment and design of the Consultation Scheme.
- 3.3.7 This is particularly important at East Tilbury, where the current configuration of the Consultation Scheme means that while it may be possible to accommodate some additional housing, it will not be of the critical scale to fund the infrastructure improvements necessary to meet the Council's aspirations to improve the range of services within the existing town as well enhance connectivity for existing residents. East Tilbury is physically separated from the Borough's main urban area by the Green Belt and suffers from severance issues arising from traffic delays at the existing level crossing. This means that for East Tilbury to be a sustainable location for growth, supporting social infrastructure, including education, must be provided as part of the expansion of East Tilbury; but to achieve this, there is a critical mass of development required. The alternative is that connectivity improvements will be required to link the settlement with existing social infrastructure provision outside East Tilbury; a solution which is complicated by the need for growth at East Tilbury to address the existing severance issues imposed by the railway level crossing which is currently closed for 40 minutes in every hour.
- 3.3.8 The Consultation Scheme supports neither solution in that it reduces the developable area to primarily the west of the existing settlement so that the scale of potential growth will not be sufficient to fund the linkage improvements either within or to East Tilbury, nor will it be possible, because of this lack of critical mass, to provide the social infrastructure needed to regenerate the existing and relatively isolated settlement and support existing and new residents' needs. The provision of an access to the Consultation Scheme at Tilbury, with appropriate traffic management to prevent rat-running in the event of congestion on the LTC, would go some way to mitigate these impacts.

Chadwell St Mary

- 3.3.9 The expansion of Chadwell St Mary is focused to the east of the existing settlement. The alignment of the Consultation Scheme reduces the scale of potential housing growth. More significantly though, growth may be dependent on improved strategic transport links to mitigate the impact on the local road network within Chadwell St Mary. For development to fund such a link, it will require a critical mass which is unlikely to be possible with the proposed alignment of the Consultation Scheme; in these circumstances, for the scheme to fulfil its economic objective of supporting sustainable local development the provision of significantly improved access (for example a bridge over the railway line) will be essential to alleviate pressure on the local road network, including the A13.

South Ockendon

- 3.3.10 South Ockendon has the potential to accommodate a large-scale urban extension comprising an interlinked network of garden villages to the north and east of the

existing urban area. With sufficient scale comes the opportunity to advance a strategic transport solution (road and rail) for the town. It could also support the regeneration of the urban area, including additional community facilities. An access onto the Consultation Scheme, to the north of South Ockendon, would potentially support this potential future housing growth as well as allowing relocation sites for non-conforming existing employment sites which currently do not have direct access onto the strategic road network.

South Essex

- 3.3.11 In addition to Thurrock's needs, housing growth must be viewed in the wider South Essex context. Thurrock, together with Basildon, Brentwood, Castle Point, Rochford and Southend councils and Essex County Council (ASELA¹⁰), are preparing a Joint Strategic Plan. The scale and distribution of housing growth is a critical consideration across South Essex. In the same way that Thurrock is constrained, so too is the rest of South Essex and in many cases, these constraints are more severe such that there may be the expectation that Thurrock might be able to accommodate housing needs from other parts of South Essex. Because the Consultation Scheme means that Thurrock potentially cannot meet its own requirements, it follows that it can no longer play a role in assisting with the wider growth objectives for South Essex and instead would become a net exporter of housing needs. Without refinement, the proposal is contrary to ASELA's memorandum of understanding which identifies transforming transport connectivity and opening-up spaces for housing and businesses amongst its aims.

Effects of the Consultation Scheme

- 3.3.12 The forecast housing need in the Borough accounts for more than a quarter of housing growth across the wider South Essex¹¹ area which reflects the Borough's strategic location between London and Southend and the need to support not only the growth of the Borough's economy but also the wider South Essex and London economies.
- 3.3.13 The adopted Core Strategy identifies the Thurrock Urban Area¹² as 'the main focus for growth for new housing, employment and associated development'¹³. However, to support the significantly higher level of growth required by the NPPF and in the context of limited supply of allocated land, the Council is aware that the emerging development plan must allocate substantial land for housing.
- 3.3.14 The Borough is highly constrained with locations for housing growth requiring green belt release and the emerging plan is balancing these constraints in order to identify sufficient housing land in sustainable locations to be able to meet local

¹⁰ The focus of ASELA is: "on the strategic opportunities, regardless of individual local authority boundaries for the South Essex Economic Corridor to influence and secure the strategic areas that will help our individual areas to flourish and realise their full economic and social potential."

¹¹ Calculated against either the SHMA 2017 (South Essex HMA comprises Basildon, Castle Point, Rochford, Southend-on-Sea, Thurrock) or using the Government's standard method set out in the PPG for the Association of South Essex Local Authorities (ASELA) which comprises all the HMA authorities and Brentwood Borough.

¹² Includes Chadwell St Mary

¹³ Para. 5.98

housing need. Jeopardising the potential for development at South Ockendon, Chadwell St Mary and East Tilbury, through the Consultation Scheme, could significantly affect the Council's ability to allocate sufficient housing in locations that meet local priorities including the support for economic growth.

3.3.15 In principle, the LTC presents a huge opportunity to support and enable this growth in sustainable locations, particularly in East Tilbury, Chadwell St Mary and South Ockendon. However, this is premised on the appropriate alignment of the LTC and, critically, access into these new and growing communities. The Consultation Scheme does not accommodate this and instead severely limits the scale of sustainable housing growth to meet the substantial development needs that could be delivered.

3.4 Indirect Effects

3.4.1 In addition to the direct effects of the Consultation Scheme, consideration should be given to any indirect effects which the scheme may have on the Borough's economic growth strategy. These might include:

- Housing and job growth needed to fund/support town centre regeneration;
- Improvement in employment market conditions needed to improve rental/yield returns on non-B8 development – only possible with longer term improvement of workforce (improvement in quality of housing supply/skills agenda); and
- The attractiveness of the Borough as a place to live and work.

3.5 Environmental impacts

Greengrid policy

3.5.1 The Consultation Scheme risks prejudicing the delivery of a sustainable Greengrid (Core Strategy Policy CSSP5). This strategic spatial policy is related to seven strategic environment policies (CSTP18-24 Green Infrastructure, Biodiversity, Open Space, Productive Land, Thurrock Design, Thurrock Character and Distinctiveness and Heritage Assets and the Historic Environment).

3.5.2 The Greengrid Strategy is premised on the principle 'that improved green access links between green assets is key to maximising the benefits derived from green assets for residents, workers and visitors'¹⁴. The proposed alignment crosses through five of the eight Greengrid Improvement Zones¹⁵. Within these zones, the policy requirement is to '*ensure that the location, planning, design and ongoing management of sites is appropriate, and that opportunities are sought to make best use of land and green infrastructure assets in delivering ecosystem services*'.

3.5.3 Policy CSSP5 states that development will not be permitted which compromises the integrity of green and historic assets or the overall Green Infrastructure network and that developer contributions will be used to facilitate improvements to the quality, use and provision of multi-functional green assets and linkages. As set out in section 5.8 below, the Consultation Scheme provides only one green

¹⁴ Para. 4.34

¹⁵ CSSP5.2 i. Avey and South Ockendon, ii. Mardyke Valley, v. North Grays and Chadwell St Mary, vi. Grays Riverside/Tilbury and vii. East Thurrock/Rural Riverside

bridge in the Borough (Green Lane) for which there is little detail. Without improvement in provision, the scheme is in contravention of the development plan.

PEIR

- 3.5.4 A review of the PEIR, which has been prepared for this consultation exercise, has been undertaken and the findings are discussed in chapter 7. This considers the potential environmental effects of the Consultation Scheme on the local environment and the performance of the scheme against policy objectives.

4 National and Strategic Policy Context and LTC Scheme Objectives

4.1 Introduction

4.1.1 It is important to consider the performance of the Consultation Scheme against national and strategic policies as well as the scheme objectives. This chapter considers this context and sets out the ‘tests’ against which the Consultation Scheme has been considered; the tests are reported in chapter 5.

4.2 National Policy Statement for National Networks

4.2.1 Strategic Policy is contained in the National Networks National Policy Statement (NNNPS) which sets out the policy framework and need case for strategic highway schemes such as the LTC. The following policies are of relevance.

Driving prosperity

4.2.2 Para 2.13 of the NNNPS states “*..the Strategic Road Network provides critical links between cities, joins up communities, connects our major ports, airports and rail terminals. It provides a vital role in people's journeys, and drives prosperity by supporting new and existing development, encouraging trade and attracting investment. A well-functioning Strategic Road Network is critical in enabling safe and reliable journeys and the movement of goods in support of the national and regional economies*”.

Considering beneficial and adverse impacts

4.2.3 At para 4.3 the NNNPS states “*...in considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account:*

- *its potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long-term or wider benefits;*
- *its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts”.*

Options appraisal

4.2.4 At paragraph 4.27 the NNNPS states that “*...all projects should be subject to an options appraisal. The appraisal should consider viable modal alternatives and may also consider other options (in light of paragraphs 3.23 to 3.27 of this NPS). Where projects have been subject to full options appraisal in achieving their status within Road or Rail Investment Strategies or other appropriate policies or investment plans, option testing need not be considered by the examining authority or the decision maker. For national road and rail schemes, proportionate option consideration of alternatives will have been undertaken as part of the investment decision making process. It is not necessary for the Examining*

Authority and the decision maker to reconsider this process, but they should be satisfied that this assessment has been undertaken”.

4.3 HE Strategy Documents

Road Investment Strategy

4.3.1 The Road Investment Strategy, March 2015 states that *“the Company [HE] will, therefore, engage with other infrastructure providers and private developers to build long-standing relationships that help unlock opportunities for growth, including the construction of new housing, industrial and business sites, while also collaborating with local authorities to identify interventions on and off the network.”*

4.3.2 The strategy states that the *“RIS does not seek to predict the future, but takes into account a range of possible outcomes, underpinned by broad evidence, which the Department will continue to build on and review. The Department and the Company [HE] must be an active contributor in efforts to ensure the UK takes advantage of these global technology trends, facilitates investment and boosts overall UK capability.”*

The Road to Growth: our Strategic Economic Growth Plan

4.3.3 The Road to Growth: our strategic economic growth plan, March 2017 sets out *“the practical steps which HE is taking to increase its economic contribution in 4 areas:*

- *Supporting business productivity and competitiveness, and enabling the performance of SRN-reliant sectors;*
- *Providing efficient routes to global markets through international gateways;*
- *Stimulating and supporting the sustainable development of homes and employment spaces;*
- *Providing employment, skills and business opportunities within our sector”.*

HE’s Strategic Business Plan

4.3.4 HE’s Strategic Business Plan, October 2017 states that *“...we will improve our planning for the next decade and beyond. This will mean:*

- *Taking a more responsive and coherent approach to planning – one that is better understood by our customers, staff, suppliers and partners;*
- *Giving stakeholders more of a say in how we develop the network at a national, route and local level;*
- *Exploring new and better ways to stimulate growth;*
- *Encouraging innovation especially to exploit the benefits of vehicle and roadside technology;*
- *Ensuring our customers have more of a voice in determining investment priorities and how work is delivered;*

- *Providing for the needs of cyclists, pedestrians and others who walk or ride on, near or across the network”.*

4.4 LTC scheme objectives

4.4.1 The published scheme objectives are as follows:

- | | |
|----------------------------------|---|
| Economic | <ul style="list-style-type: none">• To support sustainable local development and regional economic growth in the medium to long term• To be affordable to government and users• To achieve value for money |
| Transport | <ul style="list-style-type: none">• To relieve the congested Dartford Crossing and approach roads and improve their performance by providing free flowing north-south capacity• To improve resilience of the Thames crossings and the major road network• To improve safety |
| Community and Environment | <ul style="list-style-type: none">• To minimise adverse impacts on health and environment |

Source: Lower Thames Crossing, Summary Business Case, Route Consultation 2016, Table 2.1

4.5 Testing the Consultation Scheme against strategic policy and scheme objectives

4.5.1 The above policy context and the scheme objectives have been distilled into seven core themes which have been used to ‘test’ the performance of the Consultation Scheme, which is reported in chapter 5. The policy and objectives tests are as follows:

1. Economic growth and driving prosperity
2. Sustainable local development
3. Adequacy of options appraisal
4. Improving accessibility
5. Limiting and reversing environment impacts
6. Innovation and future proofing
7. Robust consultation

4.5.2 These are considered in turn below.

Test 1 - Economic growth and driving prosperity

4.5.3 National Policy Statement for National Networks (referred to as the NNNPS) para 2.13 *“The Strategic Road Network provides critical links between cities, joins up communities, connects our major ports, airports and rail terminals. It provides a vital role in people’s journeys, and drives prosperity by supporting new and existing development, encouraging trade and attracting investment.”*

4.5.4 *The Road to Growth: Our strategic economic growth plan, March 2017 explains that there are “Three roles that the SRN can play in supporting the economy have been identified:*

1. Supporting business productivity and competitiveness, and enabling the performance of SRN-reliant sectors

2. Providing efficient routes to global markets through international gateways

3. Stimulating and supporting the sustainable development of homes and employment spaces.”

The Consultation Scheme objectives include “to support sustainable local development and regional economic growth in the medium to long term”.

4.5.5 Road Investment Strategy, March 2015 sets out “...four strategic goals of the National Network National Policy Statement (NNNPS)”. The first explained in more detail as:

1. “Providing capacity and connectivity to support national and local economic activity

The SRN is vital to British businesses and to the successful functioning of our local and national economies. The network not only includes England’s main freight and logistics arteries, which connect our international gateways, logistics interchanges and distribution centres, but also inter-urban connections, which help put more people within reach of a wider range of jobs...”

“Ports

With approximately 95% of the UK’s goods trade by volume, and 75% of its value, being handled by ports in England and Wales, along with two thirds of all freight being carried on the SRN, the linkages between our ports and strategic roads are vital. Their importance will only grow with the forecast long-term growth in imports and exports by sea. The SRN must enable smooth access to ports, allowing goods and services to be moved into and around the country efficiently and reliably.”

“Encouraging economic growth

To ensure the SRN positively impacts growth, we must tackle congestion and delay on the network, particularly on the main freight arteries that connect cities and international gateways. The network must dovetail with other transport developments over the coming decades to improve domestic connectivity, encourage trade and investment, and enable British business to compete in international markets. The Company will, therefore, engage with other

infrastructure providers and private developers to build long-standing relationships that help unlock opportunities for growth, including the construction of new housing, industrial and business sites, while also collaborating with local authorities to identify interventions on and off the network.”

- 4.5.6 Road Investment Strategy post 2020: Planning Ahead, March 2016 sets out under Aim 1: Economy that:

“The road network needs to support key goals of improving productivity and building a stronger economy. We will be particularly alert to opportunities for:

- *Helping business to get goods to market: Provide good connections within the UK, as well as to overseas markets via ports and airports....”*
- *Improving access to jobs: Provide better connections that let people find work in more places, and help wider agglomerations to form”.*

- 4.5.7 Under Aim 4: Integration:

“...We will therefore seek new opportunities for:

- *Linking the strategic road network with ports, airports and rail: Intermodal connections need to be made easy and we will use the opportunity of long-term planning to see where improvements to one mode can support other forms of transport;*
- *Integrating the strategic road network with local road networks: Road users want a smooth and reliable journey regardless of which stretch of the network they are driving on. We will continue to work with local highways authorities to ensure that the different parts of the network work as an integrated whole.”*

Test 2 - Sustainable local growth

- 4.5.8 The NNNPS para 4.3 states *“In considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account:*

- *its potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long-term or wider benefits.”*

- 4.5.9 At para 2.13, the NNNPS states *“The Strategic Road Network provides critical links between cities, joins up communities, connects our major ports, airports and rail terminals. It provides a vital role in people’s journeys, and drives prosperity by supporting new and existing development, encouraging trade and attracting investment.”*

- 4.5.10 ‘The Road to Growth: Our strategic economic growth plan’, March 2017 gives three roles that the SRN can play in supporting the economy, which include: *“...stimulating and supporting the sustainable development of homes and employment spaces.”*

- 4.5.11 Road Investment Strategy, March 2015 states that *“the Company [HE] will, therefore, engage with other infrastructure providers and private developers to*

build long-standing relationships that help unlock opportunities for growth, including the construction of new housing, industrial and business sites, while also collaborating with local authorities to identify interventions on and off the network.”

- 4.5.12 ‘Road Investment Strategy post 2020: Planning Ahead’, March 2016 includes under Aim 1: Economy “*creating new opportunities for housing and development: Provide the transport capacity to allow towns and cities to grow*”.

Test 3 - Adequacy of options appraisal

- 4.5.13 At para 4.27, the NNNPS states that “*..all projects should be subject to an options appraisal. The appraisal should consider viable modal alternatives and may also consider other options (in light of the paragraphs 3.23 to 3.27 of the NNNPS)*”.
- 4.5.14 NNNPS para 4.27 states “*..where projects have been subject to full options appraisal in achieving their status within Road or Rail Investment Strategies or other appropriate policies or investment plans, option testing need not be considered by the examining authority or the decision maker. For national road and rail schemes, proportionate option consideration of alternatives will have been undertaken as part of the investment decision making process. It is not necessary for the Examining Authority and the decision maker to reconsider this process, but they should be satisfied that this assessment has been undertaken.*”

Test 4 - Improving accessibility

- 4.5.15 HE’s ‘Accessibility Strategy - Our approach’ states that “*..we want to address the barriers our roads can sometimes create, help expand people’s travel choices, enhance and improve network facilities, and make everyday journeys as easy as possible. This will be achieved by ensuring our network supports and contributes to accessible, inclusive and integrated journeys which are safe, secure, comfortable and attractive.*”
- 4.5.16 Road Investment Strategy, March 2015 states that “*..the government is committed to improving active travel options, such as cycling and walking. Too often the SRN often acts as a barrier to these activities, so we are committed to improving access through building new bridges, crossings and cycle paths...The Company [HE] has also committed to cycle-proofing new schemes as standard, as well as working with Local Authorities to improve end-to-end cycling and walking journeys.*”

Test 5 - Limiting and reversing environment impacts

- 4.5.17 The Consultation Scheme objectives include “*to minimise adverse impacts on health and environment*”. In addition, Road Investment Strategy, March 2015 states that “*...working closely with local authorities and environmental groups, will allow the Company [HE] to limit, and even reverse, the effects that the network has on its surroundings. It will also move us towards our aspiration of a dramatically lower emission SRN that delivers a net gain in biodiversity and leaves a strong environmental legacy.*” “*A greener network: through its use of environmentally and visually sensitive ‘green infrastructure’, and management of the verges and open spaces, good design will minimise the air, light, noise, and visual impacts of the SRN. Enhancements to the SRN will meet high standards of design, responding to a local sense of place, and working wherever possible in*

harmony with the natural, built and historic environments....A more integrated network: the SRN will be managed as an integrated part of a wider transport network so that users do not encounter friction at the points where it joins other networks when planning or undertaking journeys. Cyclists, pedestrians and equestrians will enjoy safe, extended and integrated network infrastructure that is attractive both for work and leisure travel.”

- 4.5.18 ‘Environment Strategy - Our approach’, April 2017 states that *“This strategy outlines our commitment to improving our environmental outcomes. In doing this, it seeks to help protect, manage and enhance the quality of the surrounding environment, with a focus on people and the built, natural and historic environment. It will be delivered through all aspects of our business and in particular the operation, maintenance and improvement of our network.”*
- 4.5.19 These policies have been considered in the review of the information contained in the PEIR (Chapter 7 and Appendix A).

Test 6 - Innovation and future-proofing

- 4.5.20 The Consultation Scheme objectives include *“to improve resilience of the Thames crossings and the major road network”*. In addition, the Road Investment Strategy, March 2015 states that the *“RIS does not seek to predict the future, but takes into account a range of possible outcomes, underpinned by broad evidence, which the Department will continue to build on and review. The Department and the Company [HE] must be an active contributor in efforts to ensure the UK takes advantage of these global technology trends, facilitates investment and boosts overall UK capability.”*

Test 7 - Robust consultation

- 4.5.21 The Strategic Business Plan, October 2017 states that *“..we will improve our planning for the next decade and beyond. This will mean:*
- *Taking a more responsive and coherent approach to planning – one that is better understood by our customers, staff, suppliers and partners;*
 - *Giving stakeholders more of a say in how we develop the network at a national, route and local level;*
 - *Exploring new and better ways to stimulate growth;*
 - *Encouraging innovation, especially to exploit the benefits of vehicle and roadside technology;*
 - *Ensuring our customers have more of a voice in determining investment priorities and how work is delivered;*
 - *Providing for the needs of cyclists, pedestrians and others who walk or ride on, near or across the network”.*
- 4.5.22 This test is considered under the adequacy of consultation in chapter 8.

5 Reviewing and Testing the Consultation Scheme - Design Elements

5.1 Introduction

5.1.1 This section covers the following design elements of the scheme:

- Adequacy of options appraisal;
- The Port of Tilbury and Tilbury Link Road;
- Rest and Services Area (RaSA) in East Tilbury;
- A13 connections: Orsett Cock and Manorway junction;
- Proposed road structures, road realignments and control buildings;
- Resilience;
- Public Rights of Way (PRoW) and Green Bridges;
- Effects on the Green Belt;
- Travellers' Site;
- Effects on Special Category Land;
- Mitigation for the Operational Scheme; and
- Design Features - landscape, flooding and ecology.

5.2 Adequacy of options appraisal

5.2.1 Although an options appraisal has been undertaken to select the preferred route for the LTC, there is no available evidence that an options appraisal has been carried out to inform the configuration of the Consultation Scheme (junction locations, junction types, restricted movements, Public Rights of Way crossing locations, scheme height, alternative modes, etc).

5.2.2 Whilst the LTC is not part of the Road Investment Strategy it is identified as a scheme to be developed for the next 'Road Period'. It is included in the draft Road Investment Strategy 2. The consultations undertaken in 2013 and 2016 consider the location options and route options respectively but it is considered that the appraisal which is available and the consultations to date have not satisfactorily considered options on the configuration of the Consultation Scheme.

5.2.3 The traffic modelling output available with the consultation documentation does not include results of any option testing and is not detailed enough to understand the scheme impacts on the local networks and residents, businesses, open countryside and designated environmental areas.

- 5.2.4 Local junction improvements and other mitigation may be necessary and should be funded and delivered with the scheme.
- 5.2.5 The Council is actively engaging with Highways England however based upon the consultation material available the Consultation Scheme proposals appear contrary to Test 3 (Options Appraisal) and Test 7 (Robust Consultation).
- 5.2.6 Due to deficiencies in the available information on the option appraisal and impacts, it is recommended that the Council should reserve an entitlement to supplement or modify its consultation response in light of additional information which is likely to be forthcoming.

5.3 The Port of Tilbury and Tilbury Link Road

Context

- 5.3.1 The Tilbury Link Road was included in the non-statutory consultation, which closed in March 2016, but has not been included in the Consultation Scheme and the rationale for this is not clearly stated in the consultation materials, particularly as the Department of Transport England's 'Port Connectivity: the current picture' confirms that the Lower Thames Crossing is expected to offer new connections, as well as improved journey times and network reliability.
- 5.3.2 The Port of Tilbury is of National and Regional importance bringing £388m Gross Value added to UK, handling some:
- 16m tonnes of cargo processed each year;
 - 3.5m tonnes paper and forest products paper year: Largest paper handling port in UK;
 - 2m tonnes recycled products p.a: largest waste/recycling export port in UK;
 - 1.4m tonnes of imported/exported Grain p.a: largest import and export terminal for grain in UK. Handling about 17% of the country's total import wheat requirements.
- 5.3.3 Other statistics relating to the Port include:
- The port is home to the London Container Terminal (LCT) and the largest reefer facility in the UK;
 - 1,400 reefer plugs: Europe's largest terminal for refrigerated containers;
 - 25,000 NFT Chilled Distribution pallets are stored;
 - 100,000 cars per year imported/exported;
 - 100,000 cruise passengers p.a;
 - 500,000 containers p.a.
- 5.3.4 The Port of Tilbury is one of the largest employers in Thurrock with:

- 3,500 employees at the Port;
- 50 apprentices;
- 8,300 local jobs supported by the Port;
- 5,500+ new jobs due to be generated at the London Distribution Park and Tilbury 2 sites.

- 5.3.5 Port-related employment accounts for some 1 in 5 of the employed population of the Borough (estimated 12,443) and 20,000 jobs (25%) of the total employed in the ports sector in England (2015) are employed at London and Medway ports, which includes the Port of Tilbury. Some £2,100m Gross Value Added (34%) of the total contribution made by all ports in England (2015) is made by the London and Medway ports.
- 5.3.6 The largest Amazon fulfilment centre in Britain is already being built on site and “...will help triple employee numbers at Tilbury from 4,000 to 12,000 in the next decade” (Financial Times 5 Feb 2017).
- 5.3.7 The Tilbury 2 investment will see the amount of trade passing through the port reach 32 million tonnes each year, equivalent to more than 1 tonne every second. Ports directly generate £1.7 billion of trade every year, however their true value to the UK economy is worth more than three times that figure (£5.4 billion) when indirect impacts such as the port industry’s spending on vehicles, construction and business services are considered.
- 5.3.8 The Port of Tilbury and the people that work there will play a major role in helping the UK to increase international trade after the UK leaves the European Union. (see <https://www.gov.uk/government/news/tilbury-port-to-capitalise-on-opportunities-to-boost-trade> Government press release, 18 Oct 2018).
- 5.3.9 Whilst traffic leaving the port will be able to access the Consultation Scheme to travel north-bound and south-bound, traffic access to the port is not straight forward, as would be expected for a major port facility, and will still need arrive via the A13 (see para 5.3.12 below). The journey time from the M2 to the Port of Tilbury would be expected to be significantly shorter with direct access from the LTC.

Review findings

- 5.3.10 It is not clear from the evidence presented within consultation materials why the proposed connection to the Port of Tilbury has been removed and option testing is not provided. Without the Tilbury Link Road, traffic ‘to’ the port will not be able to use the Consultation Scheme. From the south east, traffic will need to continue to use the A2, Dartford Crossing, A13 and A1089 route. From the north, traffic will continue to use the M25, A13, and A1089.
- 5.3.11 It is understood that the A1089 (Asda) roundabout has been tested and options considered to provide direct access from the Consultation Scheme ‘to’ A1089/Port of Tilbury, although this testing is not available in the consultation documentation. It is also understood that due to land constraints, a solution for direct access was not identified. It is not clear in the consultation documents why the Tilbury Link

Road has not been considered as an alternative solution to achieve direct access to the Port of Tilbury.

- 5.3.12 It is considered that the re-instatement of the Tilbury Link Road in the LTC scheme, with appropriate traffic management to prevent rat-running in the event of congestion on the LTC, would offer new connections, improved journey times and network reliability to a port facility of strategic importance. Its exclusion from the Consultation Scheme is considered to be contrary to Test 1 (Driving prosperity), Test 3 (Options Appraisal) and Test 4 (Improving Accessibility). There is no evidence that the configuration selected for the Consultation Scheme optimises journey times, reliability and accessibility to the Port of Tilbury to support its planned and aspirational growth, associated with opening new markets and attracting new businesses.

5.4 Rest and Services Area (RaSA) in East Tilbury

- 5.4.1 Section 12.4 of the LTC 'Approach to Design, Construction and Operation' document sets out information relating to the Rest and Services Area (RaSA) proposed in East Tilbury however it is not evident that the full range of potential options and locations has been considered, contrary to Test 3 (Options Appraisal). An option further north should be considered, either inside or outside of the Borough, which could provide a new junction to enable a potential future growth area around South Ockendon to meet Test 2 (Sustainable local growth).
- 5.4.2 The RaSA is located on land that has been put forward through the Borough's 'Call for Sites' for housing at East Tilbury. This potentially affects the Borough's ability to deliver its development needs (see para 3.3.6 et seq.) and is therefore contrary to Test 2 (Sustainable local development).
- 5.4.3 The RaSA is expected to operate 24 hours every day. The RaSA is likely to give rise to noise, air quality, visual and lighting impacts on local residents and other sensitive receptors arising from the scale and nature of the development and related activities, there are also concerns about the land quality in this area and the ability of any mitigation planting to establish. Overall it is considered that this is therefore contrary to Test 5 (Limiting and reversing environment impacts).
- 5.4.4 As the RaSA is expected to be privately delivered, which would introduce another level of uncertainty; it is important that the any detailed designs and environmental controls are agreed by the Council, as planning and highway authority, including any approvals relating to the discharge of related DCO Requirements.

5.5 A13 connections: Orsett Cock and Manorway junction

- 5.5.1 There are a number of significantly restricted movements at the proposed junction with the Consultation Scheme and the A13, due to its proposed configuration. These are:
- From the Consultation Scheme south, travelling north-bound:
 - to the A13 (west) - the A13 towards Thurrock urban area cannot be reached directly - this requires traffic to

undertake a detour along the A13 to u-turn at the Orsett Cock junction.

- to the A1089/Tilbury Port - the A1089 to Tilbury Port cannot be reached directly - this requires traffic to undertake a significant detour along the A13 to u-turn at the Manorway junction.
- To the Consultation Scheme south, travelling south-bound:
 - from the A13 (west) - traffic cannot arrive from the A13 (west) from Thurrock urban area - this requires traffic to undertake a significant detour along the A13 to u-turn at the Manorway junction.
 - from A128 - traffic cannot arrive from the A128 – traffic would need a major detour down the A13 to u-turn at the Stifford interchange (with the A1019), then back along the A13 eastwards to u-turn at Manorway junction.
- From the Consultation Scheme north, travelling south-bound:
 - to the A13 (west) - the A13 towards Thurrock urban area cannot be reached directly - this requires traffic to undertake a detour along the A13 to u-turn at the Orsett Cock junction. It is acknowledged that the existing M25 will continue to provide an attractive route.
 - to the A1089/Tilbury Port - the A1089 to Tilbury Port cannot be reached directly - this requires traffic to undertake a significant detour along the A13 to u-turn at the Manorway junction.
- To the Consultation Scheme north, travelling north-bound:
 - from the A13 (west) - traffic cannot arrive from the A13 (west) from Thurrock urban area - this requires traffic to undertake a significant detour along the A13 to u-turn at the Manorway junction. It is acknowledged that the existing M25 will continue to provide an attractive route.
 - from A128 - traffic cannot arrive from the A128 – traffic would need a major detour down the A13 to u-turn at the Stifford interchange (with the A1019), then back along the A13 eastwards to u-turn at Manorway junction.

Note: direct access to/from the A1013 Stanford Road and/or B188 Baker Street is also not possible on to the Consultation Scheme, as an alternative.

5.5.2 There is no evidence within the consultation documentation to explain the selected junction configuration or the options tested. This is therefore contrary to Test 3 (Options Appraisal).

- 5.5.3 There are therefore no direct connections between Thurrock urban area and the Consultation Scheme, except 'from' the A1089. These restricted movements (alongside the removal of the Tilbury Link Road from the Consultation Scheme) constrain the potential for the scheme to improve accessibility to/from the Borough, and therefore economic growth and local development.
- 5.5.4 The inclusion of the Tilbury Link Road, as discussed above, would provide the opportunity to relieve the currently proposed u-turning operations at Orsett Cock and Manorway junctions.
- 5.5.5 The junction at A13 to/from Lakeside Shopping Centre has suffered with significant congestion problems for many years due to the lack of east-facing slip roads. After 20 years and much lobbying, east facing slip roads are now planned. There is no evidence to demonstrate that similar issues will not arise due to the restricted movements planned at the A13 junctions. It is understood that the Council is concerned that history will be repeated without west-facing slips on the LTC to/from the A13.
- 5.5.6 Overall, the Consultation Scheme would appear contrary to Test 1 (Economic growth and driving prosperity), Test 2 (Sustainable local development), Test 4 (Improving Accessibility) and Test 6 (Innovation and future proofing).

5.6 Proposed road structures, road realignments and control buildings

Road structures – Mardyke and E Tilbury

- 5.6.1 The evidence is not available to demonstrate what opportunities have been explored to lower the vertical alignment of the Consultation Scheme, particularly through the Mardyke Valley and at Tilbury over the railway loop line. This is contrary to Test 3 (Options Appraisal).
- 5.6.2 At Mardyke, it is understood that there are various design restrictions relating to, for example, clearance height required for dredging, however, the potential visual impact is high. In order to ensure that potential environmental impacts are limited (Test 5), it is recommended that the design parameters and potential restrictions are thoroughly examined.
- 5.6.3 At East Tilbury, consideration in the design needs to be given to provision for rapid access for emergency vehicles. It is understood that a problem currently exists (see para 3.3.7 above) and it is considered that this will be exacerbated by the Consultation Scheme proposals, contrary to Test 4 (Improving accessibility).

False cuttings and other design mitigation

- 5.6.4 The assessment of the adequacy of the proposed false cutting to mitigate noise, visual and health impact is not available, contrary to Test 3 (Options Appraisal) and potentially Test 5 (Limiting and reversing environment impacts).
- 5.6.5 It is recommended HE engages with the Council in the suitability, design and effectiveness of this and other proposed physical design mitigation to address potential adverse effects on the Borough's residents eg bunds, cut and cover tunnels or lowering vertical alignment particularly where it is close to residential areas.

Passive provision for future development

5.6.6 As part of the on-going consultation, it is recommended that HE works with the Council to seek to ensure that appropriate passive provision is made in the Consultation Scheme to deliver future development planned in the Borough, in order to fulfil policy Test 6 (innovation and future-proofing).

Realignment of Rectory Road

5.6.7 As part of the proposed reconfiguration of the A13 Junction the Consultation Scheme makes provision for the realignment of Rectory Road. This would effectively sever the Orsett Showgrounds and be contrary to Test 5 (Limiting and reversing environment impacts).

Tunnel control buildings

5.6.8 The location and configuration of the proposed tunnel control buildings and access road at the North Portal approach are shown in the followings extracts from the consultation materials in Plates 5.1 and 5.2 below.

Plate 5.1: extract from consultation materials showing indicative location and alignment of LTC control buildings and access road

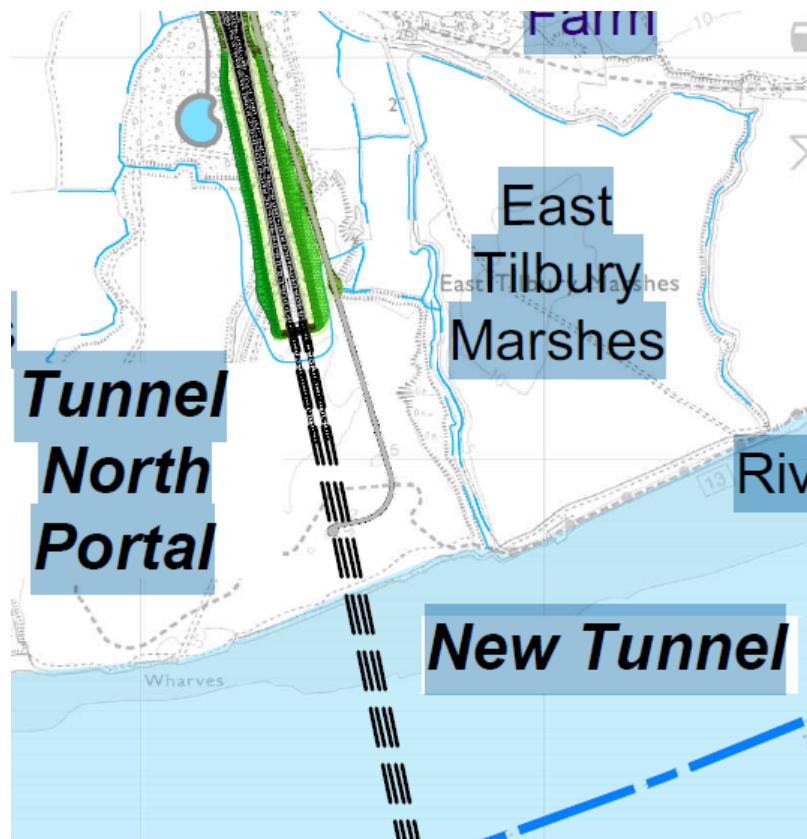


Plate 5.2: extract from consultation materials showing illustration of LTC control buildings and access road



5.6.9 The evidence is not available to demonstrate what options have been explored in relation to the location and design for control buildings and access road, as shown in the above plates. This is contrary to Test 3 (Options Appraisal).

5.6.10 In order to ensure that potential environmental impacts are limited (Test 5), it is recommended that the design and locational parameters can be presented by HE.

5.7 Resilience

5.7.1 The LTC has been designed for a life span of some 100 years, yet there is no evidence within the consultation material which presents where the design has considered or safeguarded for resilience to future change, such as travel trends, mode shift and emerging technologies. Such work would provide flexibility, for example:

- to accommodate high occupancy/public transport prioritised lanes in the future to facilitate technologies such as autonomous shuttle buses;
- to safeguard/ deliver bus priority advance lanes to and from the tunnel enabling dedicated public transport links across the river between Thurrock and Kent, particularly to the railway (offering more direct regular services into London) and/or Kent Thameside Fastrack services at Gravesend;
- to accommodate rail across the river.

5.7.2 By way of example, the west facing only slip roads were delivered in the 1980s at the A13/A126 junction to provide access to Lakeside shopping centre. A recent

government announcement has allocated £50m to deliver new A13 slip roads, after decades of congestion caused by the restricted access. There is concern that the restrictions into and out of the Borough which are part of the Consultation Scheme will cause similar delays and constraint on connectivity and economic growth. This is contrary to Test 6 (Innovation and future-proofing).

5.8 Public Rights of Way (PRoW) and Green Bridges

Policy context

- 5.8.1 HE's Road Investment Strategy, March 2015 states that *"working closely with local authorities and environmental groups, will allow the Company to limit, and even reverse, the effects that the network has on its surroundings. It will also move us towards our aspiration of a dramatically lower emission SRN that delivers a net gain in biodiversity and leaves a strong environmental legacy.".... "A greener network: through its use of environmentally and visually sensitive 'green infrastructure', and management of the verges and open spaces, good design will minimise the air, light, noise, and visual impacts of the SRN. Enhancements to the SRN will meet high standards of design, responding to a local sense of place, and working wherever possible in harmony with the natural, built and historic environments....A more integrated network: the SRN will be managed as an integrated part of a wider transport network so that users do not encounter friction at the points where it joins other networks when planning or undertaking journeys. Cyclists, pedestrians and equestrians will enjoy safe, extended and integrated network infrastructure that is attractive both for work and leisure travel."*
- 5.8.2 HE's Environment Strategy - Our approach, April 2017 states that *"This strategy outlines our commitment to improving our environmental outcomes. In doing this, it seeks to help protect, manage and enhance the quality of the surrounding environment, with a focus on people and the built, natural and historic environment. It will be delivered through all aspects of our business and in particular the operation, maintenance and improvement of our network."*
- 5.8.3 These policies should be considered in the light of the following discussion relating to PRoW and Green Bridges.

PRoW

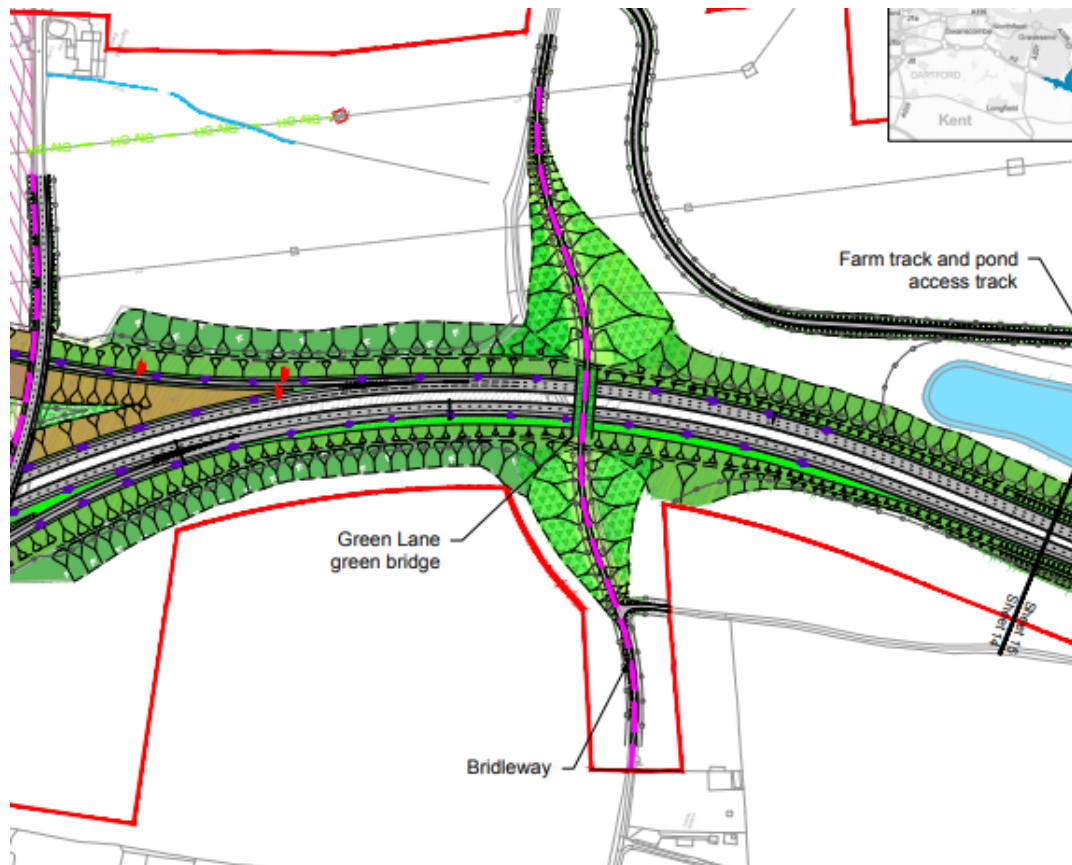
- 5.8.4 The Consultation Scheme makes provision for the replacement/re-provision of PRoW which are affected by the proposals however further details are sought in relation to the temporary provision during the construction phase. In addition, as encouraged by policy outlined above, it is recommended that opportunities are explored as to the creation of new or re-provision of existing PRoW as Green Bridges, where this is appropriate.

Green infrastructure – Green Bridges

- 5.8.5 Green infrastructure is referred to in the PEIR in a number of sections as a potential form of mitigation for loss of habitats and other environmental impacts. Proposals for green infrastructure are to be developed in association with Green Infrastructure Report to be provided at an unspecified date.

- 5.8.6 The only forms of green infrastructure specified in the consultation documents are 'green bridges', and 'green structures on the A2 corridor'. It is unclear what other forms of green infrastructure, if any, may be utilised in the Consultation Scheme as mitigation.
- 5.8.7 Green bridges, among other forms of green infrastructure are recommended in the NNNPS as potential forms of environmental mitigation in support of new and existing habitats (section 5.36). The location of the potential green bridge is presented in Map Book 1: General Arrangements. The purpose of green structures is to mitigate any fragmentation effects and improve mobility of species through the provision of green corridors between existing habitats. In addition, such bridges provide the potential to reduce the visual impact of standard bridge crossings.
- 5.8.8 The example below (Plate 5.3) is from Sheet 14 of Map Book 1: General Arrangements Map, showing the proposed Green Lane Green Bridge.

Plate 5.3: extract from consultation materials showing proposed Green Lane Green Bridge



- 5.8.9 The design and specifications of a green bridge, and its effectiveness as a form of mitigation, is not discussed in the PEIR or Approach to Design Construction and Operation document. It is therefore considered that the proposals are contrary to Test 3 (Options Appraisal) and there is no evidence to demonstrate the Consultation Scheme meets Test 5 (Limiting and reversing environment impacts).

5.9 Effects on the Green Belt

5.9.1 The Consultation Scheme is located, in part, in designed Green Belt within the Borough. Whilst it is acknowledged that the Council is itself under pressure to release Green Belt land (for example, see para 3.3.14 above) this release will be in areas that are most sustainable. In relation to the Consultation Scheme, it is noted that the 'very special circumstances' test will apply for inappropriate development in the Green Belt.

5.10 Travellers' site

5.10.1 The Consultation Scheme proposes to remove a Travellers' site located at Gammon Field, in the vicinity of the proposed A13 junction. No information is provided on impacts on this community or their future accommodation. A potential area is proposed (in red), as shown on General Arrangement Plan Sheet 12, reproduced below. The site is displayed however no proper or effective assessment of the site is provided in the PEIR or other consultation material relating to the site characteristics (above face value characteristics shown on the plan), why this site was selected against other options, or any specific consultation held with the Traveller community. For these reasons, this provision fails Test 3 (Options Appraisal).

5.10.2 In consideration of the site at face value, location-wise, it is the type of site that has the potential to be suitable for a Travellers' site. However, any site selection should be subject to a variety of assessments to ensure suitability, on:

- the impacts of noise and similar effects of the Consultation Scheme on future residents;
- the ability of the site to serve the community in terms of size, and site arrangements including after the removal of undevelopable land through, for example, any potential buffer for pylons, Flood Zones 2 or 3, or land with unsuitable contours;
- landscape and visual impact; and
- impact on the Green Belt.

5.10.3 For this reason, it cannot be assured that this site selection meets the requirements of Test 5 (Limiting and reversing environment impacts).

Plate 5.4: extract from consultation materials showing indicative location for replacement Travellers' site



5.11 Effects on Special Category Land

5.11.1 It is unclear the extent to which Special Category Land is affected by the Consultation Scheme, if any. It is recommended that the Council seek an early opportunity to discuss this with HE.

5.12 Mitigation for the Operational Scheme

5.12.1 There are a range of elements relating to mitigation for the operational scheme which are likely to require further engagement between the Council, other stakeholders such as the police and emergency services and HE, those elements highlighted at this stage are:

- Tunnel operations – procedures for dealing with accidents and emergencies in the tunnel;
- Tunnel operation – measures put in place to avoid rat-running during routine closure of the Dartford Crossing;
- Operation of the RaSA - treatment of illegal HGV parking and maintaining cleanliness of laybys;
- Effects on wider network – trunking the A13 from the A1089 to Manorway;
- Effects on wider network – traffic safety and treatment of existing accident hotspots;
- Mitigation planting – possible use of willow planting as a sustainable crop.

5.13 Design Features - landscape, flooding and ecology

Introduction

- 5.13.1 This section deals with the 'environmental' design features relating to the Consultation Scheme.

Mardyke crossing

- 5.13.2 There are extensive areas of Flood Zone 3 across the area associated with the Mardyke floodplain. North of the A13 junction the route is proposed to be at about ground level for about 1km before climbing to cross the flood plain of the Mardyke. The route crosses the Mardyke flood plain for 2km with about 1.5km of embankment up to 7.5m high and a 450m long viaduct across the Mardyke river and nearby Golden Bridge Sewer.
- 5.13.3 Initially the route between the A13 and M25 crossed the Mardyke Valley on a low embankment about 4m high. It also crossed the Mardyke river and the nearby main rivers (Orsett Fen Sewer and Golden Bridge Sewer) on short individual single span structures which were slightly wider than the rivers. Subsequently a hybrid option was chosen with a shorter viaduct (about 450m) over the Mardyke river and Golden Bridge Sewer and embankment (about 980m total length) across the rest of the area with a single span (about 50m) over Orsett Fen Sewer.
- 5.13.4 The main reasons for selecting this option are cited as: *"Including a viaduct gives a more open aspect reducing the visual impact in this open area; A combination of viaduct and embankment is a more cost-effective solution than a viaduct over the whole of the valley; A shorter viaduct will be less of a long-term maintenance issue than the longer viaduct while it will still present an opportunity for architectural treatment that minimises visual impact; Reducing the length of embankment reduces the volume of flood compensation and consequently the amount of land compared to the preferred route and option 1 making it easier to find suitable land."*
- 5.13.5 While the consultation material suggests that a balance has been struck between the solutions of a viaduct or embankment, both still offer significant adverse impacts on the landscape in terms of visual amenity and substantial land modification, with all of its associated risks. It is not apparent that options to form a tunnel for all or part of the route have been considered in order to eliminate these environmental impacts. For these reasons this element of the Consultation Scheme is considered to fail Test 3 and Test 5.

Flood Risk Assessment – compensation and mitigation

- 5.13.6 A great deal of integral environmental information is withheld from the consultation material pending the publication of a Flood Risk Assessment (FRA).
- 5.13.7 Areas for flood plain compensation are selected in consultation with the Environment Agency in the process of preparing an FRA. Flood compensation areas are created by earthworks which increase the capacity of a flood plain in response to the impacts the project will have on drainage capacity in an area, and to mitigate for increased risk of flooding caused during construction and operation of the Consultation Scheme.

- 5.13.8 HE proposes a staged approach to flood compensation, with areas progressively growing as the need for flood compensation capacity develops. Flood compensation will be needed for the temporary works as well as permanent works. The implementation of these areas will form part of the early construction programme (enabling works).
- 5.13.9 In addition to provision for flood area compensation, the scheme must also consider mitigation measures for flooding and impacts on water quality as a result of the scheme. These include the uptake, location and detailed design of the following measures:
- flood defences of the north tunnel portal;
 - bridge deck levels and spans;
 - road levels;
 - a main drainage strategy including dealing with exceedance flows;
 - pollution control and water quality;
 - runoff assessment;
 - location of surface water balancing facilities; and
 - specific techniques that may be used to mitigate pollutant runoff include attenuation ponds and swales.
- 5.13.10 Prior to the FRA being completed, it is not possible to meaningfully comprehend the significance of flood risk impacts or respond to options for compensation and mitigation approaches yet to be included in the Consultation Scheme. For this reason it is considered that the Consultation Scheme fails Test 3 and Test 7.

Approach to ecological and habitat replacement areas

- 5.13.11 The PEIR states that the process of determining areas for habitat creation is ongoing in preparation of the ES. The purpose this ongoing process is to identify the most suitable areas for potential habitat creation where significant effects on designated areas and protected species have been identified. These areas fall under the following categories (contained in Map Book 1): Ancient Woodland, Replacement Open access Land, Environmental Improvement Works, Proposed Woodland Planting, Proposed Grassland planting, and Areas Returned to Agriculture.
- 5.13.12 The process for selecting and assessing the effectiveness of these areas as forms of mitigation is not made clear in the PEIR. It is not detailed if new areas of compensation are commensurate with the loss caused by the project. It is also not identified if further work to identify such areas will be the subject of engagement with stakeholders such as the Council. It is recommended that this is clarified by HE.

Potential receptor sites for translocation of protected species

- 5.13.13 HE has identified potential habitat replacement areas where protected species can be translocated. To avoid undue stress to species HE proposes to prepare multiple replacement habitat areas, including an area for translocation of species affected by early construction activity. This approach removes the need for multiple translocations of individuals. It also has the added benefit that significant areas of replacement habitat will have more time to develop.
- 5.13.14 Potential receptor sites are identified in Map Book 1: General Arrangements. Two significant potential sites are located just to the east of the route near the Thames on the northern side. It is recommended that the Council and HE maintain dialogue to seek agreement about the suitability of the proposed sites and their long-term use and maintenance.

Potential receptor site for excavated material/landscape enhancement

- 5.13.15 A large potential receptor site for excavated tunnel material is identified in Map Book 1 around the land at Goshems Farm, on the Thames side of the northern tunnel portal. This land also comprises a designated LWS (Local Wildlife Site), however it is anticipated a large proportion of this (70ha) will have been destroyed during 2018 due to the importing of spoil from Thames Tideway and spreading it to raise the height of the land at Goshems Farm. Accordingly, it is likely to be deselected as a LWS and therefore its value reduced however the effect of the LTC mitigation works here on the mitigation associated with the Tideway project need to be considered. It is recommended that the Council and HE maintain dialogue to seek agreement about the suitability of the proposals and long-term use and maintenance of the site.

6 Reviewing and Testing the Consultation Scheme - Construction, Logistics & Utilities

6.1 Introduction

6.1.1 This chapter considers those aspects which relate to the construction of the Consultation Scheme together with the proposed utilities diversion works which are required to enable the develop of the scheme. It is acknowledged that the information relating to these aspects, presented in the consultation materials, is still at an early stage in design development, however the intention of this chapter is to provide observations and highlight those areas of potential concern which will need to be addressed by the HE design team as the scheme design and assessment work progresses.

6.2 Construction arrangements and methods

6.2.1 Overall there is little detail at this stage on the actual methods of construction to be employed, and, importantly, the interaction that these methods might have with design. Methods of construction can have significant impacts on the design of such projects and their potential environmental impacts. For example, if site-won sand and gravels are used, supplemented by marine imported aggregates, there would be a considerable reduction on the impact of vehicle movement on the local roads.

6.2.2 There is no evidence of the consideration given to the interaction of method, design and the potential reduction of impacts. Due to this, it is not known where potential adverse effects could in fact be designed out of the project and hence avoided, as opposed to fully or partially mitigated at potentially great effort and cost.

6.2.3 Little indication is made of the construction techniques to be employed. The mitigations imply, though, that these will be conventional.

CEMP and CoCP

6.2.4 Section 2.18 of the PEIR indicates that activities during the construction phase will be subject to measures defined within a Construction Environmental Management Plan (CEMP) and that a Code of Construction Practice (CoCP) will be prepared "*..which will outline the measures to be implemented through the CEMP to minimise adverse effects during the construction phase, including measures for control of pollution*". The Council would welcome an early understanding of the content of these documents and how they will be applied during the construction phase.

6.3 Construction compounds

6.3.1 The main tunnelling compound is large and appears to contain the main site offices. The main compounds at the A13 and M25 are mentioned but no location indicated and no land take specifically indicated.

6.3.2 Access to compounds with the use of local roads is possible although the creation of temporary haul roads from more major roads will be considered. Temporary haul routes for the tunnel are being considered from the A1089 or Fort Rd via RWE. It is noted that the former is likely to be a considerable road in its own right.

6.4 Land take

6.4.1 New motorway schemes are generally constructed within the site boundaries with additional land potentially required for related necessary activities. Some activities are noted below:

- Site compounds – currently identified for the tunnel activity;
- Borrow pits and surplus/unacceptable spoil deposition –surplus deposition is identified. No borrow pits for earthworks are identified;
- Materials abstraction (e.g. granular materials) – the use of a potential borrow pit for sand and gravel within the development area is mentioned. It is not clear if this is taken from within the development boundary or additional land will be taken;
- Temporary works (e.g. road diversions) – none identified;
- Utility diversions – relocation of overhead lines identified only;
- Special requirements – potential jetty shown, including access from site.

6.5 Construction logistics

6.5.1 Table 12.9 in the PEIR (Potential effects and mitigation measures during construction – PEIR, Ch 12) states “..the Project is expected to require a significant quantity of materials during construction”. This is a certainty, yet there is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established.

6.5.2 A segment factory located in the Borough at the North tunnel portal is considered, which produces tunnel segments onsite to enable easy access to the tunnel. The supply or materials for this plant is not specifically discussed but the mode used for transporting these materials may have significant effects, particularly on the road network.

6.5.3 There is insufficient detail on the likely haul routes and the impacts on local roads. The proposed Construction Travel Management Plan (CTMP) would need to be extremely robust to support the management of the haul roads and marine movements and would need to include, amongst other things, a Navigational Risk Assessment on marine movements.

6.5.4 Marine transport is considered in outline for the delivery of the Tunnel Boring Machine (TBM) and materials delivery and removal although it is not clear what these are and the benefits. It is unclear is the current jetty arrangement indicated is sufficiently sized for these tasks. It extends the existing East Tilbury jetty used for land raising.

- 6.5.5 If materials are to be transported by road, it would be positive to see consideration of the option to deliver the majority of materials to the LTC A13 main compound, which can then be distributed along the line of the works. This would reduce the potential impact upon the local road network.
- 6.5.6 The PEIR makes general statements about the aspiration to source materials locally but no reference is made to the criterion on which these decisions will be made, for example e.g. price, availability, or other.
- 6.5.7 Spoil disposal and reuse for the tunnelling materials is not clear. It is noted that the slurry can be a difficult material to handle in the short and long term.

6.6 Construction phase: materials sourcing, employment and accommodation

- 6.6.1 The Council has no surety that local sourcing would be given proper consideration. This should be extended not only to materials but to workers, plant and equipment, thereby helping to support local workers and businesses and to minimise the environmental effects of these resource streams.
- 6.6.2 Section 2.18 of the PEIR indicates that one of the 'key components of the construction compounds' is the provision of 'welfare and staff accommodation facilities'. Details of the strategy for worker accommodation and related mitigation should be provided by HE which should include:
- a. Review of the strategy objectives;
 - b. Accommodation options being considered (eg. floating accommodation, new build (temporary), new build (permanent), other off-site);
 - c. Volume, location and phasing of housing/landtake needed (both peak/average, in or outside red line boundary);
 - d. Consideration of potential social/community effects, associated mitigation, and other ancillary social provision, both temporary and permanent;
 - e. Post construction uses: options considered and phasing i.e when does this become available for non-LTC uses?
 - f. Identification of benchmarks and exemplar projects.

6.7 Utilities

- 6.7.1 Given the strategic location of the Borough and south Essex, there is an extensive range of utilities running through the area, a significant number of which are proposed to be diverted or altered as part of the enabling works for the Consultation Scheme. The extent of these is described in section 2.17 of the PEIR and an indicative plan of utility diversions is provided in PEIR Figure 2.
- 6.7.2 Para 2.17.1 of the PEIR states that "...the route will require the diversion or alteration of overhead high voltage electricity transmission and distribution lines. In addition, there are large high pressure gas feeder mains that will need diversion".

Para 2.17.2 continues “..at the three main junctions, the A2, A13 and the M25, the route will require complex diversions including: high, medium and low-pressure gas distribution mains, high pressure water mains and sewers, underground electricity distribution cables and a range of telecommunications cables including fibre optic cables. In addition, there could be low voltage electricity cables, small water mains and other utilities that may need diversion or protection works”.

6.7.3 The PEIR goes on to state that disruption of existing services “will be minimised through careful planning and liaison with the utility providers and construction works programme” and that it is assumed that some of the major diversions will be done as part of early enabling works.

6.7.4 The full extent of proposed diversions, the phasing of the works, identification of any development land that may be sterilised, and any mitigation measures is required to fully understand the extent of the disruption to the Borough and the likely significant environmental effects. This would include any temporary or permanent utility works required to service the tunnelling and construction activities.

6.7.5 In order to fully understand the potential effects, it is recommended that all utility works required for the scheme, including those which may be undertaken under Permitted Development rights or for which consent would be sought via another (non-DCO) consent process, are fully assessed by HE and reported in the Environmental Statement.

6.8 Treatment of northern tunnel portal

6.8.1 It is understood that one option being considered for the beneficial re-use of tunnel spoil material is to deposit it close to source at the northern portal. This is considered a sustainable option, minimising the distance the waste is transported and providing the opportunity for the improvement of brownfield land in this location.

6.8.2 It is acknowledged that consideration of this option is at an early stage and therefore the Council would wish to be involved in the design process to ensure that the outcomes align with its aspirations for future development in this area, should the LTC scheme proceed. The specific areas of interest to the Council are likely to be:

- a. Land improvement and waste treatment strategy for the northern portal construction area;
- b. Realising benefits of land improvement at the northern tunnel portal and how these can align with long term plans for area;
- c. Identifying the location of new development platforms and the nature of suitable end uses and any constraints on future development;
- d. Identifying the location of landscaped areas;
- e. Understanding of spoil treatment methods, including:
 - i. Potential effects (construction) and mitigation for sensitive receptors;

- ii. Potential effects (permanent), particularly any landscape/visual/heritage assets;
- f. Phasing – when will sites are available and the potential for temporary (meanwhile) and permanent uses;
- g. Availability of sites - LTC only (during construction) or TC uses?
- h. Long term ownership/maintenance requirements of the improved land.

6.9 Recommendations

6.9.1 It is acknowledged that the information relating to the construction phase and the proposed enabling works are still at an early stage in design development however it is recommended that the Council actively engages with the HE design team to ensure that the areas of potential concern, highlighted above, can be appropriately addressed by the team as the scheme design and assessment work progresses. Areas for further engagement include:

- a. further information should be supplied by HE as to proposed construction arrangements, methods and logistics. This would be to ensure that potential adverse effects are avoided or minimised and that appropriate mitigation can be considered for likely significant residual effects. Information sought should include, but not be limited to, details relating to:
 - Construction compounds – outline layout and principal construction activities;
 - Construction logistics and off-site facilities eg segment factory;
 - Materials abstraction and waste management strategy;
 - Borrow pits and haul road strategy;
 - Temporary works (e.g. road diversions);
 - On- and off-site enabling works;
 - Special requirements, including use of jetty and import of abnormal loads.
- b. Utilities: information should be supplied by HE as to the full extent of proposed utility diversions, the phasing of the works and any mitigation measures. This would include any temporary or permanent utility works required to service the tunnelling and construction activities;
- c. Construction Environmental Management Plan (CEMP), Code of Construction Practice (CoCP) and the Construction Travel Management Plan (CTMP): draft documents should be supplied by HE for early consideration by the Council;
- d. Construction phase: materials sourcing, employment and accommodation. HE to supply details of consideration being given to local sourcing of

materials and workers together with the draft strategy for worker accommodation;

- e. Northern portal: the Council would wish to be involved in the design process to ensure that the outcomes proposed for any land improvement at the Northern Tunnel Portal align with its long-term development aspirations.

7 Health and Environmental Impacts – Review of the PEIR

7.1 Introduction

- 7.1.1 This chapter summarises the findings of the review of the PEIR, seeking to identify any significant omissions and/or limitations in the assessment currently being undertaken by HE.
- 7.1.2 The policy test which has been considered in this aspect of the review has been principally Test 5 (Limiting and reversing environmental impacts (see paras 4.2.17-19).
- 7.1.3 This chapter continues with consideration of the health impact assessment work followed by a summary of the findings of the review of the PEIR.

7.2 Assessment of Health Impacts

Context

- 7.2.1 A Community Impacts Advisory Group has been established by HE, comprising: an external chairperson, members of the LTC team and representatives from each of the local the local authorities potentially affected by the LTC scheme together with Public Health England. It is understood that the intention is for this group to meet regularly to discuss topics which include health and well-being and equalities. As a precursor to the first meeting, HE has indicated (in September 2018) that a standalone Health Impact Assessment (HIA) will be prepared and that the Advisory Group will provide input to the methodology and perhaps scope of the HIA workstream. The review presented here is based on the consultation materials presented by HE in October 2018.

Overview

- 7.2.2 The PEIR does not contain a standalone assessment of human health impacts, instead taking the approach that the assessment can be carried out via other chapters. The approach taken is described in the LTC Scoping Report in Section 5.5.4: “[...] It is anticipated that effects on human health will be addressed in the People and Communities assessment and that effects reported in other chapters for example, air quality, noise and vibration will be used to inform this assessment.” In its Scoping Opinion, the Secretary of State broadly agrees with the approach, noting in Section 3.3.4:

“The Inspectorate notes that it is proposed in paragraph 5.5.4 to consider effects on human health in the People and Communities chapter, to be informed by other chapters including the Air Quality and Noise and Vibration chapters. The Inspectorate has had regard to the information provided in the Scoping Report and has taken into account the nature and characteristics of the Proposed Development and is generally content with this approach. However, the Inspectorate considers that human health effects may also be relevant to soil handling and waste management, which is understood to be assessed within the

‘Geology and Soils’ and the ‘Materials’ chapters respectively, and to the Road Drainage and Water Environment chapter.”

- 7.2.3 It is acknowledged that the Scoping Report was published some time ago (October 2017) and that both the scheme and approach to the assessment have developed since that time. However, it considered that the risks posed to the health of community are sufficient to warrant a standalone and proportionate HIA that would provide a coherent, integrated and comprehensive assessment of health impacts, brought together as a single point of reference.

Definition and understanding of human health in the EIA context

- 7.2.4 Whilst overarching consideration of human health is provided in the People and Communities chapter, the context and background is not clear. Furthermore, a working definition of human health has not been provided in the chapter, which makes it unclear how determinants of health of relevance to the Consultation Scheme have been identified.

Data limitations

- 7.2.5 There are limitations in data used to understand human health. Health Baseline data at the Local Authority level is not sufficiently detailed to understand nuances of the health baseline. Data should be provided at the Lower Layer Super Output Area (LSOA) level (as committed for the HIA) and the assessment should consider differential impact on specific groups. No deprivation data (key areas of deprivation in Tilbury, Chadwell St Mary, South Ockendon) or understanding of vulnerable groups to be considered is provided.

Engagement

- 7.2.6 It is not clear how vulnerable or ‘hard to reach’ groups have been engaged – the elderly, those with disabilities, those who may not be able to read or read English.

Engagement and stress impacts

- 7.2.7 Potential impacts on human health during construction include stress related to the planning process itself. In this respect an assessment on human health should include how communities have been engaged.

Key health impacts not identified

- 7.2.8 A key potential impact during operation is the severance of communities from social networks and facilities, and natural capital. Additionally, there is no preliminary Transport Assessment in the PEIR using standard practice methodology which assesses fear and intimidation, pedestrian amenity and delay, which will be key health determinants associated with the scheme.

Recommendations

- 7.2.9 Given the recent establishment by HE of the Community Impacts Advisory Group whose remit will include topics (and oversight) of the assessments relating to health and well-being and equalities, a watching brief is recommended to ensure

that the scope of the assessment, issues and potential mitigation being appropriately addressed as the assessment work proceeds.

7.3 PEIR-stage Environmental Assessment Methodology

7.3.1 Chapter 5 of the PEIR outlines the approach of each of the environmental topics presented. Each of the chapters, with the exception of Climate, is structured in the same format and approaches each topic consistently. The following therefore provides some background on critical points relevant to all chapters.

Identification of receptors

7.3.2 Identifies receptors and puts them on a scale of Negligible to Very High based on a number of criteria, generally related to scale and perceived importance. The determination of the significance of the receptors was undertaken by the applicant, in the absence of input from local authorities like Thurrock Council should be rectified.

Data limitations

7.3.3 A number of surveys are reported as still ongoing and will input into the environmental assessment at a later date, but have not informed the PEIR. These are surveys that relate to ground investigation, ecological, archaeological, air quality and noise.

Significance of Environmental Effects

7.3.4 The PEIR states that, in the ES, the significance of environmental effects will be assessed using criteria that reflect current best practice, as set out in the EIA Scoping Report, and taking into consideration the Scoping Opinion provided by PINS. It is considered that the Scoping Opinion does not reflect the likely significant environmental effects of the Consultation Scheme and that a new scoping exercise should be undertaken (see Section 8.2 below).

Cumulative Effects

7.3.5 No preliminary assessment of cumulative effects has been provided in the PEIR. The ES proposes to include an assessment of the cumulative effects of the Project, as set out in the EIA Scoping Report, and following the guidance in PINS' Advice Note 17: Cumulative Effects Assessment. A list of developments for inclusion in the assessment of cumulative effects shown be drawn by HE, in consultation with affected local authorities.

7.4 Approach to Mitigation

7.4.1 Specific measures to mitigate adverse environmental effects during the construction phase of the LTC are not described in the consultation documents. Each environmental topic in PEIR Volume 1 concludes with a section on Potential Effects and Mitigation Measures. The measures contained therein are generic approaches to mitigation. Specific mitigation measures are instead proposed to be incorporated within a Code of Construction Practice (CoCP) as part of the Environmental Statement. These mitigation measures will relate to the

construction phase of the project. Provisions relating to operational phase mitigation are discussed at the ends of these sections.

7.5 Environmental impacts of Construction and the CoCP

7.5.1 The consultation material puts a strong reliance on developing a Code of Construction Practice (CoCP) in order to control environmental impacts during construction. No discussion has been identified about designing out the construction impacts from the outset which help to assure consultees that adverse environmental impacts were not only being mitigated, but avoided entirely, where possible. It is recommended that a technical meeting is convened early with the Council to engage over this critical document.

7.6 Summary of review of PEIR environmental chapters

Introduction and review methodology

7.6.1 The following table presents a summary of the findings of the review of the PEIR, the details of which are presented in Appendix A. the Red-Amber Green rating which has been used is as follows:

- Red = needs addressing immediately/requires amendment to Consultation Scheme
- Amber = further work with Thurrock Council required prior to DCO submission
- Green = satisfactory

Summary Table

Table 7.1: Summary table of PEIR review

PEIR Chapter	RAG
<p>Health impacts:</p> <ul style="list-style-type: none"> • No standalone Health Impact Assessment (HIA) is provided as part of the consultation material, which is a substantial omission, considering the significant health impacts of this scheme. • Some considerations that would otherwise be made in an HIA are considered in other sections, however there are also key omissions and limitations, including: <ul style="list-style-type: none"> -No overarching definition of health is adopted in the report -The appropriate selection of datasets (for example, the exclusion of LSOA level data) -A lack of evidence that 'hard to reach' groups have been engaged with -Stress impacts related to engagement are not considered 	
<p>Air Quality:</p> <ul style="list-style-type: none"> • A number of potential significant effects are misrepresented or excluded because of flawed assumptions or inconsistencies. For example: <ul style="list-style-type: none"> -The PEIR has not included an assessment of construction phase traffic effects which may be significant for a scheme like LTC. 	

PEIR Chapter	RAG
<p>-The PEIR has not assessed all relevant road receptors following modelled changes in traffic.</p> <p>-The PEIR does not consider a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5})</p> <ul style="list-style-type: none"> • The PEIR provides standard techniques for mitigating effects such as construction dust, but omits numerous effective techniques that warrant consideration. • Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed there won't be, so the analysis does not speculate as to what these might be in the scheme. 	
<p>Cultural Heritage (including Archaeology):</p> <ul style="list-style-type: none"> • The LTC project should establish a Heritage Panel, involving local authorities like Thurrock Council, to ensure a proactive, consistent and engaged approach to the scheme. • The PEIR should acknowledge all appropriate guidance principles – including Historic England's GPA2 and GPA3 principles. • The PEIR should consider all relevant effects within its own cultural heritage analysis, such as Historic Landscape, and the effects of vibration on the fabric of heritage assets • A study area of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. • It is recommended that HE engages proactively with Thurrock Council to reduce impacts on the Thurrock Council-owned Coalhouse Fort, an important heritage asset and popular tourist attraction. • The PEIR needs to extend its assessment to significant non-designated assets, for example those associated with the Grey Goose Farm scheduled monument. • There is concern that the sensitive nature of the area of the grave terraces and interface with the grazing marsh is not fully acknowledged with the submitted documentation • Intrusive surveys need to be undertaken in order to properly determine the significance of the heritage assets to be impacted. 	
<p>Landscape:</p> <ul style="list-style-type: none"> • The PEIR should be more explicit on which guidance it is using for its assessment methodology. • the PIER's methodology does not clearly set out how levels of sensitivity and magnitude have been defined and how these judgements may be combined within the LVIA to establish significant effects for receptors. • The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the Thurrock Landscape Capacity Study. • The assessment should consider 'distant' viewpoints, including identified strategic and local views. • Early indication of operational mitigation proposals would 	

PEIR Chapter	RAG
<p>suggest they may not be adequate or effective.</p>	
<p>Terrestrial Biodiversity:</p> <ul style="list-style-type: none"> • The omission of an analysis of temporary loss of functional land potentially used by SPA species during construction means significant effects could have been missed, and furthermore may inflate the compensation areas required as mitigation. • The PEIR has not indicated any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy, and local policy • The extent of surveys has fallen short of minimum standards in the case of Barn Owl studies. • The effectiveness of recreating particular habitats, including LWS sites, is highly limited in some cases, and it is offered as potential mitigation in the PEIR. This mitigation should be given scrutiny against alternatives. 	
<p>Marine Biodiversity:</p> <ul style="list-style-type: none"> • The PEIR is limited by its sole reliance, so far, on desk-based studies, and as such the determination of impacts and mitigation are likely to be less accurate and reliable. • There is a lack of clarity on the Zone of Influence of the project, and therefore the justification of both the European sites, and the National Sites taken forward for assessment. • The PEIR does not provide opportunities for enhancement for marine receptors, as suggested by the NNNPS. 	
<p>Geology and Soils:</p> <ul style="list-style-type: none"> • The lack of intrusive investigations mean that it is not possible to be sure that HE have considered the environmental implications of worst case scenarios that can only be understood if long-term monitoring is carried out. • A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. • The study area of 250m is insufficient as it may not capture areas outside the buffer that may contain higher risk features. • The analysis excludes the potential for leachate and cavity formation in made ground, which are environmental risks that should be considered. 	
<p>Materials:</p> <ul style="list-style-type: none"> • There is insufficient detail on the possible use of the river and rail for the movement of materials, and the environmental and transport impacts of such a move. Considering the benefits of these modes, they should be seriously considered. • The analysis should also include the movements of other suitable materials, plant and equipment, and potentially transport by river/rail. • The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. • The PEIR does not demonstrate how the reuse within the project of materials has been maximised to minimise the 	

PEIR Chapter	RAG
<p>need for off-site haulage and handling.</p> <ul style="list-style-type: none"> The LTC should make a genuine commitment to local sourcing, extending to materials, workers, plant and equipment, where possible. 	
<p>Noise and Vibration:</p> <ul style="list-style-type: none"> The study area boundary of 300m is not justified - reasoning behind why impacts beyond this distance are unlikely is not explained and should consider the night-time construction activities proposed. The impacts assessment from construction should consider other sensitive receptors beyond dwellings and include schools, hospitals, and so on. A number of methodological issues are present, including, for example: <ul style="list-style-type: none"> -In line with national policy, assessment of impacts associated with the road traffic scheme should also be assigned specifically to LOAEL and SOAEL's defined in PPG. -There is no reference to topography data being applied in the modelling used. There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform Thurrock Council and other stakeholders of the significance of impacts identified. The mitigation options should explore means of designing out adverse noise effects, through for example changes to the vertical alignment or of speed restrictions. 	
<p>People and Communities:</p> <ul style="list-style-type: none"> The PEIR does not give adequate consideration to the NPPF and the presumption of sustainable development for communities, and especially falls short of demonstrating that the benefits are not significantly outweighed by adverse impacts. The PEIR takes a selective approach to identifying proposals for new employment, residential and leisure development within the local and wider region, and numbers that are provided are not properly evidenced. The PEIR refers to lower life expectancy, higher rates of cardiovascular deaths and worse levels of excess weight, some of which is evidenced and some of which appears to be anecdotal. A number of other issues have been identified related to potential effects and mitigation measures (see relevant section in Appendix A). 	
<p>Road Drainage and Water Environment</p> <ul style="list-style-type: none"> Key relevant guidance – such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991) – have not been reference in this section. The PEIR does not make it clear if the EIA will be underpinned by a whole system water balance approach 	

PEIR Chapter	RAG
<ul style="list-style-type: none"> The PEIR lacks important information on existing flood defences and their condition 	
<p>Climate:</p> <ul style="list-style-type: none"> The United Kingdom Climate Projections 2018 (UKCP18) have been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. It is unclear on the scope of Greenhouse Gases to be assessed. 	

8 The DCO Process and Adequacy of Consultation

8.1 Introduction

8.1.1 This chapter considers the DCO process, incorporating the environmental impact assessment, together with a commentary on the adequacy of consultation.

8.2 DCO process

8.2.1 In relation to the DCO process, and related EIA work, which has been carried out to date, there are three areas of potential concern which should be highlighted at this stage, as follows:

- Changes to the application boundary;
- Changes to the scheme; and
- Reporting the effects of transport and traffic.

The application boundary

8.2.2 In the Scoping Opinion (December 2017), the Secretary of State for Communities and Local Government provided his views on scoping the environmental effects based on the scheme that was submitted at the time. The area covered by the application 'red line' boundary for the Consultation Scheme has significantly increased, predominantly in the Borough - from 12.76 to 21.45 square km equating to an increase of approx. 68% - from that which was presented in the HE's Scoping Report and upon which the Scoping Opinion is based.

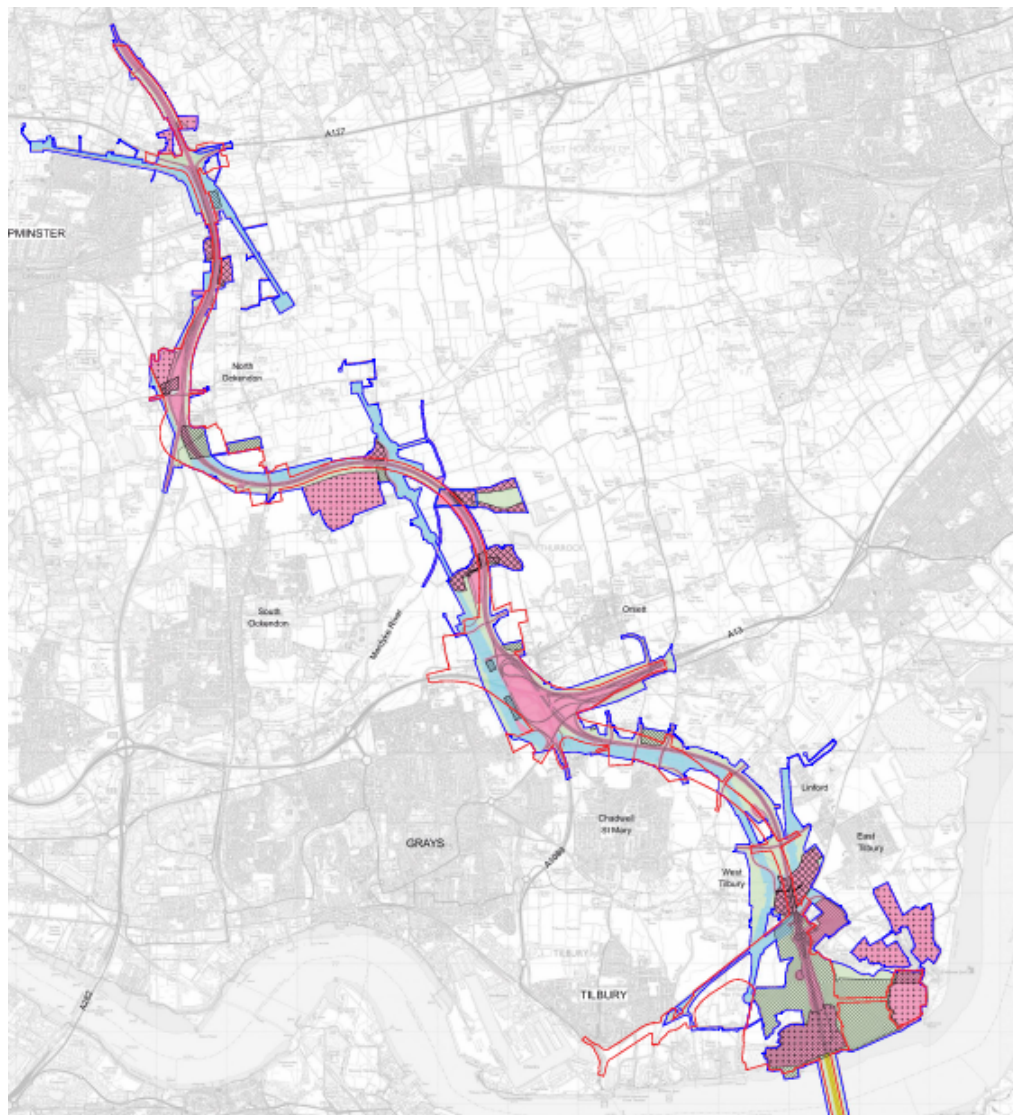
8.2.3 The map extract (Plate 8.1) below shows the application boundary for the scheme as it existed at the time of the publication of the Scoping Report in red, the application boundary which has been used for the Consultation Scheme is shown in blue.

8.2.4 Whilst it is acknowledged that there is a need for flexibility, and the Scoping Opinion notes this, section 2.3.15 of the Opinion also notes that "*...if the Proposed Development changes substantially during the EIA process and prior to submission of the application the Applicant may wish to consider requesting a new scoping opinion*". This point is particularly important given the recent changes to the EIA Regulations which place a greater emphasis on the content of Scoping Opinion. Regulation 14(3)(a) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017 No.572) states that "*...the environmental statement... must, where a scoping opinion has been adopted, be based on the most recent scoping opinion adopted (so far as the proposed development remains materially the same as the proposed development which was subject to that opinion)*".

8.2.5 Given the increase in area covered by the Consultation Scheme, it is suggested that the EIA Scoping Exercise was undertaken prematurely as noted in Para 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.”

Plate 8.1: DCO application boundaries: Consultation Scheme (blue line) and LTC scheme which was the subject of EIA Scoping Opinion



Scheme changes

8.2.6 A short exercise has been undertaken to review the LTC scheme which was the subject of the Scoping Opinion and compare this with the Consultation Scheme. It is considered that there have been several significant changes to the LTC scheme since the publication of the Scoping Opinion, as follows:

1. **Removal of Tilbury Link Road from the Consultation Scheme:** the LTC Scoping Report cited the purpose of the link road as being to

“improve traffic flow and provide an alternative route for HGVs” (p. 38) as well as having the potential to offer substantial local benefits to the Borough. This removal of the road is considered to be material and likely to give rise to new or a change in environmental effects identified in the Scoping Opinion.

2. **Reconfiguration of A13 Junction:** the LTC junction with the A13 has been significantly altered, shifting the bulk of the land required closer to the north-east of Grays. There is also additional land-take east of the A13 junction and provision for the Rectory Road Diversion. This change is considered to be material and likely to give rise to new or a change in environmental effects identified in the Scoping Opinion.
3. **Relocation of pylons and accommodation of Overhead Lines (OHLs):** additional land has been identified for the accommodation of relocated OHLs and associated pylons required by the Consultation Scheme. As OHLs can have significant impacts on landscape and visual amenity, this change is considered to be material and likely to give rise to new or a change in environmental effects identified in the Scoping Opinion.
4. **Rest and Services Area (RaSA) at Tilbury Junction (East Tilbury):** the provision of the RaSA at Tilbury Junction, discussed in section 5.4 of this report, is an addition to the scheme covering a substantial area of land in the East Tilbury area. The addition of the RaSA is considered to be material and likely to give rise to new or a change in environmental effects identified in the Scoping Opinion.
5. **Additional land-take around East Tilbury:** areas around East Tilbury have been included in the new scheme in order to accommodate areas, particularly, for Potential Relocation site for the Translocation of Protected Species, and a further large unidentified area. The addition of this land is considered to be material and likely to give rise to new or a change in environmental effects identified in the Scoping Opinion.

Reporting the effects of transport and traffic

- 8.2.7 The Scoping Opinion states at para 3.3.2: *“...while the structure of the ES remains for the Applicant to decide, the information that would be expected to appear in a Transport chapter must be provided in the ES. The ES must demonstrate where the information gathered as part of the traffic assessment has been applied to other assessments within the ES. The absence of a Transport chapter, supported by a Transport Assessment, has been noted by Essex County Council (ECC), the London Borough of Havering (LBH), and Thurrock Council (TC). The Inspectorate considers that these concerns should be addressed.”*
- 8.2.8 The PEIR addresses certain aspects relating to the effects of traffic and transport (eg PRoW severance, road user impacts and driver stress are considered in the “People and Communities” chapter) however, as it is preliminary in nature, it is difficult to determine if the information gaps relating to this topic in the PEIR are omissions or due to lack of information at this stage. It is recommended that details are sought from HE as per the requirements of para 3.3.2 of the Scoping Opinion.

Recommendation

- 8.2.9 Overall, it is considered that the increase in area covered by the application boundary and the changes to the scheme since scoping are material and likely to give rise to new or different environmental effects as identified in the Scoping Report. For this reason, it is considered that the Consultation Scheme, or any updated scheme, should undergo a further scoping exercise to ensure that all potential likely significant environmental effects are identified and that any Scoping Opinion will reflect the scheme for which consent is being sought.

8.3 Adequacy of consultation

Overview

- 8.3.1 This section examines factors which the Council may wish to consider in relation to determining the adequacy of this round of formal consultation.
- 8.3.2 On submission of the DCO application, the Council will be requested by the Planning Inspectorate to provide an adequacy of consultation statement. This exercise will require the Council to review the HE's Consultation Report and provide a statement as to whether or not HE has complied with sections 42, 47 and 48 of the 2008 PA which relate to the duty to consult relevant local authorities and other statutory consultees, the local community as well as publicising the application.
- 8.3.3 Para 7.1 of PINS Advice Note 2: The role of local authorities in the development consent process, Feb 2015, relates to concerns about the pre-application consultation:
- “If members of the public raise issues or concerns about the quality of a developer’s consultation during the preapplication stage, the Planning Inspectorate will advise them to contact their local authority. Relevant local authorities will be invited to submit an adequacy of consultation (AoC) representation.... If they wish, local authorities can append any correspondence received about a developer’s consultation from members of the public or others to the AoC representation if they consider it could be useful to the SoS’s decision about whether or not to accept the application for examination.”*
- 8.3.4 At this pre-application stage, if there is sufficient cause for concern about the adequacy of consultation, the Council may wish to contact PINS top seek corrective action.

Importance of consultation

- 8.3.5 Consultation is an essential element of the DCO process. In addition, as noted in section 4.5 above, HE's Strategic Business Plan, October 2017 includes stakeholder consultation as a means of improving its planning process “...we will improve our planning for the next decade and beyond. This will mean:
- Taking a more responsive and coherent approach to planning – one that is better understood by our customers, staff, suppliers and partners

- Giving stakeholders more of a say in how we develop the network at a national, route and local level
- Exploring new and better ways to stimulate growth
- Encouraging innovation, especially to exploit the benefits of vehicle and roadside technology
- Ensuring our customers have more of a voice in determining investment priorities and how work is delivered
- Providing for the needs of cyclists, pedestrians and others who walk or ride on, near or across the network.”

8.3.6 Test 7, set out in chapter 4, seeks to determine whether the consultation which has been undertaken is adequate and appropriate. The factors to be considered here are likely to be in relation to:

- SoCC;
- Consultation materials; and
- Equalities and engaging with harder to reach groups.

8.3.7 It is understood that the Council has compiled information in relation to these factors and will present its case directly to HE. It should be noted that, in relation to equalities and engaging with harder to reach groups, the volume of information being consulted upon, much of which is technical in nature, is likely to prove a challenge for many sectors of the community to engage fully in the statutory consultation.

9 Recommendations and Next Steps

9.1 Recommendations

9.1.1 A large number of recommendations is presented in this report, the intention is that these should be collated, agreed with the Council and used as a checklist to ensure that the Council's concerns are addressed as the LTC design and assessment work progresses.

9.2 Next Steps

9.2.1 The nature of the DCO process is to encourage close and meaningful engagement with the promoter as the design proceeds. A programme of engagement with HE is suggested as the next steps in the process, which it is recommended should cover the following key areas:

- Emerging Local Plan and delivering growth;
- Option testing/traffic modelling;
- Treatment of northern portal;
- Specific aspects including: Tilbury Link Road, Junctions, Motorway Rest Area, passive provision for potential future development;
- Health and environmental impacts;
- Construction phase works and effects, including off- and on-site enabling works, and related mitigation (including the Code of Construction Practice); and
- Securing local benefits.

9.2.2 It is anticipated that the above will be used as a reference to inform the on-going technical meetings being held with the HE team.

9.3 Potential Effects on Council Operations

9.3.1 One final element which requires consideration as a next step is in relation to the effects of the LTC scheme on the Council's day to day operations, particularly in relation to public sector resource spending. Such matters might include:

- Traffic management and controlling rat-running;
- Waste collection/road sweeping;
- Additional pressures on Council's social services;
- Controlling and designing for crime.

9.3.2 In the first instance, it is suggested that the Council may wish to consult with other local authorities which may have experienced similar works and potential effects and draw upon that experience.

Appendix A Review of LTC PEIR

A.1 Introduction

A.1.1 This appendix sets out a review of the PEIR topic chapters.

A.2 PEIR Chapter 6: Air Quality

Air quality modelling

A.2.1 The modelling has been undertaken in accordance with DMRB procedures which identify affected roads as where there is a change in traffic of more than 1,000 AADT. Even using these criteria, the PEIR has not assessed all road links/receptors where this change occurs (Para 6.3.18) and therefore there may be locations which have significant impacts that have not been assessed, which limits the ability of Thurrock Council and other stakeholders to fully understand the significance of effects of the proposal.

Measurement of pollutant concentrations

A.2.2 The traffic data has only been considered where the change is more than 1,000 Annual Average Daily Traffic (AADT) (and presumably the same methodology will be used for the ES). This is higher than the thresholds advised by the Institute of Air Quality Management (IAQM) in Land-Use Planning & Development Control: Planning For Air Quality which are 500 AADT outside of an AQMA and 100 AADT inside for considering when an assessment is necessary. Changes of these magnitudes could lead to significant changes in pollutant concentrations especially if combined with greater changes on adjacent roads. By not considering smaller changes, the assessment has not complied with Paragraph 5.11 of the NNNPS regarding impacts on AQMAs, and fails to fully inform Thurrock Council and other stakeholders.

AQS Objectives

A.2.3 In the answer to the NNNPS requirement 5.7, Table 6.3 it is stated that a definitive judgement on significance has not been undertaken as it would require an assessment of all locations which are likely to exceed AQS Objectives, and not just worst case locations (i.e. the locations that have been assessed in the PEIR). Worst case locations should also include those locations that are likely to exceed AQS Objectives and therefore the PEIR is deficient in the assessment of significance that has been provided.

Changes thresholds

A.2.4 The proposed significance criteria for the assessment is also flawed in that it allocates a threshold of the number of receptors affected for small and medium changes below which the change would not be considered significant, i.e. there can be 9 medium changes, 29 small changes and an infinitive number of imperceptible changes where the objective is exceeded, and the scheme would be judged not to be significant. By applying the same number thresholds to all Highways England schemes there is potentially an inconsistency in the allocation of significance between different schemes with different numbers of receptors, which may fail to inform Thurrock Council and other stakeholders.

PM_{2.5} concentrations and the Clean Air Strategy

A.2.5 The PEIR has not considered changes in PM_{2.5} concentrations and instead has related the likely impact of the changes in PM_{2.5} concentrations to changes in PM₁₀. The justification for this is that PM_{2.5} concentrations are likely to be well below the current objective of 25 µg/m³. This does not take into account the World Health Organisation guideline value of 10 µg/m³. The draft Clean Air Strategy published for consultation in May 2018 by Defra stated that: *We will reduce PM2.5 levels in order to halve the number of people living in locations where concentrations of particulate matter are above 10 µg/m³ by 2025.* Given this aim, and the known health effects of PM_{2.5}, it is considered that the PEIR is deficient in not considering this pollutant explicitly against the WHO guideline value and this needs to be undertaken for the ES. For Thurrock Council, this means the information provided does not contain a key component of analysis that could affect air quality in the Thurrock area.

Nitrogen and acid deposition

A.2.6 Only the change in NO_x concentrations is provided at sensitive ecological receptors; there is no data provided on nitrogen or acid deposition at the receptors which is a significant omission. At Cobham Woods SSSI, Shorne and Ashbank Wood SSSI, Hailing to Trottscliffe Escarpment SSSI the increase in NO_x concentrations is very much larger than 1% of the assessment level. Without the corresponding increase in nitrogen and acid deposition at these sites it is not possible to make a correct assessment of the likely significant effects of the scheme, which fails to inform Thurrock Council and other stakeholders.

NO_x concentration inconsistency

A.2.7 The increase in NO_x concentration is compared to a threshold value of 0.4 µg/m³ which is inconsistent to the generally accepted threshold of significance of 1% of the assessment level, i.e. 1% of 30 µg/m³ is 0.3 µg/m³. Inconsistency with such thresholds makes it harder for Thurrock Council and other stakeholders to form informed opinions based on data that can be compared to accepted standards and other schemes.

Construction phase traffic effects on air quality

A.2.8 No assessment of construction phase traffic effects has been carried out in the PEIR. For the majority of schemes increases in construction traffic, when averaged over a full calendar year, are normally not significant. However, given the extent of the scheme this may not be the case for the LTC and therefore the PEIR would appear deficient in this regard. A full assessment of construction phase traffic will be necessary in the ES to inform the Council and other stakeholders of the full extent of effects across the 7-year construction phase of the scheme.

Model Verification – annualization of monitoring data

A.2.9 Defra TG(16) guidance require that the model traffic year, monitoring data year and meteorological data year are all the same. The PEIR modelling has been verified using 2016 traffic data and meteorological data, but monitoring data from a variety of years. It is claimed that where the data is not from 2016, it has been annualised in accordance with TG(16) Box 7.9. This procedure is for annualising part year data to a full year. It does not translate the data from one year to another (Paragraph 6.3.10

says that the HE monitoring data is from 2013 – 2017), and there is no accepted procedure for doing this. The model verification is therefore flawed as it does not compare actual monitored data from the same year as the traffic and meteorological data. It needs repeating using the correct procedures. As the model verification is fundamental to the prediction of pollutant concentrations it calls into doubt the predictions made in the PEIR.

Model Verification – model verification factor

A.2.10 The resultant model verification factor is also unreasonably high for two of the 13 verification zones (7 and 10) which indicates that the model is not performing very well in these locations.

Adjustment factors for NO_x and NO₂ concentrations

A.2.11 Background concentrations of NO₂ have been adjusted by comparing monitored background NO₂ concentrations with Defra predictions. The same adjustment factor has been applied to background NO_x concentrations. As NO_x and NO₂ relationships differ, a separate adjustment factor should have been applied to the NO_x background concentrations, not the same one as for NO₂.

HE Guidance Notes

A.2.12 All the HE quoted guidance notes (IANs) are out of date when compared to the latest vehicle emission factors issued by Defra. Paragraph 6.3.43 states that updated speed band emission factors have been used, but as an update to IAN 185/15 has not been published by HE it is unclear what has been done. Additionally, paragraph 6.3.44 states that future uncertainty in vehicle emission factors has been accounted for by undertaking a LTT gap analysis. The procedure for this is described in IAN 170/12v3 published in November 2013. From page 5 of IAN 170/12v3 it is clear that there was an intention to update the IAN as it was effectively out of date, which has not been done. It therefore appears that out of date guidance has been used to correct the assessment made by following out of date guidance.

NO₂ concentrations at human health receptors

A.2.13 The results of the modelled annual mean NO₂ concentrations at human health receptors in Thurrock is that they are either predicted to increase by an imperceptible amount or decrease where the objective is exceeded. However, these results should be seen in the context of the deficiencies and omissions in the modelling.

Mitigation

A.2.14 The only reference to specific mitigation in the Chapter 6 of the PEIR is in relation to construction dust emissions and Non-Road Mobile Machinery and standard mitigation measures are proposed for these activities. No reference is made to additional mitigation measures that could be adopted such as all deliveries by Euro VI compliant HDVs; all construction traffic to be Euro 4 petrol/Euro 6 diesel, the use of freight consolidation or the provision of transport for construction workers etc.

A.2.15 If the results of the ES are the same as for the PEIR for the operational effects, HE do not intend to provide any specific air quality mitigation for the project. In paragraph 6.6.51 it is stated that: *'The preliminary air quality assessment undertaken here suggests that the Project is unlikely to require air quality-specific mitigation...'* and *'If*

the full detailed assessment predicts a significant impact, mitigation will be required as part of a Scheme Air Quality Action Plan'. This suggests that if there are no significant impacts predicted in the ES, then no operational traffic mitigation will be provided. Furthermore, unless the project provides specific commitments to mitigation measures in the design, e.g. the provision of electric vehicle charging points, then HE are not intending in providing them.

A.3 PEIR Chapter 7: Cultural heritage

A.3.1 The review of this topic has been split up to cover: the surface historic environment (in this section); and archaeology (in the following section).

Harm to historic environment

A.3.2 Throughout the PIER, it is concluded that the business case for the route as shown at present will outweigh any harm to the historic environment. This conclusion is not evidence based and implies an inflexible approach which disregards heritage implications. A distinction between hypothesis and conclusions should be made within future reports.

Historic landscapes

A.3.3 The report correctly explains that there are expected to be interrelationships between the potential effects on cultural heritage and other disciplines reported on in the PIER. Whilst this is accurate, it is important that aspects such as the analysis and interpretation of historic landscapes is considered within both the Cultural Heritage and Landscape chapters to better inform the conclusions of each discipline. Similarly, potential impacts of noise and vibration must also be analysed and interpreted within the heritage section given these have the potential to alter how we experienced and interpret heritage assets - as well as potentially cause damage to their fabric in the case of vibration. This approach is supported by Historic England's GPA3 – Note 3 (Second Edition) The Setting of Heritage Assets.

Heritage Panel

A.3.4 Highways England is advised to work in partnership with all relevant local planning authorities and consider forming a dedicated heritage panel to ensure a proactive, consistent and engaged approach to the scheme. This is important when agreeing the correct methodology as well as considering heritage assets on, or near, district boundaries. Further to this, it is important that meetings regarding heritage should include heritage representatives from all relevant stakeholders including Historic England and neighbouring authorities. On occasion, it may also be fortuitous to include representatives from landscape and other disciplines.

Methodology – national guidance

A.3.5 With regards to methodology, the PIER does not appear to reference nationally recognised guidance relating to heritage such as Conservation Principles, GPA 2 – Managing Significance in Decision Taking in the Historic Environment or GPA 3 – The Setting of Heritage Assets.

Methodology – appropriateness of study area

A.3.6 The PIER has opted for a 1km study area surrounding the site and states that the appropriateness of this was demonstrated by cross referencing a preliminary Zone of Theoretical Visibility and recorded heritage assets. No evidence has been seen to-date to evidence this conclusion and as such the appropriateness of this conclusion cannot be verified. Unless it can be demonstrated otherwise a 2km study area is considered more appropriate. It is also noted that the Figures 7.1 and 7.2 in Volume 3 referenced in Volume 1 which show the locations of designated and non-designated heritage assets was not issued to Place Services and as such has not been assessed.

Further information required

A.3.7 In relation to further information required, a 100m study area for collecting condition information on designated heritage assets is not considered wide enough. It is also important to note that interior inspections of many buildings will be required at an early stage of the assessment to better understand direct and indirect impacts upon these heritage assets. This is important to allow for the condition of properties to be fully understood so that conclusions are accurate and reliable as well as to assess the impact of the proposed from interior spaces (views and noise). One such indirect impact will be the requirement for secondary glazing to historic properties due to noise implications upon residents and this impact this will have upon the significance of these assets. This impact must be identified and assessed within future reports. A Level 3 Building Recording, in accordance with Historic England's Guidance, must be provided at an early stage for all designated heritage assets proposed for demolition so that their special interest can be fully understood.

Coalhouse Fort and Tilbury Fort

A.3.8 Coalhouse Fort is located 4km to the east of Tilbury Fort. Built in 1867–1874, the fort was part of the defence against the potential threat of French invasion. It is listed as a scheduled monument and is owned by the Council. Coalhouse Fort is a Scheduled Ancient Monument, an important heritage asset and popular tourist attraction. The fort is included in the Heritage at Risk Register and the area adjacent to the fort is an open space recreational area and the surroundings support rare botanical species, wildlife and birdlife.

A.3.9 It is understood that the Council is considering opportunities to develop Coalhouse Fort into an events facility and visitor attraction and has been awarded funding to assist with the preparation of a business plan.

A.3.10 The Consultation Scheme is likely to give rise to significant adverse effects and is contrary to the Policy CSTP24 of the Council's adopted Core Strategy committed to preserving or enhancing the historic environment at Tilbury Fort and Coalhouse Fort.

A.3.11 It is recommended that HE engages proactively with the Council on scheme design changes which need to be made to remove the significant adverse effects on this asset.

A.4 PEIR Chapter 7: Cultural Heritage (Archaeology)

Scheduled Monument of Grey Goose Farm

- A.4.1 Within the Borough, the Historic Environment Record shows the proposed route of the Consultation Scheme as affecting a large area of archaeological deposits extending from Stifford Clays Road, south to the area between West and East Tilbury. This comprises a large complex of probably related archaeological sites, of multi-period date, known from aerial photograph, which includes the Scheduled Monument of Grey Goose Farm at its northern end. This Scheduled Monument comprises extensive complexes of features recorded from aerial photos and is the largest Scheduled Area within the Borough. A large part of this nationally important monument will be destroyed by the proposed scheme along with a significant proportion of the remainder of the non-designated assets associated with it. The level of assessment needs to define the significance of not just the Scheduled Monument, but also other elements of the complex that may be of national significance, as well as understanding how the whole complex is or is not related.
- A.4.2 For this reason, it is considered that the analysis lacks the integral consideration of the interaction of these non-scheduled and scheduled heritage elements. These cropmark complexes have been interpreted as multi-period landscapes from the prehistoric through to the early medieval period.

Gravel terrace deposits

- A.4.3 There is concern that the sensitive nature of the area of the gravel terraces and interface with the grazing marsh is not fully acknowledged with the submitted documentation. The route of the Consultation Scheme will also cut through the highly sensitive gravel terraces and former historic grazing marsh on the northern side of the Thames. This area contains important deposits dating from the Palaeolithic through to the modern day. It is essential that the significance of the historic environment assets and deposits within this area and the impact of the proposed scheme on these is understood to allow the inspector to make an informed decision.

Baseline information limitation

- A.4.4 Joint discussions on cultural heritage have taken place with Highways England, Historic England and ECC historic environment advisors at which the need for an appropriate level of assessment to ensure that the significance of, and impact on, the historic environment is fully understood. The PEIR document identifies that a programme of desk-based assessment is to be undertaken to assess the extent and significance of the historic environment assets. In addition to the desk-based assessment, a programme of aerial photographic assessment has been commissioned. Similarly, specialists in geo-archaeology, Palaeolithic and military specialists are to be commissioned. This is fully supported and will help to obtain a basic baseline of the heritage data, however, it is unlikely that this will provide enough detail to assess the significance of the heritage assets.

Setting of significant non-designated assets

- A.4.5 The PEIR states that only the setting of designated assets such as listed buildings and Scheduled Monuments will be assessed, however, it is recommended that this

should be extended to assessing the setting of significant non-designated assets such as the long mortuary enclosure and other enclosures within the cropmark complex which may be of a similar importance.

Future consultation

- A.4.6 As part of the future consultation by HE or its consultants it is recommended that joint meetings with the heritage advisors both from national and local authority bodies takes place. This would ensure a consistent approach to understanding the historic environment implications of the scheme. Previous discussions with the LTC consultants have identified concerns that an appropriate assessment is to be undertaken. The implications have been that the proposed assessment methodology would use a minimal level of intrusive survey to assess the significance of the heritage assets to be impacted, which is regarded as deficient to provide an appropriate level of understanding of the impact of the scheme.
- A.4.7 Without the trial trenching it is very difficult/if not impossible in some cases to provide a date for the deposits identified, especially from aerial photography, or the complexity of the surviving archaeology. By undertaking trial trenching both the date can be defined, and the extent and complexity of the deposits can be understood. This allows an informed understanding of the significance of the assets identified, their importance, and the potential cost if these have to be recorded due to the proposed scheme (i.e. by open area excavation).

A.5 PEIR Chapter 8: Landscape and Visual Impacts

Assessment methodology

- A.5.1 It is not clear which guidance the assessment will follow, stating that both the Design Manual for Roads and Bridges Volume 11, Section 3, Part 1 and associated Interim Advice Notes 135/10 and the Guidelines for Landscape and Visual Impact Assessment 3rd Edition will both be considered. As the project is a road scheme the applicant should undertake a IAN 135/10 Detailed Assessment but they should make it clear where they deviate from this approach or where parts of the assessment is based on GLVIA3.

Determining receptors and the significance of effects

- A.5.2 The methodology set out within the PIER does not clearly set out how levels of sensitivity, magnitude (nature of change) have been defined and how these judgements may be combined within the LVIA to establish the likely level of significant effects for each receptor. It is not clear how HE has selected receptors, but if the assessment is based on a narrow 2km study area, more distant receptors may be missed. The PEIR is not clear about what receptors are located within the 5km study area and if these are scoped in or out of the assessment.

Engagement on key issues

- A.5.3 The PIER does not clearly state which parties have been or will be consulted on the developing design of the LTC, the assessment methodology, extent of study area, likely effected landscape and visual receptors.

Other landscape considerations

A.5.4 Potential effects on National Character Areas, Marine Character Areas, Special Landscape Areas (Mardyke Valley and Langdon Hills), landscape features and tranquillity have not been set out in the PIER. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the Thurrock Landscape Capacity Study.

Engagement on receptors

A.5.5 Visual effects should be assessed for receptors within 5 km of the proposed development, including 'distant' viewpoints including from the settlements of Mucking, Orsett and Bulphan, strategic and local views as covered under Policies PMD2, CSTP23, CSTP28 and those listed in Paragraph 8.3.13 of the PIER. The Applicant should consult with Thurrock Council on which visual receptors to include or 'scope' out of the LVIA.

Mitigation

A.5.6 Early indication of mitigation proposals would suggest they may not be adequate or effective in the operation phase. At this early consultation stage and not knowing the full extent of likely landscape and visual effects, it is difficult to determine if the proposed mitigation is sufficient or not. Mitigation to reduce the likely effects of the operational proposed development on landscape and visual receptors along with any proposed off-site landscape should be clearly stated. The current proposals focus on a narrow corridor following the scheme route. Mitigation should directly respond to specific landscape or visual effects of the proposed development and this may result in mitigation extending beyond 2km of the route.

Future engagement on landscape mitigation

A.5.7 It is recommended that HE should work closely with its landscape and ecological consultants to design a suitable mitigation scheme, actively engage with land owners through their community engagement teams. Mitigation proposals should be informed by Thurrock Council Landscape Capacity Study (2005) (relevance Landscape Character Types/Areas), A landscape Strategy for Thurrock 2002-2017, Greengrid Strategy and the Green Infrastructure Plan (2006) in accordance with Policy SSO12. Proposed mitigation and off-site landscape proposals should integrate with the Land of the Fanns Landscape Partnership projects and GreenArc partnership, helping to deliver objectives of their Landscape Management Plan or projects.

A.6 PEIR Chapter 9: Terrestrial Biodiversity

Potential significant effects missed and resultant inflation of land requirement

A.6.1 The PEIR does not identify the potential construction impact from temporary loss of functional land potentially used by SPA species during construction. There is also potential for the Habitats Regulations Assessment to conclude likely significant effects to the Thames Estuary and Marshes SPA, and further compensatory habitat provision may be required during construction phase, which could result in a greater land requirement in the Thurrock area and others.

Biodiversity Net Gain

A.6.2 No commitment has been made within the proposed mitigation for the provision of Biodiversity Net Gain. To comply with the NPPF 2018, Highways England policy, and local policy, the scheme will need to demonstrate Biodiversity Net Gain. The scheme should ensure ecological, landscaping, and flood compensation areas contain high quality habitats which are appropriate for the locality, and Thurrock Council and other stakeholder should be consulted on the appropriateness of these.

Tunnelling material and Goshems Farm

A.6.3 It appears excavated tunnelling material may be placed on the north bank of the River Thames. Further information is required to support the idea that this the most appropriate place for the disposal of excavated tunnelling material next to the option of transport the excavated material elsewhere, such as in Crossrail and Wallasea Island RSPB reserve examples. Including this in the analysis would provide the Council and other stakeholders with some assurance that other options for the disposal of excavated material had been considered, which could produce a more sustainable outcome for terrestrial biodiversity.

Impacts on Barn Owls

A.6.4 Barn owls survey undertaken only occurred up to 500m from the application boundary. This is contrary to industry standard of 1.5 km. Traffic collisions are known to result in the depletion of local breeding populations within 1.5 km of a major trunk road causing the permanent loss of breeding barn owls within 3 km wide corridors. The survey approach taken for LTC is likely to result in an underestimate of impacts to the population within Thurrock, and therefore inadequate measures to mitigate and compensate for impacts.

Thames Terrace Grassland habitat

A.6.5 The development of the Consultation Scheme will result in the loss of Thames Terrace Grassland, a unique habitat only found in south Essex, which supports a diverse invertebrate assemblage. Loss of this habitat, some of which from within the non-statutory designated site Low Street Pit LWS, will deplete this locally important habitat. As permanent mitigation, it is proposed to replace this habitat elsewhere but given the specific environmental requirements for this habitat to form, over nutrient-poor sand and gravel substrates¹⁶, successful recreation may be difficult to achieve. Further information should be provided to the Council and other stakeholders to give assurance of this approach, and that alternatives have been considered.

9.4 PEIR Chapter 10: Marine Biodiversity

Desk study survey data used in PEIR

A.6.6 The Marine Biodiversity chapter is informed by a desk study only, and it is proposed that a suite of surveys and more detailed desk-studies will inform the ES. This PIER chapter therefore does not provide as much up front information as other PIER chapters, and as such the determination of impacts and mitigation are likely to be less

¹⁶ Buglife (2013) The state of brownfields in the Thames Gateway

accurate and reliable for Thurrock Council and other stakeholders to effectively engage with.

Conservation of Habitats and Species Regulations 2017

A.6.7 Reference is made in Table 10.1 to the Conservation of Habitats and Species Regulations 2010, where the most up to date regulations are from 2017. This error should be corrected to provide assurance to the Council and other stakeholders that the most relevant guidance/ legislation is being considered.

Zone of Influence – International/ European Designated Sites

A.6.8 There is a lack of clarity on the Zone of Influence of the project for marine biodiversity, and therefore the justification of the European sites taken forward for assessment. It is typically expected that a source receptor pathway justification be provided. More detail should be provided in the baseline determination section to allow the Council and other stakeholders to comment and agree method.

Zone of Influence – National Designated Sites

A.6.9 There is a lack of clarity on the Zone of Influence of the project for marine biodiversity, and therefore the justification of the National Sites taken forward for the assessment. The assessment should use the Natural England Impact Risk Zones to select Sites of Special Scientific Interest to be taken forward for assessment. More detail should be provided in the baseline determination section to allow the Council and other stakeholders to comment and agree method.

PEIR commitments

A.6.10 Table 10.2 identifies the requirements of the National Networks National Policy Statement (NNNPS). It states that the *PEIR identifies the opportunities taken to protect and enhance biodiversity and geological conservation interests*, but does not provide opportunities for enhancement for marine receptors, as suggested, which falls short of providing a level of betterment that the Council believes the scheme should provide.

A.7 PEIR Chapter 11: Geology and Soils

Intrusive investigation and monitoring

A.7.1 The chapter states that “an intrusive investigation will be carried out” (Table 11.2). However the scope of that investigation and also the longer-term monitoring of groundwater and land gas conditions is not defined. The risk of this, depending on the duration of the post-investigation monitoring, is that adequate baseline information is not collated, which should be included for obtaining any seasonal, atmospheric or tidal variations to ensure that the risk assessments undertaken thereon consider worst case conditions that the Council and other stakeholders can fully consider.

Minerals Safeguarding Assessment commitments

A.7.2 The chapter states in Table 11.2 that a mineral safeguarding assessment will be prepared and discussions held with the regulatory authorities. This should be undertaken at an early stage, such that any restrictions or requirements that could

impinge on land outside the footprint of the proposed works are known and that any subsequent additional studies, such as transport assessments, noise, dust etc. are taken into consideration. Minerals safeguarded may be required also for other uses including landfill restoration or other construction activities and allowance would need to be made other than for construction of the development.

Preliminary Sources Study Report (PSSR)

A.7.3 Section 11.3 Methodology clearly states that the study is informed by a PSSR. A PSSR has not been provided so it is not possible assess the detail of the chapter as a consequence at this stage. This document will be required as part of subsequent ES together with any additional supporting studies and assessments.

Study area

A.7.4 The chapter states (11.3.3 and 11.4.49) that the preliminary site walkover “focused on areas of potential interest”. This is then contradictory with the definition of study area in subsequent section 11.3.4 which suggests that the “field assessment” included “the land within the development boundary plus a 250m buffer.” The buffer zone has been taken as being 250m as being a distance over which significant effects can reasonably be thought to have the potential to occur. In the case of areas of potential contamination this should be reviewed in light of the geological and hydrogeological setting and may need to be increased especially where such higher risk features exist just outside the 250m buffer zone.

Hydrogeology and potential for leachate

A.7.5 With regards to hydrogeology, no commentary is provided with respect to potential perched groundwater in made ground, and/or leachate within landfills. Leachate may present a significant risk both during construction and operation should the works result in uncontrolled breaches of any containment or protective layers.

Risk of natural cavity occurrence

A.7.6 No comment is made on the risk of natural cavity occurrence which may be masked by quarrying activities or overlying deposits including made ground/landfill. In addition, it should be recognised that Soluble rocks are present at depth north of the river and as such dissolution features could be present. This should be expanded upon such that the risk of triggering unstable ground in neighbouring ground can be appraised.

Mitigation

A.7.7 Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such no commentary can be provided at this stage. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided

A.8 PEIR Chapter 12: Materials

Transportation of excavated materials

- A.8.1 There is insufficient detail on the possible use of the river for the movement of materials – this should have received more than a superficial reference (Volume 1 paragraphs 2.18.30 and 12.5.8) and contains only passing reference to the supposed absence of feasible jetty or wharf provision.
- A.8.2 At Section 12 Table 12.4, it is assumed that aggregate alone would amount to 225 million tonnes - by far the largest materials stream. If this material is transported by road (assuming 20t per load) the Project would require 22,500,000 movements.
- A.8.3 The absence of marine logistics for import or export of materials, plant and equipment results in the assumption that all of these will be transported by road – with many hundreds of thousands of movements during the lifetime of the project using strategic and local roads. Fundamentally and significantly the prospect of the tunnel drives occurring from the north (**paragraph 2.18.7**) would result in all tunnel bore excavated material being transported away along the A1089 corridor to the A13 and the tunnel construction material imported along the same corridors.
- A.8.4 There is no recognition of the option to transport material across the river to reuse or disposal sites south of the river, or conversely to import material from suppliers in the south across the river – avoiding adding to congestion at the existing crossing and through Thurrock. Using small 1000t barges would reduce the movement to 225,000 barge visits. In this location on the Thames it would be totally viable to increase the size of barges or vessels.

Transportation of other suitable materials, plant and equipment

- A.8.5 The analysis does not include the movements of other suitable materials, plant and equipment. The likely supply for the TBM and components would be from Continental Europe (often France or Germany). No evidence is given of exploring opportunities to bring this equipment and components in by sea/river and transshipping locally. The Port of Tilbury seems to have been largely ignored.

Transportation by rail

- A.8.6 The use of rail has been dismissed for excavated material but there is no mention about using rail for other materials, plant or equipment, including TBM components. The PEIR does not appear to specify the focus of the rail study or substantiate how the conclusions were drawn. For example, it is not made clear if existing facilities such as the EWS depot to the east of Gravesend reviewed, or if the opportunity to introduce new rail interchange from the Tilbury Loop was considered. The dismissal of the use of rail (either north or south of the river) does nothing to mitigate the impact of transporting everything by road. This continues to assume substantial impacts on the road network in and around Thurrock.

Innovative mitigation of traffic movement effects

- A.8.7 The use of highly sustainable and innovative methods of movements should be appraised – seeking the use of clean fuel and hybrid vehicles within the supply chain and on site – potentially within the worksite boundary and minimising the use of diesel

road vehicles and non-road based plant. Aside from the reference to a Construction Traffic Management Plan (CTMP) there appears no evidence that the massive transport impact on Thurrock during the construction period would be mitigated through the use of low polluting vehicles and plant.

- A.8.8 The opportunity is missed to use the project to drive up standards in road logistics and modernising plant.

Reuse of materials to reduce need for waste transport

- A.8.9 References are made to the waste hierarchy for materials but there is no quantitative evidence of how this approach will minimise resource use. The PEIR does not demonstrate how the reuse within the project of materials has been maximised to minimise the need for off-site haulage and handling. Rather than freely dismissing the possible reuse of materials, significant investment should be made into establishing new practices and innovation to minimise the need for exporting and importing materials. Not maximising reuse through the Project does not minimise the import and export movement of material – leaving Thurrock to suffer the impacts of traffic movements.

Local sourcing of materials

- A.8.10 The PEIR makes statements about the aspiration to source materials locally but no reference is made to the criterion on which these decisions will be made, e.g. price, availability, or other factor. Thurrock Council has no surety that local sourcing would be given proper consideration. This should be extended not only to materials but to workers, plant and equipment – helping to protect local workers and businesses and to minimise the environmental effects of these resource streams.

A.9 PEIR Chapter 13: Noise and Vibration

Study Area

- A.9.1 The study area for the construction phase comprises an area up to 300 m from the development boundary. The PEIR goes on to state that the potential for significant impacts at residential receptors beyond 300 m are unlikely with receptors outside of 300 m to be considered where required. The reasoning behind why impacts beyond this distance are unlikely is not explained and should consider the night-time construction activities proposed which based on lower guidance limits could impact further from the site.
- A.9.2 Furthermore, the assessment of impacts from construction should consider other sensitive receptors beyond dwellings and include schools, hospitals etc as has been stated for the operational study area.
- A.9.3 The operational study area within the PEIR focuses on existing routes that are being bypassed or improved. However, it doesn't consider other affected routes (ie roads not being improved but may have change in traffic flows) as required by DMRB. The PEIR states that this would be undertaken in the ES. Therefore, the full extent of impacts cannot be determined based on the PEIR, which limits the ability of Thurrock Council and other stakeholders to fully understand the significance of effects of the proposal.

Baseline Surveys

- A.9.4 Surveys were undertaken in accordance with the CRTN shortened measurement procedure (3 consecutive hours between 10:00 and 17:00). We would highlight that this procedure is suitable for determining noise levels from a consistent traffic source such as a trunk road. It determines the noise levels over a short time period and uses this to predict the noise levels over an 18 hour time interval. However, in some areas the dominant noise source may not be from road traffic alone or traffic flows at quieter sites are likely to be low and the traffic pattern throughout the 18-hour period may be more variable than compared with the noisier sites where traffic flows are likely to be higher. Therefore, to confirm that the predictive nature of the shortened measurement procedure is robust we would expect to see longer term measurements to be undertaken to confirm the baseline conditions.
- A.9.5 Further surveys would also be required during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation plant and construction during different time periods as it is mentioned that some construction may require extended hours or night-time operations. These should form part of the ES.

Operational Road Traffic Methodology

- A.9.6 The assessment of impacts associated with the road traffic scheme is based on criteria outlined in DMRB. However, in line with national policy these should also be assigned specifically to Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL)'s defined in PPG. The methodology is also not specific in determining the significance level at which point the scheme would provide mitigation measures.
- A.9.7 The calculations have been based on modelling software IMMI and incorporate traffic information. However, there is no reference to topography data being applied in the modelling. We would expect this to be included in the modelling.
- A.9.8 Furthermore, it is not stated if the acoustic model has been validated using the survey data compiled. We would expect this to be undertaken. We note this is mentioned later in section 13.5.3 in that it would be undertaken and presented in the ES but would question if this has been undertaken for the PEIR.
- A.9.9 The PEIR reports potential impacts for two scenarios which are in line with the 'simple' assessment from DMRB. It is not clear why the three scenarios as required for the 'detailed' assessment have not been undertaken at this stage.

Construction and Tunnel Ventilation

- A.9.10 At this stage, no methodology/criteria/assessment have been outlined for impacts associated with construction plant, ventilation tunnel and methods of transport to be used through either road/river. However, these should form part of the ES.

Existing Conditions

- A.9.11 As indicated earlier the baseline surveys would need to be updated to account for different time periods in order to inform construction noise and tunnel ventilation assessments.

A.9.12 Furthermore, for the following road sections, the PEIR reports that no ambient/baseline sound survey data has been collected:

- Along existing A13 between Project and M25 at junction 30
- Along the existing M25 between junction 28 and the Dartford Crossing
- Along the existing A282 between Dartford Crossing and the M25/A2 junction

A.9.13 It is expected that these surveys would be undertaken and the results presented in the ES.

Potential Noise Impacts

A.9.14 Acoustic modelling has been undertaken to determine the impacts in the long-term and short term. However, there is no quantitative description of the number of noise sensitive receptors that could be impacted. The PEIR is generic in stating that receptors could be impacted but doesn't provide a number (i.e. are these a few isolated receptors or a larger number of receptors). This fails to inform Thurrock Council and other stakeholders of the significance of impacts identified.

Mitigation

A.9.15 At this stage the PEIR is generic in its mitigation, with options outlined. There are no specifics of where for example barriers could be positioned to attenuate adverse changes in noise levels.

A.9.16 In the mitigation options, there is no mention of exploring vertical alignment (i.e. keeping a route low within the natural topography to exploit any natural screening and enhancing this by the use of cuttings) or of the potential impact of speed restrictions on reducing noise impacts.

A.10 PEIR Chapter 14: People and Communities

Planning policy and legislative requirements

A.10.1 The consideration of the NPPF is superficial. Only four paragraphs, relating the overall approach of supporting sustainable development under a plan-led system and agricultural land, are referenced. While it is agreed that the NPPF does not amount to a criterion against which every application should be judged, it remains a material consideration.

A.10.2 As drafted, the PEIR does not give adequate consideration to the NPPF and the implications for Thurrock. The PEIR does not appear to have regard to the key NPPF paragraph 11 which sets out a presumption in favour of sustainable development. The critical arm of this policy is in relation to decision taking in circumstances '*where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless: i. the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.*' In the case of the Thurrock, the PEIR does not consider the scheme against the policies of the NPPF as a whole, nor has it been demonstrated that the benefits are

not significantly outweighed by adverse impacts, so it cannot be concluded that the scheme represents sustainable development which should be approved.

Existing environmental conditions

A.10.3 The socio-economic data referred to the PEIR is not the most-recently published information. Furthermore, because it relies on the ONS's annual population survey which is based on very small samples and is notoriously volatile as a result, it does not form a reliable baseline against which to assess the impact of the development. It will be critical for the submission to consider the latest available information in the context of how this sits in the historical trends to understand the true scale of impact.

Commercial and private assets

A.10.4 Assets within 500m of the application boundary are identified in the PEIR. However, no rationale is provided to justify the choice of 500m. The impact of the Consultation Scheme proposal may therefore be greater than assessed.

Development land

A.10.5 The PEIR takes a selective approach to identifying proposals for new employment, residential and leisure development within the local and wider region. While residential development is listed, in fact it gets only two references, under 'other proposed developments of relevance': firstly at Ebbsfleet (14.4.5b) and then secondly under 'the regeneration of Thurrock' (14.4.5g).

A.10.6 Reference is made to proposals for the creation of 3,000 additional homes and 9,000 jobs; however, it is unclear how this has been derived. While there is a reference to the Local Development Framework, as set out in Section 3, the figures cited do not match those set out in Thurrock's development plan and instead understate the scale of both housing and job growth.

Non-motorised users

A.10.7 The PEIR provides a number of tables (14.8-14.11) which sets out the footpaths and bridleways affected by the Consultation Scheme. While references are assigned to them, these references are not used in Figure 14.1 so understanding the potential impact of the Consultation Scheme on these links is challenging.

A.10.8 IN addition, while some routes are noted as not providing 'any key linkages', the criteria used to judge what constitutes a 'key linkage' is not explained. By implication, it suggests that all other routes are deemed to provide 'key linkages'. Under the current classification, there are four key linkages directly affected by the Consultation Scheme and a further three indirectly affected in the Borough. An additional two classified as not key linkages are identified as being indirectly affected.

A.10.9 Therefore, it is not possible to confirm whether the PEIR's designation of the links is correct. Nor is consideration given to the way in which these paths may be used by future development in the Borough which may revise the role played by these links.

Human health and wellbeing

A.10.10 The PEIR refers to lower life expectancy, higher rates of cardiovascular deaths and worse levels of excess weight in the Borough relative to the England average.

While some of this information is clearly sourced, other elements appear more as anecdotes. Given the severity of the issues, for the impacts of the proposal to be understood, the submission will need to deal with these points more comprehensively.

A.10.11 In relation to the future baseline, reference is made to the South East Local Enterprise Partnership's growth ambitions in the period up to 2020. This document does not form part of the development plan and does not cover the period in which the impact of the scheme will be assessed. The NPPF's standard method for local housing needs, which identified a need for over 1,000 homes per annum in the Borough alone, which will include significantly higher annual population growth than that set out in Table 14.4, is a much more reliable basis upon which to assess future impact.

Potential effects and mitigation measures

A.10.12 In view of the above concerns, Table 14.15 which sets out effects and mitigation during construction is lacking in the following areas:

- Development land: the effect of delaying development of both housing and employment land is not identified or any mitigation proposed
- Local and wider economy: the effect of construction on access to the port and associated freight transport movement is not adequately considered
- Community severance: for the reasons set out above, in terms of the nature of linkages affected by the scheme, it is not possible to understand whether the potential mitigation proposed will be sufficient.
- Changes in amenity for local residents: concerns over the negative impacts are set elsewhere in this report, particularly in relation to air quality, noise and landscape.

A.10.13 In relation to Table 14.16 which summarises the likely effects and mitigation during operation, there are a number of deficiencies:

- Development land: for the reasons set out in Section 3 of this report, the PEIR understates the scale of impact on development land in Thurrock. Only through amendments to scheme alignment and through additional junctions will these impacts be mitigated.
- Local economy: Thurrock's economy is underpinned by transport and logistics. However, for the reasons set out in Section 3, because there are no local connections onto the LTC, the project will have no benefit to Thurrock's economy. In fact, it is likely to harm it because the likely impact on housing land supply and the knock-on for local labour force constraints. Again, only mitigation through scheme realignment and additional junctions will overcome this.
- Changes in amenity for local residents: the effects after mitigation from issues such as noise and visual impact are expected to be negative or neutral. However, there is no evidence provided in the PEIR to demonstrate that the effect would be neutral.

- Human health and wellbeing: while impacts such as improved access to employment is identified, this does not recognise that the local level, the Consultation Scheme would not improve access the local jobs for local residents (current and future). In addition, there are concerns over both the potential nature of the effect and potential mitigation that have been identified under the review of Chapters 6 and 13 of the PEIR.

A.11 PEIR Chapter 15: Road Drainage and Water Environment

Legislative requirements

A.11.1 The chapter identifies the principal Acts of relevance when considering the water environment, however it excludes other guidance that should be incorporated into this section, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991).

Significance of likely effects

A.11.2 The chapter refers to the DMRB for the methodology used to assess the potential for the Project to change existing conditions, but does not adequately detail the methodology for assessing the significance of likely effects itself. This should be included for clarity.

Whole system water balance approach

A.11.3 The chapter identifies key receptors such as the Thames Estuary and Marshes (Ramsar sites). The overall water balance of such systems is often a complex interaction between, inter alia, surface water, groundwater and artificial controls. However, it is not clear whether a whole system water balance approach will underpin the EIA and, if so, what this will comprise in terms of data collection.

Flood defence infrastructure

A.11.4 Information regarding the nature, configuration and condition of flood defence infrastructure and flood management assets appears limited and a flood defence condition survey is likely to be required in support of the ES.

Surface water quality sampling

A.11.5 Section 15.5 sets out the further surveys and assessments to be undertaken in support of the EIA, including a FRA and WFD Compliance Assessment. Although groundwater quality sampling is identified, it is not clear what is proposed in terms of surface water quality sampling. This fails to assure Thurrock Council and other stakeholders that the analysis will be comprehensive.

Mitigation

A.11.6 Section 15.6 summarises receptors, potential effects and mitigation measures. This touches on measures such as a Code of Construction Practice, which is typically categorised as 'embedded mitigation'. However, the chapter does not include a schedule of embedded mitigation measures.

Cumulative effects

A.11.7 The PEIR does not include sufficient details regarding the methodology for assessing cumulative effects, the Zone of Influence proposed for the 'water' topic, or the inclusion and exclusion threshold criteria to be applied to the 'long list' of other development, et cetera, all of which require consultation with Thurrock Council and other stakeholders. This limits stakeholders' understanding of how the cumulative effects of the proposal will be assessed.

Flood Risk Assessment

A.11.8 The figures presented in Volume 3 show that significant areas of the Development Boundary lie within Flood Zone 3 and interact with watercourses and flood defence/flood management infrastructure. There is therefore the potential for significant flood risk impacts and detailed assessment will be required (i.e. to understand floodplain extents and identify impact mitigation measures). The chapter notes that hydraulic modelling will be undertaken as part of the FRA, but details are not presented and presumably this is the subject of the FRA scoping process referred to in the chapter. It will not be possible to establish whether (i) the nature of flood risk impacts has been adequately assessed and (ii) deliverable impact mitigation measures have been identified until the FRA has been completed.

A.12 PEIR Chapter 14: Climate

UKCP18 Data

A.12.1 The United Kingdom Climate Projections 2018 (UKCP18) have since been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. Recommend regional projections which are only available on emissions scenario RCP8.5, which is most similar to the high emissions scenario in UKCP09.

In-Combination Effects

A.12.2 In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. This should be an assessment within relevant technical chapters of how impacts of the project will alter the future baseline, using the UKCP18 projections, and the ability of receptors to respond to climate change in combination with the impacts of the project. This will be assessed as part of the FRA, however chapters, notably Biodiversity and People and Communities, should also consider this.

Greenhouse Gases Emissions Assessment

A.12.3 It is unclear on the scope of Greenhouse Gases to be assessed. The PEIR outlines a quantitative assessment will be undertaken and therefore should align with PAS 2080:2016 Carbon management in infrastructure and BS EN 15978:2011 Sustainability of construction works, Assessment of environmental performance of buildings, Calculation method, as set out in IEMA guidance.

Significance

A.12.4 The EIA Regulations require that the ES describes the likely significant effects of the proposed development. The PEIR climate change chapter makes no reference to defining the significance of effects. Due to complexities of global weather variables, there is an absence of significance criteria or a defined threshold for determining the significance of climate impacts in guidance documents. For ease in decision making, it should be clear how significance has been determined, highlighting the uncertainties within the assessment.

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