

Gail Boyle
Senior EIA and Land Rights
3D Eagle Wing
Temple Quay House
2 The Square
Bristol, BS1 6PN

Your Ref: TR010032-000007

Dear Gail

Re: Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11

Proposed application by Highways England for an Order granting Development Consent for the Lower Thames Crossing

I refer to your letter dated 2nd November 2017 regarding the above matter and to your request that the local planning authority (LPA):

- inform the Planning Inspectorate of the information we consider should be provided in the Environmental Statement (ES); or
- confirm we do not have any comments.

Thurrock Council is a unitary authority in South Essex representing over 165,000 residents and is the recipient of nearly two thirds of the proposed development. The Council therefore have a number of comments in relation to the Highways England Lower Thames Crossing Environmental Impact Assessment (EIA) Scoping Report dated October 2017. The Council's full response has been provided within a Schedule of Comments/Observations in Appendix 1 of this letter.

The following sections of this letter highlight the Council's key comments and/or concerns. However, it should be noted that these sections are solely a snapshot of the full response, and therefore it is important that the detailed comments given in Appendix 1 are taken into consideration. Moreover Highways England should also give regard to local policies to align with Thurrock's Local Plan.

- 1) In summary, Thurrock Council has not been given sufficient material from Highways England to allow the Council to determine how this scheme meets their declared objectives, nor the respective balance of priorities that resulted in the choice of crossing and chosen road alignment. Reflecting the scale and significance of this national project, a full and comprehensive understanding of the transport and land use implications is required. A robust and comprehensive analysis should be undertaken and presented within a standalone chapter within the ES. This would provide an understanding of

business case around choice of location and that proposals demonstrate the potential to unlock housing growth.

- 2) Thurrock Council has for a number of years stated that the need for a new crossing requires further evidence. Further work is required to explore alternative modes of travel. Therefore, it must be demonstrated how the need for providing or safeguarding additional capacity (passenger and freight) as part of the decision-making process has been considered in terms of alternative options. This must underpin assessment of the need for the crossing and choices around the need for two or three lanes of new motorway alongside appropriate improvements to local roads to bus services and rail networks. A thorough analysis of appropriate and acceptable options is required to evidence how proposals comply with Government Guidance to support sustainable travel and land use integration. A detailed and stand-alone analysis would reduce the significant risk in solely catering for road traffic to the exclusion of wider enhancements to transport and mobility that would better meet the wider Essex and Kent communities.
- 3) The environmental harm caused by the scheme has not been fully assessed, quantified or demonstrated as part of the announcement of the preferred route. This in turn has impacted this scoping report. This includes the impacts on health and local amenity, which may not be out-weighed by any economic or transport benefits - clearly further work is required on air quality and public health before the Government makes a decision. It must be given weight alongside economic and transport benefits. The World Health Organisation has stated that there is no safe level for particulate matter given its carcinogenic properties. Despite considerable recognition [\[click\]](#) by DEFRA and Public Health England – with the Local Government Association; as Public bodies we are not demonstrating to our public how we are taking seriously the health risk associated with vehicle emissions. New analysis and added priority must now be given within the ES to PM_{2.5} particulate matter.
- 4) The Scoping Report does not acknowledge all of the concerns the Council faces in terms of the health and wellbeing of the communities we represent. Without clear evidence to the contrary, the Council is very concerned that life outcomes may be further impacted by the proposed crossing. This is particularly in relation to the variation experienced across the borough in terms of life expectancy, incidence of and premature mortality from cancer, hospitals admissions and premature mortality due to cardiovascular disease and respiratory illnesses. Therefore, the Council strongly request that a separate Health Impact Assessment is undertaken, the methodology of which should be agreed with the Director of Public Health in the Council and in liaison with all other impacted authorities' Directors of Public Health and Public Health England. This will ensure that any negative consequences of the development are identified and mitigated, and that opportunities for improving the well-being of the community are maximised. Appendix 2 of this letter provides a full justification for the reasoning behind why a separate Health Impact Assessment should be undertaken for the project from a Thurrock perspective. The Council has also noted that precedents have been set by several Nationally Significant Infrastructure Projects (NSIPs), such as the Silvertown Tunnel in London and the A14 in Cambridgeshire, which completed Health Impact Assessments as part of their applications.

Key General Comments:

- 5) The initial chapters reflect the current existing knowledge of the proposed project. The proposed scheme is continuing to evolve, and therefore it is essential the Council understand the reasoning for changes, and is genuinely consulted on changes to the Scheme design. Highways England should also give the Council the opportunity to inform the ongoing changes to the project design. Significant changes are being made by Highways England to the current preferred route that are in advance of any robust published traffic model, and therefore this appears to be occurring without a clear foundation i.e. it is unclear how Highways England are arriving at the decision for Route 3 as opposed to Route 4, and in turn how they are making significant changes to Route 3, in advance of an approved traffic model. This leads to significant concerns over the validity and robustness of their preferred route.
- 6) The wider impact on Thurrock's socio-economic mix has not been considered, for example the effect on housing delivery and how a Lower Thames Crossing will impact on future growth and investment. The existing and emerging Thurrock Local Plan sets out the basis on which growth is planned, to balance the opportunities of growth in homes and jobs. As the new Local Plan is progressed, the Council requests that an additional and standalone socio-economic study is undertaken to assess in detail the impact the Lower Thames Crossing would have on the Borough. This should also take into consideration the wider economic benefits/dis-benefits.
- 7) The Council has major concerns regarding the proposed junction with the A13 and the A1089. This is likely to be significantly elevated, which would be very prominent in the landscape. The elevation in combination with the complex arrangement is also likely to cause adverse visual effects, worsen air quality and increase noise levels significantly. As noted in the Cultural Heritage section below, the junction is also located on a nationally significant Scheduled Monument, and therefore the construction of this junction would have direct effects on (through the removal of) the scheduled monument. The significant adverse effects caused by this junction will need considerable mitigation e.g. tunnelling to ensure the effects are reduced and the introduction of the junction is acceptable. In addition to the strategic routing model for traffic across the region, we expect Highways England to undertake a detailed micro simulation of this new junction and the local road network, to prove that the full impacts have been understood, and that it represents a workable solution compared to all other alternatives.
- 8) The Council would like to better understand Highways England consideration for a new direct spur into Tilbury, and the respective role of the current A1089. This new spur would re-route all of the Port of Tilbury traffic south of the town rather than through the town on the A1089. This new spur that Highways England have now included in their proposal, would introduce new residential receptors to air quality issues and expose new parts of the town to noise. This fails to recognise the ambition of the Council to better link Tilbury with the river. In addition to the strategic routing model, we expect Highways England to undertake a detailed micro simulation of the proposed road changes, to understand the impact on the local road network and the implication of changes to the local roads following any de-trunking.

- 9) It is a requirement of the new EIA regulations (Infrastructure Planning (Environmental Impact Assessment) Regulations 2017) to assess 'the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to the development'. Therefore, under these new regulations Highways England should undertake sensitivity testing to assess unusual but not uncommon traffic scenarios due to major accidents, e.g. the closure of both crossings, and the impact this would have on traffic/transport, noise, air quality, people, and communities. This assessment should be presented within the ES, and must recognise the impact of closures to the crossing on the jobs and livelihoods across the borough.
- 10) The Scoping Report does not fully justify the reason Location C was chosen as the preferred route. The reasons provided focus on the Scheme objectives and cost, and do not take into consideration the effects on the environment / communities / Thurrock's Strategic Growth Plans. The Council requests that full justification regarding the preferred route selection, which includes outlining a comparison of the environmental effects of each option to reach the decision on the preferred route, is provided in the ES.
- 11) The report mentions opportunities to deliver environmental enhancements, however there is no explicit mention of any enhancements that have been identified. Highways England need to consider and identify opportunities for enhancements throughout the duration of the design process, and include these in the ES. Opportunities should consider (but should not be limited to) enhancements to the existing public rights of way network, in line with Thurrock Rights of Way Improvement Plan (which is currently in draft form), and enhancements to the landscape and air quality. Highways England need to demonstrate through their design principles how the earthworks and subsequent landscaping and planting will provide a new corridor for wildlife, and with it, a new route for non-motorised travel that brings together new and existing rights of way. Aside from direct opportunities through careful scheme design to build in future new connections, the Council also advises Highways England to utilise their Environment and Air Quality Designated Funds to ensure that environmental enhancements are delivered across the widest possible network of rights of way, in order to maximise local opportunities for reduced car travel; at least to the extent that it balances the increase in total traffic mileage generated by the new crossing and the new motorway.
- 12) The report states that the Lower Thames Crossing north of the Thames will be at grade or on embankments, however though the Kent section it will be in a deep cutting which is likely to lessen its visual effects. The reasoning for this will need to be clearly presented and fully justified. To assess the landscape and visual effects, Highways England needs to provide plans showing which sections would be on embankments and which at grade. The Council would also like to see 3D visualisations for the Scheme.
- 13) The redline boundary only takes account of the road area itself and does not consider the space that will be required for attenuation storage and flood zone compensation. It is critical to consider this as early as possible to ensure the Council do not have any space issues further down the line.

- 14) The Council has key concerns regarding the adverse visual, noise and air quality effects that are likely to result from the Lower Thames Crossing. The Council therefore believes that Highways England should evidence how and why it has chosen not to provide tunnelling beneath Thurrock, as this would alleviate these effects.
- 15) Due to the scale of the project, Highways England needs to demonstrate impacts through a thorough and comprehensive construction impact assessment, and include appropriate mitigation, for the project. The method of boring the tunnels has already been suggested as being from Thurrock southwards under the Thames. This creates air quality and noise implications. In addition, the majority of the new motorway is within Thurrock and this exposes residents to significant noise and air quality issues. Highways England has not demonstrated why this cannot be built from South to North.
- 16) Thurrock has been very successful in growing jobs within the Borough, and there is a continued need to accelerate housing delivery. Highways England need to demonstrate through a detailed standalone study how housing opportunities might in future be impacted by the adverse impacts of this new motorway i.e. noise, pollution and visual impact. The LTC could further exacerbate negative perceptions of the Borough as a place to live, thereby harming the delivery of homes and, as a result, stifling economic growth.

Key Topic Specific Comments:

- **Air Quality** - *The Council recommends that additional baseline air quality monitoring is established at sensitive receptors along the new proposed link road to Tilbury, just off the A1013 along Heath Road, and along Baker Street, including Baker St/ Heath Road at A13/A1089 junction. Additionally, as of November 2017 the Council, in response to the proposed crossing, has set up its own additional NO₂ diffusion tube monitoring sites in key locations. The data from these should be included within Highways England's air quality assessment for establishing a baseline and for model verification. Please see the Schedule of Comments/Observations in Appendix 1 for the location of these additional monitoring sites.*
- **Air Quality** - PM_{2.5} needs to be considered within the air quality assessment. The evaluation of significance of this pollutant should also be assessed, particularly as it is the very fine elements of particulate matter (i.e. PM_{2.5}), such as brake and tyre wear emissions and diesel exhaust emissions that contribute to the bulk of PM_{2.5} emissions and it is this element which is most prejudicial to health.
- **Cultural Heritage** - Consideration needs to be given in the EIA for the appropriate recording of the scheduled monument (Crop mark complex, Orsett) at the junction with the A13 and A1089 considering the extensive damage that will be caused. Consideration needs to be given to undertaking a total excavation of the scheduled area and associated elements of this nationally important complex.
- **Cultural Heritage** - Tilbury and Coalhouse Forts as combined monuments, forming defensive structures along the Thames, should be considered as Very High Value receptors. This should be discussed with Historic England.
- **Landscape** - *The Landscape and Visual Impact Assessment should have regard to the new (currently draft) "Landscape Character Assessment for Thurrock" and the "Land of the Fanns Character Assessment" which covers a large proportion of the affected landscape north of the Thames. The Land of the Fanns is a Heritage Lottery Fund Landscape Partnership scheme which should be considered as part of any landscape, ecology and cultural heritage assessment.*

- **Landscape** - The Scoping Report provides no justification for the decision to adopt a 2km Zone of Visual Influence (ZVI) for the landscape and visual impact assessment. This should follow standard best practice and identify a ZVI which is likely to be much larger. This is particularly important for the land to the north of the A13, which is much more open. It is likely that the route (which is likely to be elevated through this area) would be very prominent from a long distance e.g. from Thorndon Country Park in Brentwood.
- **Landscape** - No methodology has been outlined for the production of the photomontages. These should be produced for year 1 and year 15, to show the future visual impact of the proposal. These should be produced for key views such as the proposed tunnel, the A13 and Tilbury junctions, the Tilbury loop railway and where the route crosses through the Mardyke Valley.
- **Landscape** - Highways England will need to agree any proposed viewpoint receptors with the Council, in advance of the assessment commencing. These will need to ensure that all settlements are assessed, as well as sites used for public recreation, cultural heritage assets, public rights of way and existing transport routes. Long views will also need to be assessed e.g. from Thorndon Park in Brentwood. Some future baseline viewpoints will also need to be considered.
- **Landscape** – Highways England suggest the construction of the tunnel under the Thames is likely to be from north or south. The basis for this assertion is unknown and Highways England need to set out why this is the case. This would result in large areas of land east of the power station site being set aside for construction purposes. This is adjacent to the Two Forts Way recreational route. The material extracted during the tunnel construction is likely to be stored in this area, which will have adverse visual effects for at least six years. The ES will need to take into consideration the maximum proposed heights of stored materials plus heights of machines etc. being used during the construction. It is also proposed that a substation will be required in this area. Again, the ES will need to take the size of this into consideration. The Council would like to see the heights of the stockpiles, machinery, and substation. The final restoration of this area will need to demonstrate landscape and ecological benefits with no spoil left in this area over the long term e.g. restoring the land immediately west of Coalhouse Fort as coastal grazing grass or wetland.
- **Landscape and Biodiversity** - The report recognises that the scheme would have a direct effect on the Orsett Fen Open Access Area. Highways England need to ensure that there is connectivity, and consider mitigation measures for landscape, ecology and water management that can be integrated to ensure that the historic fenland habitat can be recreated.
- **Biodiversity** - The report details a comprehensive list of protected species that are being surveyed. However, there is no mention of barn owls. Barn owls should be considered and surveys undertaken (if required), as barn owls have the potential to be impacted within a buffer zone of up to 1.5km from new roads.
- **Geology and Soils** – *Highways England need to demonstrate that particular regard is given to the potential contamination at the former Goshems Farm landfill (THU0048) where the tunnel portal would be located. The Ground Investigation will need to fully determine the level of contamination present here.*
- **Materials** - No methodology has been outlined for the materials assessment. The methodology needs to be fully defined within the ES to ensure full understanding of how the conclusions are reached. Consideration should be given to the calculation of the embodied carbon emissions of the materials required to

construct the Scheme, as a good benchmark for comparison against other similar road schemes.

- **Noise and Vibration** - Highways England need to agree the locations of the noise surveys with the Council, although the indicative noise monitoring locations outlined in the Scoping Report are generally in satisfactory locations. The Council would recommend a long-term monitor is set up in Baker Street, as this would be closest to the proposed southbound road to the A13 eastbound slip. Further monitoring may also be necessary in the south of Tilbury where the link could be preferentially used by the existing Tilbury port traffic rather than the A1089 dock access road.
- **People and Communities** - The people and communities assessment should also consider Coalhouse Fort within the community facilities assessment, *the amenity of people living and working in the area and using established leisure facilities such as parks, and severance in the context of dividing the borough and creating two separate sets of communities.*
- **People and Communities** - *Highways England need to clarify how the impacts on public rights of way will be mitigated. The use of green bridges and underpasses to replace any public rights of way that are permanently affected by the development would be beneficial. Highways England should also take into consideration Thurrock's Public Rights of Way Improvement Plan (which is currently in draft form).*
- **Climate** - *Embodied carbon from the use of materials within the construction needs to be considered within the climate assessment, as this makes up approx. 70-80% of the construction carbon footprint. Greenhouse gas emissions from the increased volume of traffic also needs to be considered within the operational assessment for climate.*
- **Cumulative Effects** - *Tilbury Energy Centre needs to be included within the assessment of cumulative effects (as well as Tilbury2). In addition, although DP World London Gateway has been developed, the capacity at this site will continue to increase. Therefore, the cumulative assessment within the ES should also take this into consideration; this is particularly important within the noise and air quality cumulative assessments.*

Proposed Structure of the ES

The proposed structure and content of the ES is set out in Chapter 17 of the Scoping Report. However, it is noted that the structure of the topic specific chapters includes a 'Regulatory Framework/NPSNN requirements' section. However, Highways England should also give regard to local policies, to align with Thurrock's Local Plan.

Additionally, as noted previously, the Council does not believe that the topics listed (for inclusion within the ES) will enable a thorough and comprehensive assessment on health and wellbeing and on the local economy. Therefore, the Council requests that the following key areas must form distinct and standalone part of the Development Consent Order Application

- a standalone Health Impact Assessment
- a standalone Socio-Economic Study
- a standalone assessment of Transportation and Land use
- a standalone multimodal assessment
- a standalone assessment of the construction impacts

Summary

I trust that the comments and enclosures are of assistance. Again, I would like to reiterate that the information outlined in this letter solely highlights the key comments/concerns the Council has. Please refer to the Schedule of Comments/Observations contained in Appendix 1 of this letter, for the full detailed response from the Council.

Thank you for this opportunity to comment on the EIA Scoping Report. If you need any further assistance or wish to discuss any matters arising, please feel free to contact me.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'Steve Cox', written in a cursive style.

Steve Cox
Corporate Director, Place

APPENDIX 1 – Schedule of Comments/Observations on the Lower Thames Crossing Environmental Impact Assessment Scoping Report

APPENDIX 2 – Justification for a full Health Impact Assessment

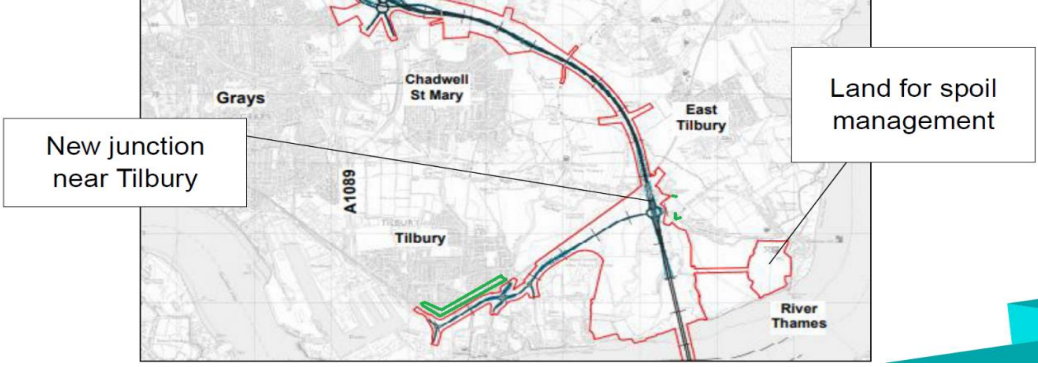
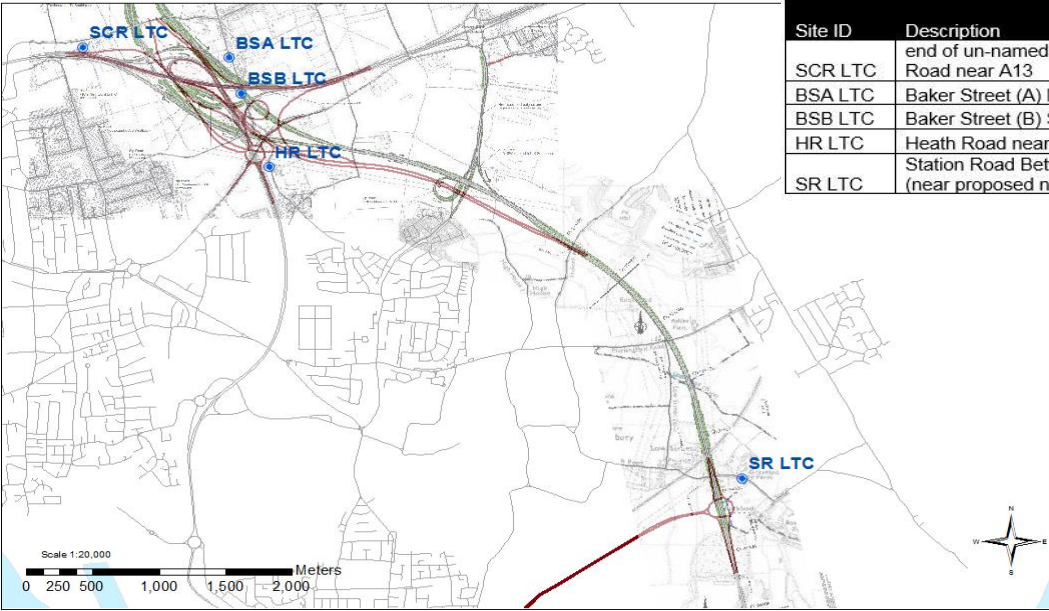
Appendix 1 Thurrock Council Response to Lower Thames Crossing - Environmental Impact Assessment Scoping Report

Schedule of Comments and Observations

Promoter	Highways England
Reviewer	Thurrock Council
Document Reviewed	Lower Thames Crossing - Environmental Impact Assessment Scoping Report

ID	Chapter / Section	Comments/Observations (Including Recommendations)
1	Overall Comment	The Council strongly requests that a Health Impact Assessment (HIA) is required and that this is completed in relation to this proposed development, to ensure that any negative consequences of the development are identified and mitigated and that opportunities for improving the well-being of the community are maximised. We note that an Equalities Impact Assessment is being undertaken as a separate assessment. We have also noted that precedents have been set by several NSIP developments such as the Silvertown Tunnel and the A14 have had health impact assessments completed as part of their applications.
2	Overall Comment	The Council has major concerns regarding the proposed junction with the A13 and the A1089. This is likely to be significantly elevated, which would be very prominent in the landscape. The elevation in combination with the complex arrangement is also likely to cause adverse visual effects, worsen air quality and increase noise levels significantly. As noted in the Cultural Heritage comments below, the junction is also located on a nationally significant Scheduled Monument, and therefore the construction of this junction would have direct effects on (through the removal of) the scheduled monument. The significant adverse effects caused by this junction will need considerable mitigation e.g. tunnelling to ensure the effects are reduced and the introduction of the junction is acceptable. In addition to the strategic routing model for traffic across the region, we expect Highways England to undertake a detailed micro simulation of this new junction and the local road network, to prove that the full impacts have been understood, and that it represents a workable solution compared to all other alternatives.
3	Overall Comment	The Council would like to better understand Highways England consideration for a new direct spur into Tilbury, and the respective role of the current A1089. This new spur would re-route all of the Port of Tilbury traffic south of the town rather than through the town on the A1089. This new spur that Highways England have now included in their proposal, would introduce new residential receptors to air quality issues and expose new parts of the town to noise. This fails to recognise the ambition of the Council to better link Tilbury with the river. In addition to the strategic routing model, we expect Highways England to undertake a detailed micro simulation of the proposed road changes, to understand the impact on the local road network and the implication of changes to the local roads following any de-trunking.
4	Overall Comment	The Council has key concerns regarding the adverse visual, noise and air quality effects that are likely to result from the Lower Thames Crossing. The Council therefore believes that Highways England should evidence how and why it has chosen not to provide a tunnel beneath Thurrock, as this would alleviate these effects.
5	Overall Comment	The wider impact on Thurrock's socio-economic mix has not been considered, for example the effect on housing delivery and how a Lower Thames Crossing will impact on future growth and investment. The existing and emerging Thurrock Local Plan sets out the basis on which growth is planned, to balance the opportunities of growth in homes and jobs. The visual and aesthetic aspects of the development alone will affect the monetary value of residential neighbourhoods which in turn will lower house values, which could ultimately change the social mix by reducing higher income groups (those who can afford to choose where they live are discouraged from settling in the borough). Also there may be an impact on future development, as developers will not build homes for higher income groups as there will be no demand. Mixed and balanced communities are an essential component otherwise unfair disadvantage is based on the borough, for example deprived communities place greater demand on healthcare services and current local skill shortages will become worse. An increase and improvement in open and greenspace that is restorative and relaxing must compensate the scheme to ensure Thurrock remains a desirable place to live and proposals are needed in this regard. As the new Local Plan is progressed, the Council requests that an additional and standalone socio-economic study is undertaken to assess in detail the impact the Lower Thames Crossing would have on the Borough.
6	Chapter 1 Introduction and Chapter 2 The Project / General	The initial chapters reflect the current existing knowledge of the proposed project. The proposed scheme is continuing to evolve, and therefore it is essential the Council understand the reasoning for changes, and is genuinely consulted on changes to the Scheme design. Highways England should also give the Council the opportunity to inform the ongoing changes to the project design. Significant changes are being made by Highways England to the current preferred route that are in advance of any robust published traffic model, and therefore this appears to be occurring without a clear foundation i.e. it is unclear how Highways England are arriving at the decision for Route 3 as opposed to Route 4, and in turn how they are making significant changes to Route 3, in advance of an approved traffic model. This leads to significant concerns over the validity and robustness of their preferred route.
7	Chapter 1 Introduction / Section 1.2.8	The Council wants to understand how the new crossing would open opportunities for regeneration in addition to how the crossing will benefit the local community.
8	Chapter 1 Introduction / Section 1.3.1	Under 'Project Objectives', there is a clear objective for the Environment and Community to minimise adverse impacts on health and the environment, yet no suggestion has been made that there will be a full health impact assessment undertaken as a separate chapter or as a standalone assessment. This project objective will not be achieved without this.
9	Chapter 1 Introduction / Table 1.3	Highways England need to demonstrate how the development would benefit the local economy of Thurrock and not just the regional economy.
10	Chapter 2 The Project / Section 2.2.7	The Council wants to understand how the new junctions would be managed safely to reduce the number of road traffic accidents resulting from the new road network.
11	Chapter 2 The Project / Section 2.5.1	Highways England need to consider the use of green bridges including foot bridges and underpasses. This not only creates a visually pleasing environment but may potentially work towards mitigating some of the air pollution that already exists as well as that possibly generated by the proposed development.
12	Chapter 2 The Project / Section 2.5.3	The report lists a number of new bridges, underpasses etc. but does not provide any detail as to which if any will be provided for public rights of way.
13	Chapter 2 The Project / Section 2.6.1	The report states that the Lower Thames Crossing north of the Thames will be at grade or on embankments, though the Kent section will be in a deep cutting which is likely to lessen its visual effects. The reasoning for this will need to be clearly presented and fully justified. To assess the landscape and visual effects, Highways England need to provide plans showing which sections would be on embankments and which at grade.
14	Chapter 2 The Project / Section 2.6.1	The Council would like to see 3D visualisations for the Scheme to ascertain the visual impact, especially in regard to where the road will be on embankments.
15	Chapter 2 The Project / Section 2.7	The proposed lighting design has not yet been finalised. This will be an essential component of any Landscape and Visual Impact Assessment (LVIA) as it is likely to have major effects if lighting is proposed on elevated sections across the Mardyke Valley.
16	Chapter 2 The Project / Section 2.9	Non-Motorised User Provision - The statement recognises the need to ensure public rights of ways remain open by providing suitable crossing points and/or diversions. It will be vital that the studies take into account the closure of public rights of ways during the construction period, which is estimated to be 6 years.
17	Chapter 2 The Project / Section 2.10	Highways England need to consider what the flood defences look like and their impact on accessibility to the river. Visual impact and access to nature can impact on health and well-being.

18	Chapter 2 The Project / Section 2.11.2	Further clarification is required in relation to the potential detour route for over-sized vehicles in terms of where this is likely to be and how it will be safely managed. The council request an explanation on how this will impact on reducing the number of such over-sized vehicles still accessing the Dartford Crossing.
19	Chapter 2 The Project / Section 2.12	The construction of the tunnel under the Thames is likely to be from north or south. This would result in large areas of land east of the power station site being set aside for construction purposes. This is adjacent to the Two Forts Way recreational route. The material extracted during the tunnel construction is likely to be stored in this area which will have visual effects. The EIA will need to take into consideration the maximum proposed heights of stored materials plus heights of machines etc. being used during the construction. It is also proposed that a substation will be required in this area. Again, the EIA will need to take the size of this into consideration. The Council would like to see the heights of the stockpiles, machinery, and substation. The final restoration of this area will need to demonstrate landscape and ecological benefits e.g. restoring the land immediately west of Coalhouse Fort as coastal grazing grass or wetland. In addition, the longer term the impact of the 25m chimneys at the tunnel mouths to filter air will create long term visual impacts.
20	Chapter 2 The Project / Section 2.12.5	It is noted that consideration will be paid to the feasibility of using rail and river to transport materials during construction which will aim to reduce the level of transport by road. If found to be feasible it is possible that additional construction works will be required. This may include the construction of new jetty or modification of a new jetty, as well as new rail heads. Consideration of the potential impacts of the possible additional construction works needs to take into account a potential for increases in noise, air pollution and dust emissions.
21	Chapter 2 The Project / Section 2.14.4	Consideration of the mental health and wellbeing of landowners whose land falls within the design boundary (64 residential and 4 commercial properties North of the Thames) and may be acquired for building the new junction at the A13 needs to be investigated. Further information is required in relation to how this will be managed, and what will likely happen should landowners decline to sell their land/properties and potential impacts on their livelihoods; whilst the project will create new employment opportunities, the Council would like to see whether it is possible that it will damage existing ones.
22	Chapter 2 The Project / Section 2.14.5	The report recognises that the scheme would have a direct effect on the Orsett Fen Open Access Area. It will be necessary for Highways England to ensure that there is connectivity and consider mitigation measures for landscape, ecology and water management that can be integrated to ensure that the historic fenland habitat can be recreated.
23	Chapter 2 The Project / Section 2.18	A residence scheme should be considered for those living in Thurrock and areas affected in Kent.
24	Chapter 3 The Reasonable Alternatives Considered / General	The Scoping Report does not fully justify the reason Location C was chosen as the preferred route. The reasons provided focus on the Scheme objectives and cost, and do not take into consideration the effects on the environment / communities / Thurrock's Strategic Growth Plans. The Council requests that full justification regarding the preferred route selection, which includes outlining a comparison of the environmental effects of each option to reach the decision on the preferred route, is provided in the ES.
25	Chapter 3 The Reasonable Alternatives Considered / General	The Council would like additional information on how the methodology of the sifting process, particularly how the objectives were weighted within the process.
26	Chapter 3 The Reasonable Alternatives Considered / Table 3.1	We note that Option B was discounted due to severance, when the preferred route Option C creates severance throughout the borough of Thurrock.
27	Chapter 3 The Reasonable Alternatives Considered / General	The Council has major concerns over the route selection process and the fact that this was based on out of date traffic data. Further information should be provided by Highways England to document this process.
28	Chapter 4 Consultation / General	Please provide a breakdown of the results of the consultation as part of the EIA document, in particular those from the local community of Thurrock.
29	Chapter 5 EIA Method / General	The Council agrees with the approach to EIA and inclusion of a Habitat Regulations Assessment (HRA).
30	Chapter 5 EIA Method / General	It is a requirement of the new EIA regulations (Infrastructure Planning (Environmental Impact Assessment) Regulations 2017) to assess 'the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to the development'. Therefore, under these new regulations Highways England should undertake sensitivity testing to assess unusual but not uncommon traffic scenarios due to major accidents, e.g. the closure of both crossings, and the impact this would have on traffic/transport, noise, air quality, people, and communities. This assessment should be presented within the ES, and must recognise the impact of closures to the crossing on the jobs and livelihoods across the borough.
31	Chapter 5 EIA Method / Section 5.2.2	The report mentions opportunities to deliver environmental enhancements, however there is no explicit mention of any enhancements that have been identified. Highways England need to consider and identify opportunities for enhancements throughout the duration of the design process, and include these in the ES. Opportunities should consider (but should not be limited to) enhancements to the existing public rights of way network, in line with Thurrock Rights of Way Improvement Plan (which is currently in draft form), and enhancements to the landscape and air quality. Highways England need to demonstrate through their design principles how the earthworks and subsequent landscaping and planting will provide a new corridor for wildlife, and with it, a new route for non-motorised travel that brings together new and existing rights of way. Aside from direct opportunities through careful scheme design to build in future new connections, the Council also advises Highways England to utilise their Environment and Air Quality Designated Funds to ensure that environmental enhancements are delivered across the widest possible network of rights of way, in order to maximise local opportunities for reduced car travel; at least to the extent that it balances the increase in total traffic mileage generated by the new crossing and the new motorway.
32	Chapter 5 EIA Method / Section 5.5.3	The Council requests that a dedicated chapter be provided to cover the subject of Human Health. This will provide a clearer, more concise assessment of the potential impacts on human health and how these will mitigated against to reduce such impacts in subsequent EIAs, ES and planning applications. Additionally, the Council strongly request that a separate Health Impact Assessment (HIA) is required and that this is completed in relation to this proposed development to ensure that any negative consequences of the development are identified and mitigated and that opportunities for improving the well-being of the community are maximised. Assessment on human health, and methodology on how this will be done is not made clear in any of the chapters highlighted in 5.5.3.
33	Chapter 5 EIA Method / Section 5.6.1	It is noted that study areas will be individually designed for environmental topic based on the geographical scope of the impacts. It will be important to ensure that the full health impacts for residents living in the 9 Wards in Thurrock closest to the proposed development (Tilbury Riverside and Thurrock Park, Tilbury St Chads, Ockendon, Belhus, Stifford Clays, Little Thurrock Blackshots, East Tilbury, Orsett and Chadwell St Mary) are undertaken. A focus on the Tilbury wards, Ockendon, Chadwell St Mary and Stifford Clays in particular will be vital due to the existing health inequalities that assist in these wards. Wider borough health impacts as a result of the traffic modelling and as such should also be considered.
34	Chapter 5 EIA Method / Section 5.7.4	Future Baseline - Highways England will need to agree this with the Council as there are a number of former minerals sites on or close to the route that are currently being restored. It is important that these are taken into account of as they would then have a higher landscape value once restored.

35	Chapter 5 EIA Method / Section 5.11	The Council agrees that a separate equalities impact assessment needs to be undertaken. This should include information relating to the severance through the borough in terms of ensuring that all residents residing in Thurrock are able to access the same social and economic opportunities across the borough. Health inequalities should be considered as a part of this assessment - there are significant health inequalities across the borough and an assessment should be undertaken to ensure that these will not be further increased. Again a full HIA should be able to support this. It is noted that an EIA is being undertaken and we would request a full HIA.																														
36	Chapter 6 Air Quality / General	This chapter predominantly focuses on exceedances to Air Quality Objectives and EU limits, which whilst important, it does not focus in on the potential impact on health, particularly on identified vulnerable populations, from increases in air pollutants and exceedances as a result of the proposed crossing. In addition annual means are focussed on, but it is known when there are incidents on the existing crossing the local road network is impacted significantly, thereby impacting in the short term on air pollutants. Consideration should be paid to frequency and average number of daily exceedances in an annual period and the impact this might have on vulnerable populations. This supports the point above which states that sensitivity testing should be undertaken for different unusual, but not uncommon traffic scenarios.																														
37	Chapter 6 Air Quality / Section 6.3.2	<p>Section 6.3.2 outlines that baseline monitoring was agreed with Local Authorities for nitrogen dioxide (NO₂) and particulate matter (PM₁₀). However the proposed road layout has changed since this consultation was conducted, which has introduced some new potential receptors not considered in the original proposed baseline monitoring. There is now to be an additional road junction in the south of Thurrock linking onto a trunk road which will potentially serve the new proposed Tilbury2 Port facility.</p> <p>In addition to this it may serve as an access road for Heavy Goods Vehicles (HGVs) from the original Port of Tilbury. This will likely generate more traffic along this new access road, where there will be potential residential receptors in close proximity to the new access road in Tilbury itself. (See Figure 1)</p> <p>Figure 1: marked in [Green] (potential new receptors not previously considered in consultation)</p>  <p>We propose that some additional baseline monitoring is setup in these areas by Highways England, in order to establish a more appropriate baseline for use in the detailed dispersion modelling assessment.</p>																														
38	Chapter 6 Air Quality / Section 6.3.2	<p>In addition to the above there is a change in the design of the main junction linking the A13 and A1089 to the new crossing. It is proposed to be a new roundabout junction which links onto the A1013, this also links to the A1089 dock approach road, but in the process will sever the existing A1089 dual carriage way and introduce a pinch point for traffic on this road as they will now have to navigate via the new roundabout junction.</p> <p>This will likely cause queuing at this junction, a lot of this traffic will be from the Tilbury Docks and predominantly HGV's. The A1089 serves as the primary route for all traffic generated by the Port of Tilbury, this roundabout will likely hinder the currently free flowing nature of this dual carriageway.</p> <p>This new junction will also introduce a number of residential receptors which were not considered in the previous design. There are a number of residential properties just off the A1013 along Heath Road which will be close to this roundabout junction. The Council recommend that further baseline monitoring is introduced here as well.</p> <p>Also there are residential properties along Baker Street which lie in close proximity to the proposed junction which have not been included in the baseline monitoring, the Council propose that further baseline monitoring sites should be setup in in key locations along this road also.</p>																														
39	Chapter 6 Air Quality / Section 6.4.3	The Council agrees that the baseline PCM model (2015 base) should be applied to the assessment and not CAZ or CAZ+additional measures scenarios.																														
40	Chapter 6 Air Quality / Section 6.4	<p>The Council have in response to the new proposed road layout set up its own NO₂ diffusion tube monitoring sites in key locations as of November 2017. There are a total of five new monitoring locations (see Figure 2). These should be included within Highways England air quality assessment for establishing a baseline and for model verification.</p>  <table border="1" data-bbox="1115 1881 1864 2065"> <thead> <tr> <th>Site ID</th> <th>Description</th> <th>site height</th> <th>X ref</th> <th>Y ref</th> </tr> </thead> <tbody> <tr> <td>SCR LTC</td> <td>end of un-named street Off Stifford Clays Road near A13</td> <td>2m</td> <td>562381</td> <td>181155</td> </tr> <tr> <td>BSA LTC</td> <td>Baker Street (A) North of A13</td> <td>2m</td> <td>563481</td> <td>181070</td> </tr> <tr> <td>BSB LTC</td> <td>Baker Street (B) South of A13</td> <td>2m</td> <td>563572</td> <td>180770</td> </tr> <tr> <td>HR LTC</td> <td>Heath Road near A1089</td> <td>2m</td> <td>563782</td> <td>180155</td> </tr> <tr> <td>SR LTC</td> <td>Station Road Between Tilbury & East Tilbury, (near proposed new tilbury junction)</td> <td>2m</td> <td>567349</td> <td>177552</td> </tr> </tbody> </table> <p>THURROCK COUNCIL www.thurrock.gov.uk</p>	Site ID	Description	site height	X ref	Y ref	SCR LTC	end of un-named street Off Stifford Clays Road near A13	2m	562381	181155	BSA LTC	Baker Street (A) North of A13	2m	563481	181070	BSB LTC	Baker Street (B) South of A13	2m	563572	180770	HR LTC	Heath Road near A1089	2m	563782	180155	SR LTC	Station Road Between Tilbury & East Tilbury, (near proposed new tilbury junction)	2m	567349	177552
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41	Chapter 6 Air Quality / Section 6.6.4	Section 6.6.4 of the report states that PM _{2.5} is not currently assessed and reported as part of the DMRB HA207/07 and hence will not be included within the assessment for the project. The Council believes that this should also be included as part of the assessment, as it is PM _{2.5} which is potentially more prejudicial to health than PM ₁₀ . The evaluation of significance of this pollutant should also be assessed, particularly as it is the very fine elements of particulate matter i.e. PM _{2.5} , such as brake & tyre wear emissions and diesel exhaust emissions that contribute to the bulk of PM _{2.5} emissions and it is this element which is most prejudicial to health.																														
42	Chapter 6 Air Quality / Section 6.6.4	From a health perspective, 5.6% of premature deaths in Thurrock are attributable to air pollution particulate matter (PM _{2.5}) which is approximately 20% higher than the England average (4.7%). Thurrock have the highest number of deaths attributable to particulate matter when compared with their CIPFA comparators and 2nd highest across the East of England region.																														

43	Chapter 6 Air Quality / Section 6.7.6	Highways England should undertake modelling of the construction vehicles. The number of construction vehicles in each phase/year of construction should be quantified. A good reason for scoping out a simple or detailed construction phase assessment should be included in the EIA when construction vehicle numbers are available. It is considered that an increase in construction vehicles just below the DMRB screening criteria may still lead to long term effects due to the duration (6 years) of construction.
44	Chapter 6 Air Quality / Section 6.7.14	The EIA should confirm that the opening year (currently 2026) is worst case in terms of air quality impacts.
45	Chapter 6 Air Quality / Section 6.7.26	The EIA must include the latest PCM data available at the time of assessment. This paragraph states that the PCM 'model provides predicted concentrations for each link in a number of years at five year intervals.' The latest (August 2017 (as referred to in other places in this scoping report)) PCM data should be applied to the assessment. This data is provided by Defra as yearly concentrations from 2017 and not five year intervals as suggested in paragraph 6.7.37.
46	Chapter 6 Air Quality / Section 6.7.41	Section 6.7.41 of scoping report states that emissions from vehicles in particular diesels, do not perform to their prescribed European standards and limited evidence on Euro 6 emissions. Any modelling using DEFRA's Emission Factor Toolkit V7.0 (EFT 7.0) is likely to underestimate these emissions considerably, as they are known to greatly under-represent real world emissions. A conservative approach should be adopted for this, upscaling of diesel emissions in particular should be undertaken. Air Quality Consultants (AQS) have developed such a conservative approach known as CURED V2A, which better represents diesel emissions than EFT 7.0, something similar should be adopted in this case also.
47	Chapter 6 Air Quality / Section 6.7.47	Section 6.7.47 of the scoping report states It will only consider receptors which exceed the Air Quality Standards / Objectives i.e. (annual mean of 40 µg/m³ for NO2 and PM10) in either the, with or without scenarios are used to inform the evaluation of significance. The Council recommends that any receptor be considered in the evaluation of significance proposed if it has a medium >2 µg/m³ or large >4 µg/m³ magnitude of change. As some of these may be near the objective limit and have a large magnitude of change but fall just below the objective limit. Considering the uncertainties associated with air quality modelling I'd like to see these sites listed as well as those above the objective limits.
48	Chapter 6 Air Quality /Section 6.9	It is assumed that best practice mitigation measures will be applied during the construction phase, this needs to be clarified.
49	Chapter 6 Air Quality / General	Other than the points that have been raised, the proposed methodology for assessment is acceptable. However, the recommendations that have been outlined should be considered as there has been a significant of change in the proposed layout of the new crossing and change in the road junctions, that warrants further consideration before the full EIA and subsequent Air Quality Assessment is undertaken.
50	Chapter 6 Air Quality / General	Highways England should include information or a map outlining where the highest levels of pollutants would occur as a result of the development.
51	Chapter 7 Cultural Heritage / General	A Heritage Statement should be undertaken and reported in compliance with Historic England Good Practice Advice Note 3: The Setting of Heritage Assets 2015.
52	Chapter 7 Cultural Heritage / Section 7.2	There is no consideration of local policy, Highways England needs to take this into consideration in the EIA.
53	Chapter 7 Cultural Heritage / Section 7.3.4	The heritage stakeholders identified should not be consulted in isolation. Any future meetings should, where possible, include all relevant heritage advisors.
54	Chapter 7 Cultural Heritage / Section 7.4.1	The baseline should include any existing (as mentioned in 7.5.1) or emerging Local Heritage Lists which have yet to be adopted.
55	Chapter 7 Cultural Heritage / Section 7.5.1	The baseline should include the rectification of all available aerial photographs with an assessment of images available online such as Google Earth.
56	Chapter 7 Cultural Heritage / Section 7.6	The applicant should outline the proximity of the assets to the scheme.
57	Chapter 7 Cultural Heritage / Section 7.6.7	Tilbury Fort and Coalhouse fort as combined monuments forming defensive structures along the Thames could be viewed as Very High Value. This should be discussed with Historic England.
58	Chapter 7 Cultural Heritage / Section 7.6.7	Consideration should be paid to the value rating of Tilbury Fort as a historic building. As a significant heritage site, access, supporting tourism and celebrating heritage should be considered. Impact of the proposed crossing on views, access and economic viability for the fort and other heritage sites (Coal house fort for instance) should be considered. These sites provide an important sense of community, pride, space for leisure activities, visual and scenic landscapes which all impact on health and well-being.
59	Chapter 7 Cultural Heritage / Section 7.6.7	The list of heritage assets is not exhaustive, for example The Grade II* Riverside Station is not listed, though it is within the search area of Fig.7.1. This list will need to evolve.
60	Chapter 7 Cultural Heritage / Section 7.7.4	It has been recommended that as an initial survey a programme of aerial photographic rectification is undertaken as part of the desk based phase of work. This will then feed into the follow up stages of ground investigation.
61	Chapter 7 Cultural Heritage / Section 7.7.4	The Council would like the analysis of the aerial photography and LIDAR be rectified and mapped, to provide an accurate representation of identified archaeological remains.
62	Chapter 7 Cultural Heritage / Section 7.7.4	Highways England should also be using the Historic Environment Characterisation Work undertaken by Essex County Council for the Thurrock area, and should also look at the work undertaken by Chris Blandford on Characterisation in the Thames Gateway.
63	Chapter 7 Cultural Heritage / Section 7.7.6	Visual inspection of listed buildings and other designated assets should be carried out as part of the desk based assessment, not following results of it.
64	Chapter 7 Cultural Heritage / Section 7.7.6	Is 'Aerial Photogrammetrical Survey' the rectification and mapping of features identified on the aerial photographs and LIDAR? If so this should be done in conjunction with the desk based assessment.
65	Chapter 7 Cultural Heritage / Section 7.7.6	Trial trenching should be used in its own right, not just related to geophysics. For those areas where geophysics cannot be used, a general trial trenching evaluation at 5% should be considered.
66	Chapter 7 Cultural Heritage / Section 7.7.6	Consideration needs to be given in the EIA for the appropriate recording of the scheduled monument (Crop mark complex, Orsett) at the junction with the A13 and A1089 considering the extensive damage that will be caused. Consideration needs to be given to undertaking a total excavation of the scheduled area and associated elements of this nationally important complex.
67	Chapter 7 Cultural Heritage / Section 7.7.6	The Zone of Visual Influence should be defined in conjunction with heritage consultees. This will be in accordance with Historic England's Advice Note 3.
68	Chapter 7 Cultural Heritage / Section 7.7.6	Setting assessments of assets should be carried out at the desk based assessment stage. Note that setting does not solely relate to intervisibility and views but can relate to sound, tranquillity, relationship with the landscape, air quality etc (see Historic England guidance in GPA3).

69	Chapter 7 Cultural Heritage / Section 7.7.8	The Local Authorities, as curators, should be undertaking monitoring visits to all of the sites investigated.
70	Chapter 7 Cultural Heritage / Section 7.7.8	Where possible, the number of separate contractors should be kept to a minimum to ensure consistency of results. A consortium of large contractors has been successful on large scale projects in the past.
71	Chapter 7 Cultural Heritage / Section 7.7.10	There should be consideration to using side scanning sonar for the Thames, or this should be discussed with Wessex Archaeology who probably have already undertaken this for London Gateway.
72	Chapter 7 Cultural Heritage / Section 7.7.11	In addition to Noise/Traffic Impact, the assessment will need to cross over with reports/analysis into associated lighting and potential light pollution, as this also impacts upon Cultural Heritage. This assessment should utilise Thurrock Councils Night Time Skys data/resources.
73	Chapter 7 Cultural Heritage / Section 7.7.12	The Council requests clarification on the methodology for determining where the study area can be refined.
74	Chapter 7 Cultural Heritage / Section 7.7.13	This section states that the zone of visual influence used will be the same as for the landscape assessment. In the landscape chapter the zone of visual influence is defined as a 2km buffer around the application boundary. However, it is stated in Section 7.7.12 that the study area for cultural heritage will be 1km. Clarification is needed in regard to the zone of visual influence study area that will be used in the cultural heritage assessment. The study area for cultural heritage should be extended further than 1km for certain receptors that lie outside the 1km buffer but which may experience visual impacts from the proposed development.
75	Chapter 7 Cultural Heritage / Section 7.7.13	Designated assets outside of the study area requiring assessment should be identified by the applicant and should be agreed with the consultees.
76	Chapter 7 Cultural Heritage / Section 7.7.14	Assessments should always assess 'worst case scenario' for all elements of the proposed development.
77	Chapter 7 Cultural Heritage / Section 7.7.26	The term 'harm' relates to any adverse change in the heritage significance of an asset and should not be categorised simply into a large adverse effect. Substantial harm is a more nuanced categorisation of a change in significance which is separate to the DMRB significance of effect terminology. Under the methodology in the scoping report only a high or very high value asset could be subject to substantial harm, whereas substantial harm could be subjected to any heritage asset, regardless of value. For instance, demolition of a grade II listed building would certainly constitute substantial harm.
78	Chapter 7 Cultural Heritage / Section 7.7.26	It would be more appropriate to discuss the terms of harm with all of the specialist heritage advisors not just Historic England.
79	Chapter 7 Cultural Heritage / Section 7.8.1	No impact on archaeological remains has ever been shown through ground movements associated with the tunnel boring machine. Also it is not vibrations from the tunnel boring machine, but ground settlement following the tunnelling which can effect historic structures.
80	Chapter 7 Cultural Heritage / Section 7.8.3	In relation to changes in groundwater level, the impact on the grazing marsh area and the potential heritage assets it contains will need to be assessed.
81	Chapter 7 Cultural Heritage / Section 7.8.5	This section notes that there may be some beneficial impacts to conservation areas and listed buildings outside of the study area through the amelioration of the deteriorating effects of traffic pollution. These effects should not be considered if they lie outside of the study area. If these effects are to be considered, then the study area needs to be widened and any other adverse effects within the study area would also need to be reported.
82	Chapter 7 Cultural Heritage / Section 7.9	Mitigation should include measures set out in the CEMP/COCP to ensure best practice construction methodologies and ensure accidental damage to heritage assets is avoided.
83	Chapter 8 Landscape / Section 8.2.1	The landscape and visual impact assessment should have regard to the new (currently draft) Landscape Character Assessment for Thurrock (a timetable for its completion should be agreed by end of November 2017). In addition, consideration should also be given to the Land of the Fanns Landscape Character Assessment which covers a large proportion of the affected landscape north of the Thames. The Land of the Fanns is an heritage lottery funded Landscape Partnership scheme which should be considered as part of any landscape, ecology and cultural heritage assessment.
84	Chapter 8 Landscape / Section 8.2.1	This section suggests that the text in italics is taken directly from the NPSNN as it appears in italics within speech marks, however, the bullet points are not a full representation of that provided within paragraphs 5.151-5.155 of the NPSNN. In addition to this, it is noted that sentences that may not align with the scheme vision are actually left out altogether. This appears misleading and a misrepresentation of the NPSNN.
85	Chapter 8 Landscape / Section 8.2.6	No mention is made of the relative tranquillity of the upper Mardyke Valley where there are few dwellings and no street lights. This area should also be assessed for the combined effects of noise and visual intrusion in the same way as the Thames Estuary.
86	Chapter 8 Landscape / Section 8.2.14	Highways England needs to demonstrate where off-site mitigation may be required as this will need to be included in the EIA and DCO.
87	Chapter 8 Landscape / Section 8.4	Natural England's proposed England Coast Path needs to be considered in the assessment. This path is planned to go through Tilbury and will be an important leisure trail from the Thames Nature Reserve at Mucking through to the Coalhouse Fort and onto Tilbury Fort, and the ferry crossing to Gravesend. Natural England will need to be consulted on this. Other future projects include Land of the Fanns (a Thames chase and LA partnership) the project has been awarded 2.4 million from Heritage Lottery funding for a 5 year programme of activity to restore and promote landscapes within Essex. Strategic work is already underway and some of the projects will be affected by the LTC. The report does not give consideration to this significant project.
88	Chapter 8 Landscape / Section 8.4.4	Reference is made to the Saxon Shore Way - this is only on the Kent side of the river. The reference should be Thames Estuary Path (including the Two Forts Way). Grangewaters is a recreation site close to the proposed route so should be included on the list of recreation/sports sites.
89	Chapter 8 Landscape / Section 8.5	The Council will need to agree any proposed viewpoint receptors in advance of the landscape and visual impact assessment commencing. These will need to ensure that all settlements are assessed, as well as sites used for public recreation, cultural heritage assets and public rights of way and existing transport routes. Long views will also need to be assessed e.g. from Thorndon Park in Brentwood. Some future baseline viewpoints will also need to be considered.
90	Chapter 8 Landscape / Section 8.5.1	Reference to Identifying tree protection orders - clearly this does not remove the need to undertake a proper arboricultural assessment as not all good quality trees are covered by a tree protection order e.g. they are not placed on council owned trees or on trees where there is no perceived threat.
91	Chapter 8 Landscape / Table 6.2	Reference is made to the Local Character Areas defined in the current Landscape Capacity Study. The list should follow the new Landscape Character Areas which should be finalised soon.
92	Chapter 8 Landscape / Section 8.7	No methodology has been outlined for the production of photomontages. These should be produced for year 1 and year 15. There is also no mention of the methodology for production of the zone of visual influence. The Council would like clarification on whether this will be done using ground modelling software etc.
93	Chapter 8 Landscape / Section 8.7	Photomontages should be undertaken for the key views of the route, e.g. the proposed tunnel, A13 and Tilbury junctions, and where the route crosses through the Mardyke Valley.

94	Chapter 8 Landscape / Section 8.7.3	It is not clear whether the night time impacts will simply be informed and presented in line with the Lighting assessment undertaken in accordance with the Institute of Lighting Professionals Guidelines or whether it will be assessed from a landscape and visual impact assessment perspective. The lighting assessment does not consider the sensitivity and change in view in the same way as an landscape and visual impact assessment should. The lighting assessment simply looks at changes in lighting levels, not whether a series of lights will now be visible against an otherwise dark landscape etc/ take into account existing views, sensitivity to change of a landscape/view and the likely magnitude of change etc. Highways England needs to demonstrate that the night time impacts will be fully assessed in the landscape and visual impact assessment.
95	Chapter 8 Landscape / Section 8.7.3	Highways England has not made it clear whether tranquillity would be assessed for each character area. It does not appear to be mentioned. Only that tranquillity will be assessed on recreational receptors within AONB and on cycle routes and LDF. Tranquillity needs to relate to character and be assessed for all landscape character areas within study area.
96	Chapter 8 Landscape / Section 8.7.8	No justification/explanation is given to the decision to adopt a 2km Zone of Visual Influence. This should follow standard best practice and identify a zone of visual influence which is likely to be much larger. This is particularly important for the land to the north, which is much more open. It is likely that the route (which is likely to be elevated through this area) would be very prominent from a long distance e.g. from Thorndon Country Park in Brentwood.
97	Chapter 8 Landscape / Section 8.7.11	As stated previously it is important for Highways England to take into account approved restoration schemes in the locality.
98	Chapter 8 Landscape / Section 8.7.18	Significance should be shown as a matrix rather than a description for clarity.
99	Chapter 8 Landscape / Section 8.9	The Council would like to restate the importance of avoiding harm rather than mitigating it. Highways England need to demonstrate that design options have been considered that will reduce the landscape and visual harm being caused.
100	Chapter 8 Landscape / Section 8.9.2	Mitigation measures should also include opportunities to restore/recreate historic landscape features such as marsh and fen which would link to biodiversity and water management mitigation. Green bridges will be important for public rights of way and biodiversity mitigation and the Council would like to see several provided.
101	Chapter 8 Landscape / Section 8.10.1	The Council agrees that there is no landscape and visual impact assessment aspects than can be scoped out.
102	Chapter 8 Landscape / Figure 8.1	Grangewaters Outdoor Pursuits Centre needs to be included. The Thames Chase is shown as the Visitor Centre only, it needs to include the whole designated boundary. This figure also shows the limited zone of visual influence study boundary. This should be based on an appropriate zone of theoretical visibility with obscured viewpoints scoped out. The present approach is not considered acceptable as the boundary is arbitrary and not based on a sound justification.
103	Chapter 8 Landscape / Figure 8.1	The drawing title suggests that visual receptors are shown but none are actually identified, these need to be identified and included.
104	Chapter 8 Landscape / Figure 8.2	Landscape Character Areas need to be agreed with the Council.
105	Chapter 8 Landscape / Figure 8.2	The figure would benefit from references other than just colour from Gravesham Landscape Character Area as it is not clear.
106	Chapter 9 Biodiversity / Section 9.2.8	Ecological corridors/networks should also have regard to the landscape character and seek to restore/enhance landscape features.
107	Chapter 9 Biodiversity / Table 9.1 and Section 9.7.8	Table 9.1 and Appendix C States that Extended phase 1 habitat survey (botanical) of application boundary + 50m buffer. Paragraph 9.7.8 states the extended Phase 1 survey covers the application boundary plus a 500m buffer. This needs to be clarified and consistent. A 500m buffer would be expected to be used for Extended phase 1, which will increase for some protected species.
108	Chapter 9 Biodiversity / Table 9.1	The report details a comprehensive list of protected species that are being surveyed. However, there is no mention of barn owls. Barn owls should be considered and surveys undertaken (if required), as barn owls have the potential to be impacted within a buffer zone of up to 1.5km from new roads.
109	Chapter 9 Biodiversity / Table 9.1	Bat emergence and activity surveys need to ensure Hangman's Wood and Deneholes SSSI is included as this is designated for its bat roost.
110	Chapter 9 Biodiversity / Table 9.1	Invertebrates - The Council agrees that surveys of Thames Terrace Grasslands and Ancient woodland are important but should also consider any brownfield. Open Mosaic Habitat sites such as Blackshots Nature Park Local Wildlife Site which are designated in part due to their value for invertebrates. OMH is also a s41 HPIE.
111	Chapter 9 Biodiversity / Section 9.5.4	The project construction is over a 6 year period and there is no suggestion of a long-term fish monitoring project. The Council requests a confirmation that the Environment Agency are conducting this monitoring.
112	Chapter 9 Biodiversity / Section 9.5.4	There is no mention of water quality surveys to be conducted during construction. Confirmation needs to be provided as to whether this will be covered in the proposed survey mentioned in Table 9-2- Collection and analysis of sediments and contaminant samples.
113	Chapter 9 Biodiversity / Table 9.5	The boundaries of the Local Wildlife Sites around Tilbury Power Station and Goshems Farm have been amended as a result of the Local Wildlife Site Review carried out in 2016 but which is still in draft (nearly finalised). Highways England need to work to the revised boundaries as they make more sense on the ground following recent restoration works at Goshems Farm.
114	Chapter 9 Biodiversity / Section 9.7	The Council agree with guidance referenced.
115	Chapter 9 Biodiversity / Table 9.6	The Council agrees with the comparison of sources for determining valuation/importance.
116	Chapter 9 Biodiversity / Section 9.7.12	It is important that any surveys take into account the ways animals move through the area and what effects the new route would have. The Council would like to see whether consideration has been given to whether the Scheme would form a barrier to commuting bats and how these effects can be mitigated.
117	Chapter 9 Biodiversity / Section 9.7.15	Future baseline needs to take into account sites where restoration works should be completed during this period and where restoration is for biodiversity. The Council agrees that while much of area is arable some sites around Goshems Farm and East Tilbury will change during this period.
118	Chapter 9 Biodiversity / Section 9.7.19	The CIEEM guidelines are proposed to be used to determine significant effects. Significance criteria has been based on CIEEM guidelines only, which are used for ecological assessment of non-infrastructure projects in the UK. However, this isn't consistent with other disciplines included within the assessment. As the project is an infrastructure project, the assessment should describe the impacts and significance in accordance with DMRB, where effects of Moderate Adverse or Beneficial and above are considered to be significant. The CIEEM guidelines do not translate this across in a way which is consistent with other topics. Although the CIEEM guidelines should be referred to (as they are the recognised standard for EclA in the UK), the conclusion to the assessment should also use the terminology outlined within the DMRB to ensure language/consistency is maintained throughout the assessment.
119	Chapter 9 Biodiversity / Section 9.7.20	Highways England needs to consider increase of plastics into the marine environment during construction.
120	Chapter 9 Biodiversity / Section 9.8.25	This section only takes into consideration the potential impacts to the qualifying features of the recommended Marine Conservation Zone during construction, which are acknowledged in table 9-10. Implications to other species of conservation importance, i.e. marine mammals, are not listed, although are acknowledged in the text in section 9.8.24. The EIA will need to take into consideration all species of conservation importance.

121	Chapter 9 Biodiversity / Section 9.8.30	Retention of the jetty could also provide substrate for subtidal communities (shellfish, fish species etc.). Possible negative implications of the jetty, re. invasive species habitat, as well as its construction should be covered in the hydrographic modelling. As part of any mitigation procedures, additional opportunities for ecological enhancement within the Projects zone of influence that will enhance the designated sites identified features and support biodiversity and ecosystem services, especially in connection with the marine environment intertidal and subtidal especially, should be identified and implemented.
122	Chapter 9 Biodiversity / Section 9.9.1	Marine mammal mitigation for underwater noise emission during any piling or dredging needs to be identified.
123	Chapter 9 Biodiversity / Section 9.10	The Council agree that no topics are to be scoped out of the EIA assessment.
124	Chapter 9 Biodiversity / General	In general the Biodiversity section has been prepared following consultations with statutory agencies responsible for nature conservation as well as national and local conservation NGOs. The survey methodology is therefore considered generally appropriate. The key points however is to consider sufficient weight is given to the potential severance of ecological corridors for species such as bats. Also 'temporary disturbance during construction' is for a period of 6 years.
125	Chapter 9 Biodiversity / General	As a general point, access to nature and the impact this can have on human health could also be considered. Access via PRow's offer opportunity for people to have closer access to nature. This should be assessed in a standalone health impact assessment.
126	Chapter 9 Biodiversity / Appendix C Survey Methodology	Highways England need to demonstrate that they have considered hedgerow surveys to determine if they are important under the Hedgerow Regs. 1997. There is no mention of this survey type specifically.
127	Chapter 9 Biodiversity / Appendix C Survey Methodology	Highways England need to evidence that consideration has been given to crossing point surveys and landscape scale transects being as part of the survey methodology, with reference to methods outlined in Berthinussen & Altringham (2015).
128	Chapter 9 Biodiversity / Appendix C Survey Methodology	Bat surveys have been proposed to continue 2 hrs after sunset. Natural England advise that transect and emergence/re-entry surveys are extended to 3 hours after sunset to account for late-emerging bat species, such as Horseshoes, if they are likely to be present. Highways England should consider extending survey requirements.
129	Chapter 9 Biodiversity / Appendix C Survey Methodology	The methodology for the reptile surveys only proposes 7 surveys. This will only give presence/absence data. Highways England need to demonstrate that consideration been given to understanding population i.e. undertaking 20 surveys or more over a season to establish this.
130	Chapter 9 Biodiversity / Figure 9.1	Local Wildlife Site boundaries around Tilbury Power Station/ Goshems have been amended. This needs to be considered within the EIA.
131	Chapter 9 Biodiversity / Figure 9.3	The Priority Habitats don't accord with what is on the ground, though they are of use as a reference.
132	Chapter 10 Geology and Soils / Section 10.1.3	Geological designations and SSSIs etc. covered in biodiversity and ecological conservation chapter, but not in the geology and soils assessment. These should be included within the geology and soils assessment for completeness.
133	Chapter 10 Geology and Soils / Section 10.1.4	The interrelationship with the materials assessment needs to be considered.
134	Chapter 10 Geology and Soils / Section 10.4	Any designated sites with direct or indirect geological value should be considered (e.g. if none designated for geological value, those with habitats dependent on underlying geology/groundwater quality etc).
135	Chapter 10 Geology and Soils / Section 10.4.43-10.4.52	The assessment needs to take into consideration the potential margin for error in landfill locations. Not all historic records are accurate and landfill extents can vary and presence can sometimes be unmarked.
136	Chapter 10 Geology and Soils / Section 10.4.68-10.4.72	Highways England need to evidence where the agricultural land information has been collected from. The Council would like to know whether this is based on MAFF (1975) data, post 1988 ALC data or ALC survey data.
137	Chapter 10 Geology and Soils / Section 10.4.73 and 10.4.74	Highways England need to identify the potential number of individual farms present.
138	Chapter 10 Geology and Soils / Section 10.6	Key environmental receptors have been identified but value has not been assigned. It would be useful to separate geological resources (superficial/bedrock deposits of resource value) from soil resources (ALC etc). Highways England also need to consider designated sites dependent on geological conditions/with geological value in this list.
139	Chapter 10 Geology and Soils / Section 10.7.4	A wider area for controlled water impacts should be considered.
140	Chapter 10 Geology and Soils / Table 10.6	Geological site importance is discussed in this table (and also in Table 10.7) but previously it has been stated that this is covered in biodiversity chapter. This should be included within the geology assessment. Very High would normally count as international importance (World Heritage Sites etc) with High being National. It is also recommended that built environment receptors (concrete structures, buried pipes etc) should be included, including a description for geological resource value.
141	Chapter 10 Geology and Soils / Table 10.7	The definition for magnitude of impacts on superficial/bedrock geological resources (e.g. potential for sterilisation) and for generation of excess quantities of geological materials for re-use elsewhere (tie-in with materials chapter) should be included. Controlled water quality impacts should also be quantified e.g. changes with regard to Drinking Water Standards (DWS)/Environmental Quality Standards (EQS).
142	Chapter 10 Geology and Soils / Table 10.9	The Council believes that the quantity of land owned by a farm is also an important consideration. For example, a farm with a greater area of land is likely to be able have a greater degree of diversification, i.e. Crop/ livestock types, whilst a farm with a smaller area of land will have less flexibility.
143	Chapter 10 Geology and Soils / Table 10.10 and Table 10.11	The magnitude of impact should be major, moderate, minor (adverse or beneficial), negligible or no change as per DMRB Volume 11 Section 2 Part 5. For Table 10.10, this should also consider severance impacts and changes to drainage.
144	Chapter 10 Geology and Soils / Section 10.8	Impacts relating to the generation of excess geological materials should be included (and tied in with the materials chapter).
145	Chapter 10 Geology and Soils / Section 10.8.5	Effects also include the necessity for dewatering and requirement to manage potentially significant quantities of contaminated groundwaters, and the generation of significant quantities of potentially hazardous waste/soils requiring treatment. These effects need to be considered in the EIA.
146	Chapter 10 Geology and Soils / Section 10.8.6	A Foundation Works Risk Assessment may be required in areas of piling/other foundations works in accordance with Environment Agency guidance to determine the potential likely effects relating to the driving of piles through any contaminated Made Ground/landfilled materials and into the underlying Aquifers, and to identify what mitigation measures will be appropriate for the site.
147	Chapter 10 Geology and Soils / Section 10.8.11	This section highlights significant contamination of ground with the potential for migration of land gases from these contaminated areas during construction. The report mentions mitigation measures to prevent this, but the Council believes this should be more enhanced to include emergency measures for local residents in the event of failed mitigation leading to significant risk to public health. Impacts to human health need to be fully assessed within a standalone health impact assessment.
148	Chapter 10 Geology and Soils / Section 10.9.1	A Contaminated Land Risk Assessment and Detailed Quantitative Risk Assessment are required.

149	Chapter 10 Geology and Soils / Section 10.9.7	A Soil Management Plan should also be included as part of the Construction Environmental Management Plan (CEMP) (separate from the Materials Management Plan).
150	Chapter 10 Geology and Soils / General	The Council is satisfied that the proposals within the chapter are adequate to address the potential impact of the development with regard to potentially contaminated land as long as the measures outlined in Section 10.9 are implemented. Particular regard should be given to the potential contamination at the former Goshems Farm landfill (THU0048), the ground investigation will need to fully determine the level of contamination present here.
151	Chapter 11 Materials / General	Highways England needs to demonstrate a clear understanding of the potential effects for Thurrock. Potential effects include increased minerals extraction e.g. opening new quarries or extending the life of existing operations with associated visual and ecological effects, as well as storage and disposal of material arising from tunnelling and wider construction, which could provide threats or opportunities in terms of land raising or restoring poor quality former landfill sites. Additionally, there is an issue of wider storage of materials during construction e.g. maximum heights or areas of pallets etc to reduce visual effects.
152	Chapter 11 Materials / Section 11.3.3	The consultation focuses on waste, the Council would like to see a plan to consult on material availability, such as aggregate.
153	Chapter 11 Materials / Section 11.7	No methodology has been outlined. The methodology needs to be fully defined to ensure full understanding on how the conclusion regarding effects will be reached.
154	Chapter 11 Materials / Section 11.9	Although mentioned in section 11.2.7, the use of a SWMP, MMP and CTMP has not been specified in the mitigation section.
155	Chapter 12 Noise and Vibration / Overview	The Noise and Vibration Section has been produced in a normal scoping report format and scopes in all the matters relevant to Noise and Vibration for a project of this scale and extent. In general the Council is satisfied that all relevant noise and vibration matters have been included and the proposed standards and methodologies are acceptable. If the Council has any concerns, comments or requests to make relating to specific paragraphs these will be shown below. The remaining paragraphs are accepted.
156	Chapter 12 Noise and Vibration / Section 12.2	There is other over-arching legislation e.g. National Planning Policy Framework which should be referred to and referenced.
157	Chapter 12 Noise and Vibration / Section 12.2.6	An explanation of Noise Important Areas should be included. Clarification as to what they mean and how they are defined should be included.
158	Chapter 12 Noise and Vibration / Section 12.3.2	Local authorities should be consulted (not 'as appropriate').
159	Chapter 12 Noise and Vibration / Section 12.4.5	The proposed noise survey locations need to be agreed with the Council. In particular, the Council would like to see a long-term monitor in Baker Street closest to the proposed southbound new road to A13 eastbound slip road.
160	Chapter 12 Noise and Vibration / Section 12.4.6	Noise Action Plans and Noise Important Areas. There are a number of Noise Important Areas that may be affected by the operational noise from the project directly or indirectly where traffic flows on local roads are perturbed. These NIAs fall within the responsibility of Highways England and the Thurrock Council Highways Authority.
161	Chapter 12 Noise and Vibration / Section 12.5.4	The Indicative noise monitoring locations in Figure 12.1 in Appendix F are generally in satisfactory positions. There are potentially some additional locations. In particular, the Council would like to see a long-term monitor in Baker Street that will be closest to the proposed southbound road to A13 eastbound slip. Further monitoring may also be necessary in the south of Tilbury where the link could be preferentially used by the existing Tilbury port traffic rather than the A1089 dock access road.
162	Chapter 12 Noise and Vibration / Section 12.6.3	The study area should be clearly defined by DMRB and not subject to development.
163	Chapter 12 Noise and Vibration / Section 12.6.5	The proposed Receptor Importance/Sensitivity criteria designations in Table 12-1 are acceptable. However, aligning sensitivity to receptors should be more than just professional judgement, references should be made to IEMA guidelines and DMRB Assessment of Environmental Effects.
164	Chapter 12 Noise and Vibration / Section 12.6.8	The LOAEL and SOAEL levels assumed for operational road traffic noise in Table 12-2 are acceptable. It is assumed that LAeq levels are free-field and LA10 levels include a façade reflection component. It is assumed that the day is 16 hours 07:00 to 23:00, night is 8 hours 23:00 to 07:00 and LA10 is 18 hours 06:00 to 00:00. This should be confirmed with the Council.
165	Chapter 12 Noise and Vibration / Section 12.6.9	The LOAEL and SOAEL levels assumed for construction noise in Table 12-2 are reasonable. Clarification of the LAeq,T period will be needed. Thurrock Section 61 consents typically have upper noise limit levels with T as 1 hour for more sensitive times of the day and the whole night time period. Weekdays T is 10 hours 08:00 to 18:00 and Saturday T is 5 hours 08:00 to 13:00.
166	Chapter 12 Noise and Vibration / Section 12.7.2	What are the proposed vibration LOAEL and SOAEL level values for construction? Are these to be taken from BS5228-2 +A1:2014? (ref. to paragraph 12.7.18)? This needs to be clarified in the EIA.
167	Chapter 12 Noise and Vibration / Section 12.7.4	The reason for limiting the construction study area to 300m need to be clarified, including the guidance referred to for this. In addition, haul routes need to be considered.
168	Chapter 12 Noise and Vibration / Section 12.7.13	The Council would like to see how the noise impacts from the tunnel ventilation systems will be calculated and assessed.
169	Chapter 12 Noise and Vibration / Section 12.7.20	This is not consistent with other approaches set out, e.g. traffic noise.
170	Chapter 12 Noise and Vibration / Section 12.7.20	It would be useful to have an understanding of what this criteria is, which has been used on other major tunnelling projects, and any potential impacts this would have on local resident's health.
171	Chapter 12 Noise and Vibration / Section 12.7.21	While the noise prediction models proposed are acceptable, Thurrock does not have a proprietary noise model and the Council would like access to the link-level input data used so that individual receptor location levels may be verified using a CRTN spreadsheet program.
172	Chapter 12 Noise and Vibration / Section 12.7.25	While the noise prediction models proposed are acceptable, Thurrock does not have a proprietary noise model and the Council would like access to the plant sound power (or SPL @distance) input data used so that individual receptor location levels may be verified if necessary using a ISO 9613-2:1996 propagation method spreadsheet program.
173	Chapter 12 Noise and Vibration / Section 12.7.23	Highway England needs to demonstrate the rationale for not looking at the short term noise impacts. Consideration needs to be paid to the role that noise can play in relation to individual's sleep. A good night's sleep is beneficial for health, as it increases concentration, mood and wellbeing.
174	Chapter 12 Noise and Vibration / Section 12.8.4	Consideration will need to be paid to implementing appropriate mitigation measures to reduce the impact of noise on local residents in Thurrock. Measures will need to minimise residents experiencing sleep disturbance, as this could affect their mental health and wellbeing.
175	Chapter 12 Noise and Vibration / Section 12.9.2	The construction works will require a CEMP that will include construction work noise. A Control of Pollution Act 1974 Section 61 Prior Consent should also be sought from the Council. This is not mandatory, but Highways England usually require contractors to apply for a S61 for major road construction projects.

176	Chapter 12 Noise and Vibration / Section 12.9.5	The Council understood that all new Highways England projects and resurfaced carriageways would have a low-noise road surface as standard. The Council would like an explanation as to whether this is now not the case.
177	Chapter 12 Noise and Vibration / Section 12.10	Ground borne vibration from road traffic is unlikely to cause issues and the Council agrees that this may be scoped out of the EIA.
179	Chapter 13 People and Communities / Section 13.1.3	The Council questions whether changes in traveller views and driver stress are relevant to NMUs, and equally whether changes in amenity are relevant for vehicle travellers.
180	Chapter 13 People and Communities / Section 13.1.3	The local and wider economy should be expanded to include opportunities and threats to local economy. Increased accessibility could improve the attractiveness of locations in Thurrock for new and existing business and could enable these to be by-passed for other locations.
181	Chapter 13 People and Communities / Section 13.2.8	The NPSNN expects applicants, where possible, to improve access on and around the networks - "applicants are advised to seek to deliver improvements that reduce community severance and improve accessibility". It is not clear at this stage how these improvements will be achieved and this should be scoped into the EIA.
182	Chapter 13 People and Communities / Section 13.3	There is no mention of consultation with a wide range of community and business groups, businesses and residents, amenity groups etc. Highways England need to demonstrate that this will be undertaken and the outcomes of the consultation.
183	Chapter 13 People and Communities / Section 13.3.2	Consultation with the Council will need to continue.
184	Chapter 13 People and Communities / Section 13.3.2	This section refers to 'identified facilities', but there are many that are not referred to here. The red line now includes Coalhouse Fort, a scheduled Ancient Monument that the council manages for conservation and leisure, which has not been included. There also needs to be a cross reference to wider consultation
185	Chapter 13 People and Communities / Section 13.3.2	The key emergency services (East of England Ambulance Service NHS Trust, Essex Police, Essex County Fire and Rescue Service and the relevant local Acute Hospital Trusts with A&E facilities) should be consulted on this proposed new crossing, as a future potential increase in incidents and accidents will have a direct impact on their capacity to respond.
186	Chapter 13 People and Communities / Section 13.3.14	As outlined previously, the use of green tunnels/underpasses and bridges to replace any PRoWs permanently affected by the development would be beneficial in creating visually pleasing environments as well as the potential to reduce some of the impacts of air pollution. Consideration should be paid to how the local walking and cycling infrastructure will be significantly enhanced to across the borough to mitigate congestion/air pollution/severance across the area.
187	Chapter 13 People and Communities / Section 13.4.13	Coalhouse Fort needs to be included.
188	Chapter 13 People and Communities / Section 13.4.19-13.4.22	This Scoping Report does not acknowledge all of the concerns Thurrock faces in terms of health and wellbeing which could be further impacted by the proposed crossing. In particular the variation across the borough in terms of lower life expectancy, higher cancer rates, higher mortality due to cardiovascular disease and respiratory illness, deprivation levels etc. Please see additional information provided in support of a Health Impact Assessment. There are 3 traveller sites in Thurrock and the Gammon Field site at Long Lane (22 plots) which will need to be relocated. The travellers affected have already been informed but the report does not consider the impact this will have on the health and wellbeing of this community. Gypsies and Travellers experience some of the poorest health outcomes including the lowest life expectancy of any group in the UK and high infant mortality rates. The travellers affected have already expressed concerns over the distance they will be relocated and subsequent disruption to their lives and community, in particular possible changes to healthcare providers and children's schools. The report does not mention re-location options or how this community will be supported during this time.
189	Chapter 13 People and Communities / Section 13.4.25	Consideration of other routes, i.e. footways, crossings, long distance footpaths, national trails etc. is required.
190	Chapter 13 People and Communities / Section 13.4.25	The Natural England proposed English Coastal Path (from Tilbury to Southend) also needs to be considered in the EIA.
191	Chapter 13 People and Communities / Section 13.4 and 13.5	Highways England has not provided any baseline information for existing amenity. The Council would like to see a confirmation of any designated crossings/ bridges or underpasses for NMUs.
192	Chapter 13 People and Communities / Section 13.4 and 13.5	The baseline needs to include more detail on the settlements that are likely to be directly affected by the scheme, including reference to the travellers community that is located on the proposed route.
193	Chapter 13 People and Communities / Section 13.4 and 13.5	Highways England need to provide more details on the development sites in the area which will be considered in the assessment (for example a table listing them).
194	Chapter 13 People and Communities / Section 13.4 and 13.5	Baseline information on existing severance needs to be identified and included in the assessment. Given the level of detail on other topics, this feels like a significant omission.
195	Chapter 13 People and Communities / Section 13.4 and 13.5	Statistics in the local and wider economy baseline section should be provided to support the text.
196	Chapter 13 People and Communities / Section 13.5.1	The Scoping Report has not made it clear whether NMU surveys will be undertaken. If there would be permanent modifications to NMU facilities, with the potential for significant effects, these should be undertaken.
197	Chapter 13 People and Communities / Section 13.6.3 and 13.6.4	Highways England need to demonstrate the value of these receptors (i.e. NMUs and vehicle travellers), NMUs are likely to be highly sensitive to change.
198	Chapter 13 People and Communities / Section 13.7	The Council would like greater clarification on what engagement will be carried out with representatives of the community assets that will be affected by severance or demolition, and key interest groups such as those interested in cycling and walking in the local area affected by the severance of the PRoWs, in order to gain local knowledge on the effects on impacted assets.
199	Chapter 13 People and Communities / Section 13.7.4	This section refers to the impact on Community and Private Assets caused by demolition and land take, however the severance of catchment areas could also have a significant impact particularly in the short to medium term on a variety of such interests, and therefore needs to be considered in the assessment.
200	Chapter 13 People and Communities / Section 13.7.4	Community and Private Assets: Highways England need to clarify what assessment will be done in the local impact and wider impact areas, this needs to include reference to the relevant parts of DMRB Vol 11 Section 3 Part 6 and how the method will comply with the guidance.
201	Chapter 13 People and Communities / Section 13.7.7	The methodology for assessing impact on health and wellbeing is not acceptable - a full Health Impact Assessment should be undertaken with recommended best practice methodology (e.g. HUDU), Thurrock Council Public Health and Public Health England should be consulted on the methods for full Health Impact Assessment.

202	Chapter 13 People and Communities / Section 13.7.8	Refers to an assessment of impact on development land being based on planning applications and development plans. The assessment should consider the strategic planning sites set out in the new Local Plan. The Council also has regeneration strategies which promote growth in locations and have been the basis for generating funding from other sources for implementation, these should also be included in scope of the assessment. The assessment also needs to recognise that the scheme could improve the attractiveness of some development land and reduce the attractiveness others impacted by noise, reduced site areas etc.
203	Chapter 13 People and Communities / Section 13.7.8	Development Land: Highways England needs to clarify what assessment will be done on the effects on development land (not just identifying what development land is in the area). Greater clarity is also required on whether the focus will be on land taken, on accessibility or other factors.
204	Chapter 13 People and Communities / Section 13.7.9	Local and wider economy: detailed modelling of the wider economic impacts was published for the appraisal of the shortlisted options. The Council would like greater clarification on whether the method used to assess economic impacts in the EIA will build on this.
205	Chapter 13 People and Communities / Section 13.7.10	Changes to Journey Length and Severance: The method steps could be set out more clearly. Existing journey lengths will need to be identified by mapping routes to key community facilities, and the changes to the journey lengths assessed. The scoping report states "The methodology to identify existing non-motorised traffic will be agreed with local authorities". The Council recommends that traffic counts are carried out at the site of PROWs, using video monitoring at set times to identify the traffic at these routes. The data should then be used to identify the number of people affected by the changing journey length. This needs to be carried out in line DMRB Vol 11 Section 3 Part 8 by relevant transport planning specialists.
206	Chapter 13 People and Communities / Section 13.7.11	The Council would like greater clarification on whether NMU surveys are going to be undertaken. DMRB Volume 11 Section 3 Part 8 Chapter 9 states that 'counts of pedestrians and others should be undertaken where this is necessary to achieve the objective of this stage of assessment' i.e. where there are going to be permanent changes to journey times, and safety and amenity is likely to be prejudiced. Furthermore, where 'pedestrians and others' travel patterns are complex and a scheme could have a major impact, origin destination surveys should be considered'.
207	Chapter 13 People and Communities / Section 13.7.14 and 13.7.15	The table references are incorrect. Highways England need to clarify whether Table 13-5 and Table 13.6 are still in the assessment. It isn't clear what the scale of impacts will be for changes in journey length or amenity or what the methodologies are based on, without the tables.
208	Chapter 13 People and Communities / Section 13.7.15	Highways England needs to consider what changes in barriers between people and traffic will occur. In addition, the EIA should at least include a reference to forecast traffic flows (DMRB Volume 11 Section 3 Part 8 Chapter 4) for routes.
209	Chapter 13 People and Communities / Section 13.7.15	The Scoping Report refers to changes to amenity in terms of impact on pleasantness of the journey and driver exposure to fumes etc. Amenity of people living and working in the area and using established leisure facilities such as parks and PROWS should also be considered in the assessment.
210	Chapter 13 People and Communities / Section 13.7.21	Highways England need to provide justification for the 200m local study area. It is generally accepted that 250m is the appropriate study area for the majority of people and community effects. Additionally, the Local Study Area needs to be more flexible. Some impacts could be outside of this zone such as severance of catchment areas for community and private assets, changed traffic flows etc.
211	Chapter 13 People and Communities / Section 13.7.22	Highways England need to clarify what the study area will be for effects on driver stress.
212	Chapter 13 People and Communities / Section 13.7.28	The approach to determining the level of significance should have been set in the scoping report. There are tables referred to earlier in the method. However, they appear to have been removed from the report, this needs to be clearly set out in the EIA.
213	Chapter 13 People and Communities / Section 13.8.3	There doesn't appear to be a section 1.14 however it states "As outlined in section 1.14 of this EIA Scoping Report". More detail on the impacts on properties and community assets needs to be provided.
214	Chapter 13 People and Communities / Section 13.8.14	Highways England need to provide detail on whether all PROWs will be mitigated by a footbridge or underpass and if they will be provided at appropriate locations as determined by NMU Surveys. The mitigation for PROWs is not clear and needs to be clarified. The use of green bridges and underpasses to replace any PROWs that are permanently affected by the development would be beneficial.
215	Chapter 13 People and Communities / Section 13.8.15	Highways England need to give greater consideration to the severance of the community in regard to the crossing severing links across the community and essentially creating two sets of communities that work in isolation from each other.
216	Chapter 13 People and Communities / Section 13.9	The mitigation proposals for NMUs are not clear. Highways England need to clarify whether permanent diversions or crossing will be provided for NMUs.
217	Chapter 13 People and Communities / Section 13.9	The proposed development should also include enhancements for the existing public rights of way networks, which should take into consideration Thurrock's Rights of Way Improvement Plan (which is currently in draft form), particularly it's aims to increase east to west connectivity for equestrians.
218	Chapter 13 People and Communities / General	It is not clear from reading the section what sources of information are intended to be used. There is reference to assessments of business, community health etc. but there are existing sources of information that would inform this assessment. This needs to be clarified in the EIA.
219	Chapter 14 Road Drainage and the Water Environment / General	The redline boundary only takes account of the road area itself and does not consider the space that will be required for attenuation storage and flood zone compensation. It is critical to consider this as early as possible to ensure the Council do not have any space issues further down the line.
220	Chapter 14 Road Drainage and the Water Environment / General	With regards to WFD, there is no mention of whether any of the waterbodies affected by the proposals are heavily modified waterbodies (HMWB). This is an important factor which should have early consideration - liaison with the Environment Agency at an early stage to discuss whether there are any mitigation measures for the waterbodies which could be delivered as part of the project should be undertaken.
221	Chapter 14 Road Drainage and the Water Environment / General	Again with regards to WFD, there is no specific mention of watercourse crossing design (where new watercourses are being crossed) which is a key consideration in highways schemes and the design for which needs to involve clear span bridges and not culverts etc. Early communication with Environment Agency on this will be essential.
222	Chapter 14 Road Drainage and the Water Environment / Section 14.2.4	It is stated that a WFD assessment will be prepared and appropriate design and mitigation measures would be incorporated into design to facilitate WFD compliance. Highways England need to clarify whether this will be a separate, standalone assessment or included as part of the environmental statement. Additionally, the WFD will need to be considered as part of project design development (as an ongoing input) to facilitate WFD compliance, then a WFD assessment will need to be produced when the final design is frozen/confirmed so that compliance can be proven.
223	Chapter 14 Road Drainage and the Water Environment / Section 14.2.7	It is noted that consultation with relevant regulatory authorities with regards to consents and licensing for project activities will occur, but it is also noted that there will be engagement with the 'ecology team'. The council requests greater clarity on whether it means ecology team at HE or at the council, at the Environment Agency, or within a consultancy.
224	Chapter 14 Road Drainage and the Water Environment / Section 14.2.7	The Scoping Report states that 'none of these waterbodies [unnamed rivers and ordinary watercourses] are monitoring under the second cycle of the water framework directive'. Although they are not monitored under WFD anymore, Highways England need to clarify that works affecting the waterbodies still needs to comply with WFD, as they should be assessed as part of the downstream waterbody (as cumulative effects will need to be accounted for).

225	Chapter 14 Road Drainage and the Water Environment / Section 14.3.2	The Council expects compliance with Essex County Council's (ECC's) Sustainable Drainage Systems Design Guide, Non-statutory technical standards for sustainable drainage systems, The CIRIA SuDS Manual (C753), BS8582 Code of practice for surface water management for development sites. The Council will treat the development consistently with major planning applications which for which the Council is a consultee for. If evidence can be provided as to why the criteria cannot be achieved we may accept a lower standard.
226	Chapter 14 Road Drainage and the Water Environment / Section 14.4	There is no mention of WFD objectives for the waterbodies within the study area. This should be clarified including where they are the study area, current status, HMWB classification and objectives.
227	Chapter 14 Road Drainage and the Water Environment / Section 14.5.2 and 14.5.5	The Council agrees that there is probably enough baseline data available to characterise quality of surface water receptors, though as noted, the approach will definitely require confirmation from the Environment Agency. The Water Features Survey sounds like a suitable and sensible approach to verify/check baseline data.
228	Chapter 14 Road Drainage and the Water Environment / Section 14.5.6	The Thames Local Flood Risk Management Strategy including the Critical Drainage Areas included in this document should be considered. The Council would expect to see a detailed analysis of the impact of the scheme with reference to the latest surface water modelling in the Surface Water Management Plan. Any other relevant document should also be considered.
229	Chapter 14 Road Drainage and the Water Environment / Section 14.5.8	It must be ensured that infiltration testing and groundwater testing in line with BRE 365 is conducted. In line with the discharge hierarchy, infiltration is first preference. Supporting infiltration tests will need to be provided if this is the proposed method and should be demonstrated that any infiltrating water will not be contaminated. The next preference is to discharge to watercourses, then sewers as a last resort (evidence from the water company of available discharge capacity to be provided if this is the proposed method). If discharging to the estuary then tide locking and surcharging must be considered.
230	Chapter 14 Road Drainage and the Water Environment / Section 14.5.9 and 14.5.10	Methodology regarding sediment contaminants to create a 'baseline' sounds sensible, particularly initial consultation with EA/MMO/PLA for any sediment analysis data prior to undertaking any sampling. Comparison to CEFAS criteria/guidance also sounds appropriate.
231	Chapter 14 Road Drainage and the Water Environment / Table 14.2	The River Thames Estuary has been assigned 'medium' value for water quality with rationale that the waterbody is currently at moderate status. The Council disagrees with this - just because the waterbody isn't in good condition (and may never be) it does not mean that the water quality should be valued any less. The value should be high/very high, as the project must present no deterioration to WFD status. The Council queries whether WFD waterbody status should be used as a rationale for receptor value, if a WFD assessment is being done separately to the assessment of effects.
232	Chapter 14 Road Drainage and the Water Environment / Table 14.2	Same comment as above but for Mardyke waterbody - value for water quality should be high/very high status.
233	Chapter 14 Road Drainage and the Water Environment / Table 14.2	The value for water quality for Unnamed main rivers and ordinary watercourses is 'low', with rationale that the waterbodies are unclassified under WFD with 'low rarity' at local scale. These two should be split up in to two separate categories (main rivers, and then ordinary watercourses and drainage ditches). The value for main rivers should be at least medium if not high. The value for the latter might be medium.
234	Chapter 14 Road Drainage and the Water Environment / Section 14.7	The methodology for assessment of potential effects on water environment following DMRB guidance, study area/assessment periods/future baseline/significance criteria sounds appropriate. Same applies to the FRA.
235	Chapter 14 Road Drainage and the Water Environment / Section 14.7.12	The Essex SuDS Guide and CIRIA SUDS Manual C753 provides an index approach to mitigating surface water /groundwater pollution which should be followed. This may help to pick appropriate SuDS in terms of water quality requirements.
236	Chapter 14 Road Drainage and the Water Environment / Section 14.7.15	The Environment Agency updated climate change allowances should be referred to.
237	Chapter 14 Road Drainage and the Water Environment / Section 14.7.15	Consideration should be paid to the impact of flooding on local resident's health. Flooding can result in loss of a home and possessions, place of work and as such can have a major impact on mental health and wellbeing. More severe flooding could result in loss of life and family members left behind may experience poor mental health through bereavement (see justification for a full HIA provided). Flood mitigation measures will be of vital importance in relation to the proposed development. The selection of flood defences is also vitally important to the visual amenity and character of the local landscape, as well as access to the riverfront.
238	Chapter 14 Road Drainage and the Water Environment / Section 14.7.15	How water pollution will be mitigated should also be included in the FRA.
239	Chapter 14 Road Drainage and the Water Environment / Section 14.8 and 14.9	It must be ensured that during construction and operation, flood risk or water pollution is not increased off site. If any features that will be used to manage surface water during construction will also be used as part of the final drainage scheme, it must ensured that appropriate features are in place to stop pollution/sediment entering these features. Any final surface water features should be fully inspected to ensure they are working efficiently.
240	Chapter 14 Road Drainage and the Water Environment / Section 14.8	Description of significant effects (construction and operation) seem comprehensive and sensible.
241	Chapter 14 Road Drainage and the Water Environment / Section 14.9	The potential mitigation measures seem sensible, however as part of the attenuation storage, opportunities to (re) create new wetland features, e.g. fens on the Mardyke, to also benefit landscape and biodiversity need to be considered.
242	Chapter 14 Road Drainage and the Water Environment / Section 14.10	The Council agrees that no aspects can be scoped out at this stage.
243	Chapter 14 Road Drainage and the Water Environment / Figure 14.1	SuDS should be located outside of undefended Flood Risk Zones. Additional volumes of water shown to flow to the site must be stored for/accommodated to ensure no increase in flood risk as a result of the development.
244	Chapter 15 Climate / Section 15.4	The baseline information does not mention any actual average temperatures, rainfall etc., only observed changes, so there is no base to start from. Highways England need to take into consideration average met data for the South East for Temperature, Rainfall, Wind, Sunshine and Air Frost, etc.
245	Chapter 15 Climate / Section 15.4.4	Highways England need to clarify why has the 2080 scenarios has not been taken into account bearing in mind the design life for the tunnel is 120 years.

246	Chapter 15 Climate / Section 15.4.5	There is no mention of local greenhouse gas emissions to the scheme, or embodied carbon from the construction industry. Bearing in mind the UK construction industry is the largest consumer of natural resources with an average of over 400 million tonnes of material consumed every year. This accounts for approximately 10% of the total UK carbon emissions (Embodied Energy and Carbon, ICE (Accessed September 2017)- https://www.ice.org.uk/knowledge-and-resources/briefing-sheet/embodied-energy-and-carbon).
247	Chapter 15 Climate / Section 15.7	No reference has been made to Highways England Major Projects' Instructions 'Environmental Impact Assessment: Implementing the Requirements of 2011/92/EU as amended by 2014/52/EU (EIA Directive)' (MPI-57-052017).
248	Chapter 15 Climate / Section 15.7.4	Highways England needs to consider embodied carbon from use of materials in construction within the assessment.
249	Chapter 15 Climate / Section 15.7.6	Highways England need to clarify the methodology used to carry out the climate change risk assessment as it is not clear from the text.
250	Chapter 15 Climate / Section 15.7.10	Clear and adequate mitigation measures at both the construction and operational phases of the project will be required to reduce the levels of greenhouse gas emissions, which in turn will aid in reducing the impact of climate change in the borough and wider areas. This will also work towards reducing poor air quality which can be detrimental to human health (for example leading to premature mortality and exacerbation of conditions such as Asthma and COPD). Climate change can lead to more extremes in the weather and is predicted to lead to hotter summers. In terms of health hotter summers may lead to increased A+E attendances related to heatstroke and other heat related ill health. Extreme weather events should be considered in terms of impact of this proposed crossing and consideration for mitigation measures such as tree planting which can provide shade and SUDS as well as other health benefits.
251	Chapter 15 Climate / Table 15.2	Although mentioned further on in the chapter, there is no mention in this table of embodied carbon from materials used in construction, which for an average highways scheme will make up approximately 70%-80% of the construction carbon footprint.
252	Chapter 15 Climate / Table 15.3	Again there is no mention of embodied carbon associated with materials in the greenhouse gas assessment. This should be considered.
253	Chapter 15 Climate / Section 15.7.17	General comment - PAS2080 was bought in to try and reduce carbon and cost across the infrastructure industry, Highways England need to clarify whether any effort is going to be made to encourage Low Carbon design by monitoring Carbon throughout the project not just at the end with HE's Carbon Calculation tool.
254	Chapter 15 Climate / Section 15.8.9	When the Project is operational, i.e. has vehicles on it, the greenhouse gas emissions from the increased volume of traffic has the potential to be significant. Highways England need to clarify why is this not considered here.
255	Chapter 16 Cumulative Effects / General	Consultation with the Council should be undertaken to agree on the final list of developments to be included in the cumulative assessment.
256	Chapter 16 Cumulative Effects / General	Tilbury Energy Centre has not been included within the list of developments for inclusion in the cumulative assessment. This is an NSIP located adjacent to the proposed development. Due to the proximity of all three NSIPs (Tilbury2, Tilbury Energy Centre and Lower Thames Crossing) the cumulative effects of these developments need to be thoroughly assessed, including the impacts on traffic due to the increased number of vehicles and HGVs all three NSIPs will create.
257	Chapter 16 Cumulative Effects / General	Although DP World London Gateway has been developed, the capacity at this site will continue to increase. Therefore, the cumulative assessment within the EIA should also take this into consideration, this is particularly important within the noise and air quality cumulative assessments.
258	Chapter 16 Cumulative Effects / General	Highways England need to consider the cumulative effect of the various developments (Tilbury2, Tilbury Energy Centre, and the Lower Thames Crossing). The Council requires further clarification on how does these various developments impact on the designated assets within the Thames Corridor.
259	Chapter 16 Cumulative Effects / General	Consideration of existing planning applications (both residential and commercial) and developments in close proximity to the proposed LTC and the cumulative impacts of construction and operation of all of these developments in terms of noise, air pollution, access and social cohesion and employment will be vital in developing appropriate mitigation measures that will reduce the impact on local resident's health.
260	Chapter 16 Cumulative Effects / General	The chapter uses guidance outlined in the PINS Advice Note 17, which is the most up-to-date guidance on a methodology for assessing cumulative effects for Nationally Significant Infrastructure Projects.
261	Chapter 16 Cumulative Effects / General	Cumulative impact on wider marine environment also needs to be accounted for.
262	Chapter 16 Cumulative Effects / Section 16.2	The methodology does not include a significance criteria/indication as to how significance will be established. Section 3.4.7 of PINS Advice Note 17 provides information on the requirements of the significance criteria for cumulative effects assessment.
263	Chapter 16 Cumulative Effects / Section 16.2	The approach for the cumulative effects assessment of air quality and noise and vibration should be clarified in the methodology; as per Section 3.4.4 of PINS Advice Note 17, operational assessments for air quality and noise are often already due to the use the traffic forecast results. If this is the case, this should be included for clarity.
264	Chapter 16 Cumulative Effects / Section 16.2	Highways England need to ensure that a comprehensive cumulative assessment of the air quality effects during construction is undertaken. The construction of the lower Thames crossing would be likely to coincide with the construction of Tilbury2 and the cumulative impact on ambient air quality effects is likely to be significant.
265	Chapter 16 Cumulative Effects / Section 16.2.3	For 'Intra-Project Cumulative Effects', reference is made to results being presented in a matrix. Further clarity is required on this method, and sight of the assessment matrix proposed would be useful.
266	Chapter 16 Cumulative Effects / Section 16.2.5	Reference is made to the EIA Regulations (2009) as amended, Highways England need to refer to the Infrastructure Planning (EIA) Regulations (2017).
267	Chapter 16 Cumulative Effects / Section 16.2.10	In accordance with the Infrastructure Planning (EIA) Regulations 2017, the assessment of cumulative effects should include 'effects with other existing and/or approved projects'. The assessment methodology presented within the chapter states that all Tiers of 'other development' are included; justification should be provided to support this, such as the use of the Precautionary Principle.
268	Chapter 16 Cumulative Effects / Appendix E	The PINS Advice Note 17 recommends a table for recording the Long List of 'other developments' and the subsequent Short List. The table contained within Appendix E only contains the Short List of 'other developments', the Long List should also be included for clarity.
269	Chapter 16 Cumulative Effects / Appendix E	A series of drawings should be produced to accompany the EIA, showing the proposed Scheme in relation to each of the 'other developments' with the ZOIs around both, so that the ZOI overlaps are shown visually.

End of comments

Information in support of a request for a full and comprehensive Health Impact Assessment on the proposed development of the Lower Thames Crossing

With regards to the Environmental Impact Assessment (EIA) Scoping report for the Lower Thames Crossing proposal, it is felt important that consideration is paid to the potential human health impacts in respect of this proposed development. This relates to the health and wellbeing of any person(s) employed during construction and operational stages, local residents living in communities close to the proposed development, and the wider community as a whole where impacts may be felt via the wider transport network.

It is felt to be a useful starting point, to provide a definition of what is meant by the term 'human health', to support and enable full consideration of any potential health impacts that may arise from this proposed development. This will allow the appropriate and adequate mitigation processes to be developed and implemented to reduce such impacts on health.

The World Health Organisation (WHO) defines health as "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." This definition encapsulates the 'holistic' and 'whole' person. Health and wellbeing can be affected by a variety of complex and interrelated factors including the built environment and communities that people live in. This definition also focusses on keeping people well. In order to support people to remain well, acknowledgement of the role that the wider determinants of health can play needs to be recognised. This includes consideration of issues in the built environment such as landscape, traffic, congestion, and air quality, and how these issues can impact on health.

The proposed route for the Lower Thames Crossing essentially divides the borough into two halves. This has the potential to sever links across the borough and create two sets of communities that work in isolation from each other. The health impacts of such a proposal on community and social cohesion, as well the potential to inhibit access to health services and local amenities (e.g. healthy food environments), requires careful consideration. Alongside this, it will be vitally important to determine what the health needs of different wards within the borough are and how they might be affected, as well as identifying what the cumulative effects might be, as a result of the development of the crossing. The wards that are most likely to be affected, in regard to the resident's health, have been identified and are discussed below in turn. As a result, it is strongly recommended that a Health Impact Assessment (HIA) is required, and that this is completed in relation to this proposed development to ensure that any negative consequences of the development are identified and mitigated, and that opportunities for improving the well-being of the community are maximised. We would request that we are included and consulted on during the process of completing the HIA, in particular around the scope and methodology employed. As we have access to more localised health intelligence we feel that it would be useful for Highways England to consult with Thurrock Council Public Health Team to ensure all health impacts are fully identified and assessed, and to inform appropriate mitigation measures.

To support this request for a HIA, we have highlighted the key health issues for the communities that have the potential to be impacted by this development.

Proximity to residential housing, local amenities and local health profile

Thurrock has a population of 165,184 people. It is served by 20 wards, 9 of which may experience potentially significant health impacts related to the proposed Lower Thames Crossing development. Each is discussed below in turn, and an overview of the health needs of each sub-population group will be included that provides the 'bigger picture' of the health needs of Thurrock. This will be focussed on the wards that are most likely to be impacted on by the proposed development. Further to this, inclusion of the potential cumulative impacts on Thurrock as a whole will be outlined. The populations of people most likely to be affected by the proposed development are children, older people, those living with long term conditions and those living in areas of higher deprivation.

Tilbury

The town of Tilbury lies to the West of the proposed Lower Thames Crossing. It is covered by two wards (Tilbury Riverside and Thurrock Park and Tilbury St Chads). The total population of Tilbury is 13,495 people (7274 –Tilbury Riverside and Thurrock Park; 6221 – Tilbury St Chads).

Key health concerns in these wards (Tilbury Riverside and Thurrock Park and Tilbury St Chads) - (taken from Local Health Data, 2017) include:-

- The percentage of children aged 0-15 years - Tilbury Riverside and Thurrock Park – 28.2% and Tilbury Chads 25.8%. This is significantly higher than the Thurrock (22.3%) and England averages (19%).
- The percentage of older people (aged 65+) in Tilbury Riverside and Thurrock Park and Tilbury St Chads are 10.8% and 10.6% respectively.
- Life expectancy for males in Tilbury Riverside and Thurrock Park (75 years) and Tilbury St Chads (76.3 years) is significantly lower than Thurrock (79.1 years,) and national (79.4 years) averages.
- Life expectancy for females in Tilbury Riverside and Thurrock Park (79 years) is significantly lower than the Thurrock (82.5 years) and national (83.1 years) averages. Life expectancy for females in Tilbury St Chads (80 years) is significantly lower than the national average.
- Poverty - 38.6% (Tilbury St Chads) and 40.2% (Tilbury Riverside and Thurrock Park) of children are living in poverty which is significantly higher than the Thurrock (21.8%) and national averages (19.9%).
- Deprivation - Tilbury Riverside and Thurrock Park (36.6) and Tilbury St Chads (40.1) have significantly higher IMD score than Thurrock (21.6) and the national (21.8) averages.
- Limiting long term illness/disability – 15.7% of people in Tilbury Riverside and Thurrock Park and 18.4% of people in Tilbury St Chads are living with a long-term condition. There is a significantly higher percentage of people with a long-term condition residing in Tilbury St Chads than the national (17.6%) average.
- Premature mortality rates for conditions for deaths from all causes- The Standardised Mortality Ratio (SMR) for under 75's - 145.4 in Tilbury Riverside and Thurrock Park and 148.7 in Tilbury St Chads which is significantly higher than both Thurrock (103) and England (100) averages.
- Deaths and early deaths that could largely be prevented – circulatory disease (all ages) and respiratory disease deaths are significantly higher than the Thurrock and national averages in both wards that comprise Tilbury.
- In Tilbury St Chads premature deaths from Coronary Heart Disease for all ages (223.2 SMR) are significantly higher than the Thurrock (114.9) and National (100) averages.

Appendix 2 Thurrock Council – Information in support of a request for a full and comprehensive Health Impact Assessment on the proposed development of the Lower Thames Crossing

- In Tilbury Riverside and Thurrock Park premature deaths from CHD (all ages) measured by SMR is 150. This is significantly higher than the national (100) average.
- Premature deaths from cancer across all ages measured by SMR is 130.9. This is significantly higher than the national (100) average.
- Deaths or early deaths from stroke are significantly higher than the National (100) average in Tilbury Riverside and Thurrock Park (173.1 SMR).
- Hospital admissions for Coronary Obstructive Pulmonary Disease (COPD) - The Standardised Admission Ratio (SAR) is significantly higher for Tilbury (209) than the Thurrock (118.6) and national (100) averages.
- The incidence of lung cancer –The Standardised Incidence Ratio (SIR) in both wards is 122.9.
- Social Isolation (based on number of pensioners living alone) – lots of people experience social isolation – 39.1% Tilbury Riverside and Thurrock Park and 32.1% Tilbury St Chads. The percentage of people living in Tilbury Riverside and Thurrock Park living in social isolation is significantly higher than the Thurrock (31.9%) and National (31.5%) averages.
- Childhood obesity –13% of 4-5 year olds in Tilbury. This is significantly higher than the national average (9.3%). Of 10-11 year olds 26.2% children in Tilbury are obese, which is significantly higher than the national (19.3%) average.

To summarise, existing residents are more likely to be living in poverty and deprivation. They are more likely to die at a younger age from several conditions that could be appeased by better environmental conditions. There are higher proportions of older people living alone, leaving them at risk of social isolation. Additionally, childhood obesity is a key health priority in this area.

East Tilbury

East Tilbury is located to the East of the proposed Lower Thames Crossing. East Tilbury has a population of 6469 people.

Key health concerns in this ward (taken from the Local Health data 2017) include:-

- 21.4% are aged 0-15 and 13.1% are aged 65+. There significantly higher numbers of children in East Tilbury than the national average (19%).
- Emergency hospital admissions for COPD – The SAR is 147.3 which is significantly higher than the England (100) average.
- The incidence of lung cancer – The SIR in East Tilbury is 132.
- Social Isolation - 22.2% of people living in this ward experience social isolation.
- Obesity – 29.3% of adults, 7% of 4-5 year olds and 19.4% of 10-11 year olds are obese.

There are higher numbers of children residing in this ward, who may be more vulnerable to the potential health impacts arising from the proposed development. In East Tilbury there are high levels of emergency hospital admissions for COPD which could be reduced by better environmental conditions that promote good health.

Orsett

This ward lies to the North-East of the proposed Lower Thames Crossing and has a total population of 6168.

Key health concerns in this ward (taken from Local Health Data 2017) include:-

Appendix 2 Thurrock Council – Information in support of a request for a full and comprehensive Health Impact Assessment on the proposed development of the Lower Thames Crossing

- 18% are aged 0-15 and 20.2% are aged 65+. There are significantly higher numbers of people aged 65+ living in Orsett than both the Thurrock (13.8%) and England (17.7%) averages.
- Limiting long term illness/disability – 14.2% (876 people) in Orsett.
- Social Isolation - 19.5% of the people in this ward.
- Obesity - 25.6% of adults and 11% of 4-5 year olds are obese. This rises to 18.9% of 10-11 year old children living in Orsett.
- There are 3 traveller sites in Thurrock and the Gammon Field site at Long Lane (22 plots), considered in the ward of Orsett, and under the proposed route will need to be relocated. Gypsies and Travellers experience some of the poorest health outcomes including the lowest life expectancy of any group in the UK and high infant mortality rates.

Orsett has a significantly higher proportion of people aged 65 and over who may be more vulnerable to health impacts, including social isolation and poor health generally.

Ockendon

Ockendon is located West of the proposed site and is the most Northern ward on the West side of the borough. Ockendon has a population of 10,691.

Key Health concerns in this ward (taken from Local Health Data 2017) include:-

- 23.3% are aged 0-15 years which is significantly higher than the national average (19%). There are 13.1% of people living in Ockendon who are aged 65+.
- Limiting long term illness/disability 18.1% of population have an long-term condition which is higher than the Thurrock and England averages (15.6% and 17.6% respectively).
- Poverty – 24.4% of children are living in poverty which is significantly higher than both Thurrock (21.8) and England (19.9%) averages.
- Premature mortality rates for deaths from all causes – The SMR for deaths in those aged under 65 is 110.3.
- Deaths and early deaths from conditions which could be prevented as measured by SMR – Cancer (all ages) – 132.1 and CHD (all ages) – 138.5 SMR are significantly higher than the National (100) average.
- Emergency hospital admissions for COPD – The SAR is 148.1 which is significantly higher than the national (100) average.
- The incidence of lung cancer – The SIR is 140.
- Social Isolation – 38% of people in Ockendon. This is significantly higher than the Thurrock (31.9%) and England (31.5) averages.
- Obesity – 28.6% of adults, 10.1% of children aged 4-5 years of age and 24.9% of 10-11 year olds are obese. The percentage of children aged 10-11 years who are classified as obese is significantly higher than the national averages (19.3%).

In Ockendon, higher proportions of people are living with long-term conditions, alongside higher premature mortality rates from conditions that could be reduced by better environmental conditions. Poverty is also a concern with high levels of children and families living in deprivation. As with some of the other wards in the borough social isolation is a health concern in Ockendon. Obesity is also a key consideration particular in relation to children and promoting their health and wellbeing.

Chadwell St Mary

This ward lies to the South-West of the proposed development. Chadwell St Mary has a population of 10,195 people

Key health concerns for this ward (taken from Local Health Data 2017) include:-

- 22.1% are aged 0-15 years which is higher than the national (19%) average. There are 18.6% of people living in Chadwell St Mary who are aged 65+. This is significantly higher than the Thurrock (13.8%) and national (17.7%) averages.
- Life expectancy for males is 77 years. This is significantly lower than the England (79.4 years) average.
- Life expectancy for females is 80.3 years. This is significantly lower than both the Thurrock (82.5 years) and England (83.1 years) averages.
- Poverty- 31.1% of children are in poverty which is significantly higher than the Thurrock (21.8%) and national (19.9%) averages.
- The IMD score of for deprivation in Chadwell St Mary (28.4) is significantly higher than both than the Thurrock (21.6) and national (21.8) averages.
- Limiting long term illness/disability – The percentage of people living with a limiting long term condition in Chadwell St Mary (21.9%) is significantly higher than the Thurrock (15.6%) and England (17.6%) averages.
- Premature mortality rates for deaths from all causes – the SMR for deaths for under 75's is 137.2 which is significantly higher than both Thurrock and England average (103 and 100 SMR respectively).
- Deaths and early deaths from conditions that could be prevented - Cancer (under 75's) as measured by SMR is 144.2 is significantly higher than both the Thurrock (105.9) and England (100) averages.
- Premature deaths from cancer across all ages (132.8 SMR) and respiratory condition (all ages) – 142.1 SMR are significantly higher than the England (100) average.
- Deaths or early deaths from strokes, measured by SMR, is 107.5.
- Emergency hospital admissions for COPD – the SAR is 144.3 which is significantly higher than the national average (100).
- The incidence of lung cancer – the SIR is 124.6.
- Social Isolation – 32.1% of the population of Chadwell St Mary.
- Obesity - 27.6% adults, 12.3% of 4-5 year olds and 20% of 10-11 year olds are classified as obese in this ward. The percentage of obese young children in this ward is significantly higher than the national (9.3%) average.

Chadwell St Mary is an area with high levels of poverty. Life expectancy is significantly lower for both males and females. Premature mortality from several conditions could be appeased by better environmental conditions. There are high levels of people living with long-term conditions as well as emergency hospital admissions relating to COPD. Obesity is a priority health area for young children (aged 4-5 years) who may be more vulnerable to health impacts.

Little Thurrock Blackshots

Little Thurrock Blackshots lies to the South-West of the proposed Lower Thames Crossing and has a total population is 6,059.

Key health concerns for this ward (taken from Local Health Data 2017) include:-

Appendix 2 Thurrock Council – Information in support of a request for a full and comprehensive Health Impact Assessment on the proposed development of the Lower Thames Crossing

- 18.6% are aged 0-15 years and 21.3% are aged 65+. There is a significantly higher number of people aged 65 and over living in this ward than the Thurrock (13.8%) and England (17.7%) averages.
- Limiting long term illness/disability -18.4% of people in this ward which is significantly higher than the Thurrock (15.6%) average.
- Poverty – 15.1% of children live in poverty.
- Social Isolation – 29.4% of people living in this ward experience social isolation.

In Little Thurrock Blackshots, there are high numbers of older people and people with long-term conditions. Additionally, many older people are living alone, and as such are at increased risk of experiencing social isolation which can negatively impact on both physical and mental health.

Stifford Clays

Stifford Clays lies west of the proposed site. There is a total population of 6,628 people living in this ward.

Key health concerns for this ward (taken from Local Health Data 2017) include:-

- 19% aged 0-15 years and 21.6% are aged 65+. There is a significantly higher number of people aged 65+ living in this ward than the Thurrock (13.8%) and national (17.7%) averages.
- Limiting long term illness/disability – 20.4% of people in Stifford Clays live with an LTC which is significantly higher than the Thurrock (15.6%) and national (17.6%) averages.
- Emergency hospital admissions for COPD – the SAR is 125.8 in this ward which is significantly higher than the national average (100).
- Premature deaths from conditions that could be prevented (CHD –all ages) – the SMR is 118.3 in Stifford Clays.
- Social isolation – 35.9% of people in this ward experience social isolation which is significantly higher than Thurrock (31.9%) and national (31.5%) averages.

There are significantly higher numbers of people with long-term conditions in Stifford Clays. High numbers of emergency hospital admissions related to COPD as well as premature mortality from CHD could be reduced with better environmental conditions. As with the many of the other wards discussed, there are higher numbers of older people living alone which puts them at increased risk of social isolation.

Belhus

Belhus lies between Ockendon and Stifford Clays and is West of the proposed Lower Thames Crossing. Belhus has a population of 10,256 people

Key health concerns for this ward (taken from Local Health Data 2017) include:-

- 23.2% are aged 0-15 years which is significantly higher than the national (19%) average. There are 11.5% of people living in Belhus who are aged 65+.
- Poverty– 25.2% of children are in poverty which is significantly higher than the Thurrock (21.8) and national (19.9%) averages.
- The IMD score for deprivation in Belhus is 32 which is significantly higher than the Thurrock (21.6) and England (21.8) averages.

Appendix 2 Thurrock Council – Information in support of a request for a full and comprehensive Health Impact Assessment on the proposed development of the Lower Thames Crossing

- Limiting long term illness/disability – 18.9% of people have an LTC in Belhus. There are significantly higher percentages of people living with long-term conditions in this ward than both Thurrock (15.6) and England (17.6%) averages.
- Premature deaths from all causes – The SMR for deaths in under 75's is 132.1 which is significantly higher than both the Thurrock (103) and England (100) averages.
- Deaths or early deaths from conditions that could be prevented – cancer (under 75's), and CHD (all ages), are significantly higher than the Thurrock and National averages.
- Social Isolation – 34.9% of people experience social isolation in this ward which is significantly higher the national (31.5%) average.
- Obesity – 30.2% of adults, 9.9% of 4-5 year olds and 26.3% of 10-11year olds are obese. The percentage of 10-11 year old children who are obese in Belhus is significantly higher than the national (19.3%) average.

Existing residents living in Belhus experience high levels of deprivation. The number of people dying prematurely from many conditions could be appeased by better environmental conditions. There are significantly higher numbers of older people living alone in this ward. This places these individuals at increased risk of social isolation. Obesity is an area of priority in relation to children, in terms of promoting health and wellbeing.

Thurrock – Borough-wide considerations

Key Health concerns across Thurrock (taken from Public Health England) include:-

- Exposure to rail, air and traffic noise of 65DB (A) + (day and night) – 2.7% (4460 people) are affected by daytime exposure and 4.8% (7929 people) at night.
- 5.6% of premature deaths are attributable to air pollution particulate matter (PM2.5) which is higher than the England average (4.7%). Thurrock have the highest number of deaths attributable to particulate matter when compared with their CIPFA comparators and 2nd highest across the East of England region.
- Annual level of air pollution particulate matter (PM2.5) - The annual level is 10ug/m3. Thurrock has the highest level of annual air pollution than their CIPFA comparators and is 2nd highest in the East of England region.
- Currently, there are 18 AQMAs across the borough, predominantly in the South and West of the borough. All of these have the potential to be impacted further by the proposed crossing in terms of the broader impact that it may have on the local road network and potential for traffic congestion. Therefore the potential health impact this might have on residents near these AQMAs needs to be assessed.
- Common Mental Health Disorders (CMHDs) – 17.9% of people aged 16-74 years have a CMHD.
- Depression – 8.5% of people are recorded as having depression.
- 5-a-day recommended intake of fruit and vegetables – only 40.1% of adults and 49.2% of children (aged 15) eat the recommended 5-a-day.
- Physical activity – 53.9% of adults meet recommended physical activity levels per week, 31% of adults are classed as inactive, and only 13.7% of children are physically active for at least 1hour per day. 76% of children are engaged in sedentary behaviour for 7+ hours per day.

Thurrock experiences higher levels of air pollution annually than other similar areas, as well as across the East of England. 5.6% of premature deaths are attributable to poor air quality, which could be reduced by introducing better environmental conditions. As described above, there are many existing residents who are already impacted on by the effects of noise pollution, reportedly more during the night. This could be affecting individuals' ability to

Appendix 2 Thurrock Council – Information in support of a request for a full and comprehensive Health Impact Assessment on the proposed development of the Lower Thames Crossing

sleep and as such could lead to sleep deprivation. Getting a good night's sleep is beneficial for improving concentration, mood and wellbeing.

There are high numbers of existing residents in the borough who experience poor mental health, which for some may be associated with living alone, and as such being at increased risk of social isolation. There are low numbers of both adults and children who eat the recommended 5-a-day portions of fruit and vegetables. There are high numbers of existing residents who are inactive or who do not meet the recommended physical activity levels.

As can be seen from the information presented above, Thurrock as a whole is very varied in terms of health needs across the borough. There are many pockets of extreme deprivation and numerous existing health inequalities. These existing issues have the potential to be exacerbated by the development of the Lower Thames Crossing, particularly in relation to the potential for increased levels of air and noise pollution, and severance of local communities. There is also potential that some of the 'Rights of Way' may be impeded upon which in turn will affect people's ability to move across the borough or engage in walking and cycling as a form of physical activity.

It is also possible that there may be some indirect impact on other areas (outside of the 9 wards described above) as a result of the proposed Lower Thames Crossing. Consideration should be given to whether there may be increased demand on existing health services (e.g. GP practices and secondary care services at Basildon Hospital) which are already oversubscribed and under pressure, as a result of the proposed new crossing.

Evidence Base

Although the evidence base on the built environment and particularly transport and health is in its infancy in parts or is sometimes differential or conflicting for different populations at a local or wider level, the emerging health evidence is also considered as a basis for fully investigating the health impact the proposed new road and crossing.

Some of the highlighted impacts of new roads and transport interventions which are considered important in terms of the evidence base and the subsequent impact on local population health include:

- Noise – in particular its impact on mental health and wellbeing related to stress from noise, and sleep disturbance from noise, and on cardiovascular health (increased blood pressure and increased risk of coronary heart disease).
- Air Pollution – impacts on respiratory and cardiovascular health and on vulnerable groups.
- Community severance - impacts on mental well-being, social isolation, access to healthcare and amenities and services.
- RTAs – consideration of the safety of the intersect between old and new road networks and the prevention of shifts in RTAs to other roads.
- Physical Activity – impact on obesity, long-term conditions (such as cardiovascular diseases), and mental health and wellbeing.
- Health Inequalities - the proposed route is located close to areas of high deprivation and health inequality. This proposed development has the potential to add a further burden to already disadvantaged communities.

Additional considerations

Additionally, as part of any subsequent EIA, HIA and planning applications, we would like to see the following included:-

Appendix 2 Thurrock Council – Information in support of a request for a full and comprehensive Health Impact Assessment on the proposed development of the Lower Thames Crossing

- A noise impact assessment that takes into account the importance of implementing adequate noise mitigation measures (as needed) to reduce the impact on resident's health and wellbeing.
- An air quality impact assessment that includes consideration of the impact on human health that poor air quality can have, particularly in areas where health inequalities exist, and where premature mortality rates are high and there are large numbers of people with respiratory conditions or COPD that can be exacerbated by air pollution (as is the case in many of the wards located in close proximity to the proposed Lower Thames Crossing – see above for details). This will be vital considering the potential increase in traffic within the borough's transport network as a result of the proposed Lower Thames Crossing.
- Consideration should also be paid to the inclusion of cycling and walking infrastructure across the borough to mitigate wider transport network activity and the replacement and enhancement of any potentially lost existing rights of way, as part of the development, which promotes social cohesion and encourages residents to engage in physical activity.
- Visually pleasing environments are beneficial for mental health and wellbeing and can support people to spend more time outside being physically active, feel safe in their local communities, enhance a sense of pride of their local area and increase social cohesion. Incorporation of mitigating actions such as green bridges that will connect local areas that will be severed by the proposed route would create aesthetically pleasing environments, connects communities and enhances social cohesion. Such bridges could incorporate some of the walking and cycling infrastructure proposed above to promote more sustainable modes of travel and increase physical activity.
- There is emerging evidence about the effectiveness of urban greening and tree planting in mitigating the effects of air pollution. Strategic planting of trees can reduce the impacts of poor air quality. Some of the best species to use in terms of reducing air pollution as calculated by the urban tree air quality score (UTAQS) include; alder, field maple, hawthorn, larch, laurel, Lawson cypress, Norway Maple, pine and Silver birch. More broadly urban greening and planting create stimulating and pleasing environments which as noted above are beneficial to mental health and wellbeing. Introduction and enhancement of green environments also benefit in terms of participation in physical activity, social connectivity, and access to nature. Consideration should therefore be paid to the inclusion of tree planting and urban greening as part of the development process.

Conclusion

Based on the above information, we request that a comprehensive HIA be undertaken as part of the planning process. This is in light of the size of the development and the potentially large impacts on health that may be result from the development. The HIA should consider all aspects of human health and how they may be affected by the proposed development. Alongside this, clear mitigation measures should be included that aim to reduce and minimise the impact of the development on the health of the existing and future residents who live in Thurrock. As Thurrock has a currently higher proportion of young children and a growing older population who are more likely to have multiple health needs, a HIA that protects and promotes their right to good health, will be of vital importance.

As noted earlier in this report we would request that we are consulted on during the process of completing the HIA, in particular around the scope and methodology employed. As we have access to more localised health intelligence we feel that it would be useful for Highways England to consult with Thurrock Council Public Health Team to ensure all health impacts are fully identified and assessed and to inform appropriate mitigation measures.

Ockendon Key Health Concerns:-

- 18.1% of population have an LTC which is higher than the Thurrock and England averages (15.6% and 17.6% respectively).
- 24.4% of children are living in poverty which is significantly higher than both Thurrock (21.8) and England (19.9%) averages.
- Deaths and early deaths from conditions which could be prevented as measured by SMR – Cancer (all ages) – 132.1 and CHD (all ages) – 138.5 SMR are significantly higher than the National (100) average.
- Emergency hospital admissions for COPD – The SAR is 148.1 which is significantly higher than the national (100) average.

Belhus Key Health Concerns:-

- 30.2% of adults, 9.9% of 4-5 year olds and 26.3% of 10-11 year olds are obese. The percentage of 10-11 year old children who are obese is significantly higher than the national (19.3%) average.
- Premature deaths from all causes – The SMR for deaths in under 75's is 132.1 which is significantly higher than both the Thurrock (103) and England (100) averages.
- Deaths or early deaths from conditions that could be prevented – cancer (under 75's), and CHD (all ages), are significantly higher than the Thurrock and National averages.
- 25.2% of children are in poverty which is significantly higher than the Thurrock (21.8) and national (19.9%) averages.

Little Thurrock Blackshots Key Health Concerns:-

- Population - 18.6% are aged 0-15 years and 21.3% are aged 65+. There is a significantly higher number of people aged 65 and over living in this ward than the Thurrock (13.8%) and England (17.7%) averages.
- Limiting long term illness/disability - 18.4% of people in this ward which is significantly higher than the Thurrock (15.6%) average.
- Poverty – 15.1% of children live in poverty.
- Social Isolation – 29.4% of people living in this ward experience social isolation.

Stifford Clays Key Health Concerns:-

- Population - 19% aged 0-15 years and 21.6% are aged 65+. There is a significantly higher number of people aged 65+ living in this ward than the Thurrock (13.8%) and national (17.7) averages.
- Limiting long term illness/disability – 20.4% of people in Stifford Clays live with an LTC which is significantly higher than the Thurrock (15.6%) and national (17.6%) averages.
- Emergency hospital admissions for COPD – the SAR is 125.8 in this ward which is significantly higher than the national average (100).
- Social isolation – 35.9% of people in this ward experience social isolation which is significantly higher than Thurrock (31.9%) and national (31.5%) averages.

Orsett Key Health Concerns:-

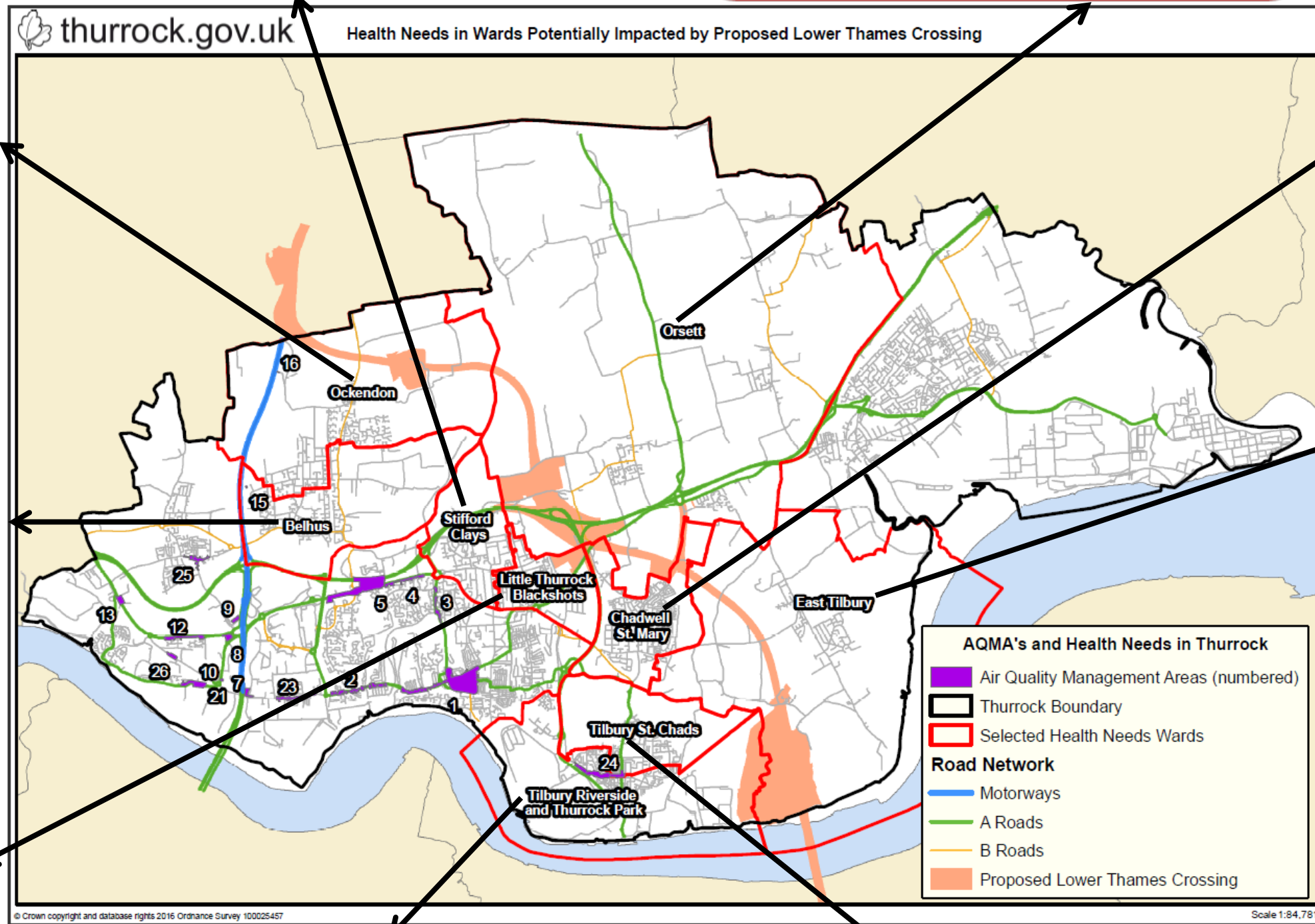
- Population - 18% are aged 0-15 and 20.2% are aged 65+. There are significantly higher numbers of people aged 65+ living in Orsett than both the Thurrock (13.8%) and England (17.7%) averages.
- Limiting long term illness/disability – 14.2% (876 people) in Orsett.
- Social Isolation - 19.5% of the people in this ward.
- Obesity - 25.6% of adults and 11% of 4-5 year olds are obese. This rises to 18.9% of 10-11 year old children living in Orsett.

Chadwell St Mary Key Health Concerns:-

- Life expectancy for males is 77 years. This is significantly lower than the England (79.4 years) average.
- Life expectancy for females is 80.3 years. This is significantly lower than both the Thurrock (82.5 years) and England (83.1 years) averages.
- Premature deaths from cancer across all ages (132.8 SMR) and respiratory condition (all ages) – 142.1 SMR are significantly higher than the England (100) average.
- Emergency hospital admissions for COPD – the SAR is 144.3 which is significantly higher than the national average (100).

East Tilbury Key Health Concerns:-

- Population - 21.4% are aged 0-15 and 13.1% are aged 65+. There are significantly higher numbers of children in East Tilbury than the national average (19%).
- Emergency hospital admissions for COPD – The SAR is 147.3 which is significantly higher than the England (100) average.
- Social Isolation - 22.2% of people living in this ward experience social isolation.
- Obesity – 29.3% of adults, 7% of 4-5 year olds and 19.4% of 10-11 year olds are obese.



Tilbury Riverside & Thurrock Park Key Health Concerns:-

- 40.2% of children are living in poverty which is significantly higher than the Thurrock (21.8%) and national (19.9%) averages.
- Deaths and early deaths from circulatory disease (all ages) and respiratory disease deaths are significantly higher than the Thurrock and national averages in this ward.
- The percentage of people living in Tilbury Riverside and Thurrock Park (39.1%) living in social isolation is significantly higher than the Thurrock (31.9%) and National (31.5%) averages.
- Tilbury Riverside and Thurrock Park (36.6) has a significantly higher IMD score than Thurrock (21.6) and the national (21.8) averages.

Tilbury St Chads Key Health Concerns:-

- Life expectancy for males in Tilbury St Chads (76.3 years) is significantly lower than Thurrock (79.1 years,) and national (79.4 years) averages.
- Life expectancy for females in Tilbury St Chads (80 years) is significantly lower than the national average.
- In Tilbury St Chads premature deaths from Coronary Heart Disease for all ages (223.2 SMR) is significantly higher than the Thurrock (114.9) and National (100) averages.
- There is a significantly higher percentage of people with an LTC residing in Tilbury St Chads than the national (17.6%) average.