



Lower Thames Crossing

Executive Summary

DRAFT - 12 Mar 2020

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Executive Summary

Introduction

1. Highways England is applying for a Development Consent Order (DCO) to construct and operate the Lower Thames Crossing (LTC) which is approximately 14.5 miles (23 km) of new motorway connecting the existing road network from the A2/M2, south-east of Gravesend, to the M25, to the north of North Ockendon. The scheme incorporates two 2.5 mile (4 km) tunnels under the River Thames and associated modifications to the M25, A2 and A13.
2. The scheme is classified as a Nationally Significant Infrastructure Project (NSIP) therefore consent will be sought via a Development Consent Order (DCO) under the Planning Act 2008 (PA 2008) and the Planning Inspectorate (PINS) will consider the application on behalf of the Secretary of State for Transport. Highways England's programme is to submit to the DCO application in Summer 2020.
3. At the end of 2018, Highways England presented its 'Statutory Consultation Scheme' for the proposed LTC. The scheme has evolved in the last year and now a series of design changes has been published which is the subject of a Supplementary Consultation exercise, running from 29 January until 25 March 2020.
4. This report has been prepared for Thurrock Council to provide a review of the material presented as part of the Supplementary Consultation exercise. Its purpose is to identify areas of concern, potentially significant issues and suggest areas of further work required by HE, in order to assist the Council in preparing its response to the consultation exercise.
5. Overall, the Council has been actively engaging with Highways England however, based upon the consultation material available, the information presented by Highways England is deficient of the detail required for stakeholders to provide an informed response to the proposed design changes. Each design change is complex and gives rise to a number of subsequent revisions to the design and structure of the scheme, creating a cascade effect. In addition, progress on the environmental and health impact assessment work, and related engagement, has been slow such that the potential effects of the scheme, and the effectiveness of mitigation proposals cannot be properly determined at this late stage in the programme.

Supplementary Consultation Scheme

6. The design changes proposed in the Supplementary Consultation Scheme comprise:
 - Increase in length of tunnels, now 2.6 miles (4.3 km) and corresponding decrease in length of new road, now approx. 14.3 miles (23 km);
 - Changes to the M2/A2 junction and local link roads;
 - Relocating the southern tunnel entrance approximately 350 metres to the south;
 - Removal of the Rest and Services Area (RaSA);
 - Removal of the previously proposed junction at Tilbury;
 - Relocating the route between Tilbury and the A13 junction approximately 60 metres north-east;
 - Changes to a number of slip roads at the junction between the LTC, A13, A1089 and A1013;

- Removal of one southbound running lane between the M25 and A13 junction;
 - Changes to the structures over the Mardyke River, Golden Bridge Sewer and the Orsett Fen Sewer;
 - Changes to the southbound link from the M25 to the LTC; and
 - Changes to the layout of junction 29 of the M25.
7. In addition, as part of the Supplementary Consultation exercise, Highways England has reported its progress in relation to:
- Funding – the project is now being developed as a fully publicly-funded scheme rather than as a privately financed initiative;
 - Charging at Dartford and LTC – it is proposed that the charging regime will be the same for both the Dartford Crossing and the LTC; and
 - Local Residents Discount Scheme (LRDS) – Highways England intends to apply a LRDS to residents of Thurrock and Gravesham for the LTC. The intention is that this will be on a similar basis to that which applies to the Dartford Crossing.
8. Highways England’s Supplementary Consultation materials also includes the following material:
- i. Environmental Impacts Update;
 - ii. Traffic Modelling Update; and
 - iii. Utilities Update.

Review process

9. The review which has been undertaken seeks to identify and assess potential issues arising from the construction and operation of Highways England’s Supplementary Consultation Scheme which are likely to be of concern to the Council as a ‘host authority’. The review considers only the design changes north of the river.

Review findings and the Council’s position

10. The exercise has been used to re-cap the Council’s principal areas of concern relating to the LTC scheme, which are:
- **National and Strategic Policy** - the proposed LTC does not meet several of the national and Highways England’s strategic policy tests and scheme objectives;
 - **National Planning Practice** - the assessments presented by Highways England to date do not give adequate consideration to the NPPF;
 - **Emerging Local Plan and its interface with the proposed LTC** – the proposed LTC does not make provision for, and is inconsistent with, the housing and development potential for Thurrock and the aspirations for the Borough and for the wider South Essex area as set out in Thurrock’s emerging Local Plan and South Essex Joint Strategic Plan;
 - **Design Quality** – the need for the LTC scheme, if approved, to provide good quality design;

- **Effects on Thurrock's communities and environment** – the proposed LTC would give rise to adverse effects during the construction and operation of the scheme which would significantly affect Thurrock's communities and environment;
- **Effects on Thurrock's economy** – the scheme would have significant economic costs on residents and businesses in the Borough, principally due to direct loss of land, disruption to access and movement in the Borough and the creation of blight across the LTC corridor;
- **Effects on Thurrock's operations** – potential effects from the construction and operation of the LTC scheme on the Council's day to day operations;
- **Creating a lasting legacy** – the importance of ensuring a lasting beneficial legacy - covering community infrastructure, environment, health and wellbeing and skills;
- **Configuration of the proposed LTC** – concerns relating to the configuration of the proposed LTC, for example at the interchange between the LTC and A13, in the reduction in number of lanes southbound from the M25, and more generally in relation to facilitating future local growth;
- **DCO process, technical engagement and LTC application programme** - the Council has raised concerns with Highways England and the Planning Inspectorate in the past, and is now raising this point again, in relation to the limited amount of meaningful technical engagement which has taken place to date, the adequacy of consultation and relating to DCO Requirements. This remains a considerable concern to the Council.

Technical assessments

11. The following areas require further assessment work and engagement with the Council:

- **Environmental Impact Assessment** – significant information gaps and the potential for under reporting potential impacts. Further increases to the Application Boundary made since EIA Scoping Opinion (2017) which are likely to give rise to new or altered likely significant environmental effects. A further scoping exercise should be undertaken;
- **Health Impact Assessment** – Highways England has confirmed that this will be provided in the form of the Health and Equalities Impact Assessment (HEqIA) however, no detail has been provided in order to consider the potential effects of the scheme and any associated mitigation and it is understood that that no detailed information will be provided by Highways England until the DCO application is submitted;
- **Assessment of cumulative effects and interaction of effects** – potential prolonged adverse effects on the communities and environment of Thurrock from major construction projects in the Borough;
- **CoCP/CEMP** – a strong reliance placed by Highways England on these documents although no detail seen by the Council as yet;
- **Traffic modelling** – does not include the results of any option testing and has insufficient detail to understand the impacts of the Supplementary Consultation Scheme on the local road networks as well as residents, businesses, open countryside and designated environmental areas in the Borough;

- **Utilities** – concerns relating to the extent of land take proposed for the utility works and the direct impact on residential premises. The land take shown for utilities works should be rationalised to the minimum possible area required to complete them.

Locations

12. The high level and generic nature of the commentary provided by Highways England means it is difficult to understand the true impacts of the design changes or to make specific recommendations regarding the mitigation measures which ought to be sought. The following locations, for example, are areas where further work is considered to be required:
 - Alternative design options for the treatment of the crossing through the Mardyke Valley should be considered to reduce potential adverse environmental effects;
 - Alternative design options for the treatment of the viaduct over the Tilbury Loop Line should be considered to reduce potential adverse environmental effects; and
 - Configuration of the interchange between the proposed LTC and A13.
13. In relation to Public Rights of Way (PRoWs), the Guide to Supplementary Consultation identifies many affected PRoWs but no detail is given as to what will be provided by way of mitigation or the measures that are “improving and upgrading” facilities for walking cycling or horse riding. There is an opportunity to provide a link from the Thames Chase Forest Centre through to Coalhouse Fort with only minor amendments to the proposed routes.

Recommendations

14. Recommendations relating to the Supplementary Consultation Scheme are presented in this report and relate to:
 - Design Quality (Ch 4)
 - Review of Environmental Impacts (Ch 5)
 - Review of Traffic Modelling Update (Ch 6)
 - Proposed Route Changes (Ch 7)
 - Review of Walking, Cycling and Horse-riding Network (Ch 8)
 - Review of Utilities Update (Ch 9)
 - Constructing and Operating the Proposed LTC (Ch 10)
15. The intention is that these should be collated, agreed with the Council and used as a checklist to ensure that the Council's concerns are addressed as the LTC design and assessment work progresses.

Engaging with the Council

16. The Council's concerns about the limited amount of meaningful technical engagement are well documented in this report. The nature of the DCO process is to encourage close and meaningful engagement with the promoter as the design proceeds and the Council would wish to ensure that this can be achieved in the time available up to submission of the DCO application. Therefore, in addition to the technical engagement which is recommended in this report - in relation to, for example, the scheme design and configuration, the on-going technical assessment work (ie. EIA, HEqIA) and traffic modelling - the Council would wish to see further discussion with Highways

England in relation to some of other aspects of the proposal which would have a direct bearing on the Council and its communities should consent for the scheme be granted. These aspects would comprise, but are not limited to:

- Addressing the aspirations set out in the emerging Local Plan and delivering sustainable local growth;
- Mitigation for the likely economic costs to the Borough (see report in Appendix C);
- Delivering a lasting legacy and securing local benefits; and
- Agreeing relevant draft DCO Requirements and s106 draft Heads of Terms.

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1. Review of Environmental Impacts Update

1.1 Overview

1.1.1 This section sets out the findings of the review of Highways England’s Environmental Impacts Update. Appendix D provides the detailed review and comments relating to the potential environmental impacts of each design change, as presented in the Supplementary Consultation material. The comments are summarised in Table 1.1 below.

Red-Amber-Green rating

1.1.2 A Red-Amber-Green (RAG) rating has been used to classify the potential environmental effects of the proposed design changes. The RAG rating is as follows:

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

Table 1.1: Summary and key points of the review of the Environmental Impacts Update

Design Change	Summary and Key Points
Removal of Tilbury Junction, the rest and service area and maintenance depot - Design Change 8	<p>While removal of the RaSa is supported, the removal of the junction places pressure upon the Council to identify, fund and maintain any link road provision that will facilitate growth and access in Tilbury. The removal of Tilbury Junction is an impediment to economic development in the Tilbury area. There is no consideration of the negative impact for Tilbury and the Docks, identified as a growth sector for employment and business. A link road could have improved access to Tilbury Port and provided an alternative route away from residential areas. Also, there should be a potential to create a route through to East Tilbury and Coalhouse Fort.</p> <p>Further specific assessment and mitigation is required for the following:</p> <ul style="list-style-type: none"> • Views from West Tilbury and East Tilbury Conservation Areas, Coal Fort East Tilbury Battery or Tilbury Fort Scheduled Monuments. • Design of balancing ponds and their integrated use for wildlife, landscape and other uses with amenity value rather than the standard ‘deep ditch’ balancing pond detail. • Impact to Low Street Local Wildlife Site (LWS), concerns regarding reduction in mitigation.
Tilbury viaduct length reduced - Design Change 9	<p>As yet no detailed design of the Tilbury viaduct structure, including acoustic fencing, lighting and gantries has been provided. Map Book 3: Engineering Plans only provides an indicative elevation out of context with the surrounding landscape features). Although Tilbury viaduct is proposed to be lower at Supplementary Consultation, however, there will still be visual impacts in terms of the design quality. It is unclear how the design change would lessen the temporary adverse construction impacts on local communities, such as East Tilbury and West Tilbury.</p> <p>Further specific assessment and mitigation is required for the following:</p> <ul style="list-style-type: none"> • Views from West Tilbury and East Tilbury Conservation Areas, Coalhouse Fort, East Tilbury Battery or Tilbury Fort Scheduled Monuments
Muckingford Road realignment and green	<p>The area surrounding Muckingford Road is considered to be tranquil. The LTC route has moved slightly closer to the properties on the north side of Muckingford Road, whereby their access is affected but the properties are retained. Construction work is likely to be closer to noise sensitive receptors, however, no specific construction</p>

Design Change	Summary and Key Points
bridge - Design Change 10	<p>mitigation is provided. Information is cross referred to in the PEIR, however Figure 13.2 in Volume 3 of the PEIR is a low-resolution map and it is not clear if noise monitoring has been undertaken in this area. Alternative design should be explored to lower the LTC to preserve the tranquil nature of the area.</p> <p>Further specific assessment and mitigation is required for the following:</p> <ul style="list-style-type: none"> • Design to mitigate the major negative landscape change and a moderate to major negative change in terms of views. • Further information required on receptor sites for translocation of protected species. <p>While the green bridge would represent some form of mitigation in terms of severance for people and communities and walking/cycling active connections, it is dependent on how the green bridge is designed, planted and maintained to encourage public use.</p>
LTC route realignment near Chadwell St. Mary and Linford – Design Change 11	<p>Potential impacts to the Linford community should be properly assessed due to the route moving 60 metres closer to Linford. The Environmental Impacts Update states that this design change may increase the temporary adverse construction effects experienced by residents of Linford. Furthermore, it is not clear how this conclusion has been reached and which receptors are affected (e.g. community open space, community severance, economy, health).</p> <p>The Supplementary Consultation documents do not refer to the effect on Rainbow Shaw LWS which is ancient woodland. Highways England has acknowledged that the realignment will result in the permanent loss of part of this site although the extent of this loss of the priority habitat is yet to be provided. This loss will require additional woodland creation of an appropriate scale and quality to compensate for this habitat loss.</p> <p>The Environmental Impacts Update does not explicitly confirm whether there are any new direct or indirect effects on the nearby Scheduled Monument (Neolithic Causewayed Enclosure and Anglo-Saxon cemetery) considering that the footprint of the LTC appears to be closer.</p>
A13/A1089 junction changes - Design Change 12	<p>Significant changes have occurred to the junction of the A13, A1089 and LTC. Further buildings are subject to demolition as part of the proposed design changes and there are likely to be further receptors included within scope which have not been identified in the Environmental Impacts Update.</p> <p>There is a significant amount of land take proposed within this area which includes the loss of woodland and likely impacts to Blackshots Nature Area LWS, which is yet to be surveyed.</p> <p>The proposed design is confusing and the junction would continue to result in the encroachment of road infrastructure, including structures, embankments, signs, gantries and street lighting into the local landscape as a result of the intertwined string of new link roads connecting the A13 with the LTC. This will include the direct impact and permanent loss to Orsett Cropmark Complex. Specific mitigation is yet to be understood.</p> <p>The assessment makes no reference to the impact of the relocation of the traveller site.</p>
Rectory Road Realignment - Design Change 13	<p>The long-term closure of Rectory Road and planned works to other access points into Orsett could reduce the ability to deliver housing growth in Orsett in the first 5 years of the Local Plan due to the reduction in local highway capacity and resilience during the construction phase of the LTC. Furthermore, the long-term closure of Rectory Road will cause significant disruption for the residents of Orsett and could limit access to hospitals. Baker Street is also scheduled for a long-term closure and there are works planned for Stifford Clays Road, therefore, the timing of the LTC works will need to be carefully considered to reduce the impact on the residents of Orsett.</p>

Design Change	Summary and Key Points
	<p>It is unclear if Old Rectory Road will be closed during the construction of LTC, Highways England should demonstrate the implications for air quality on the Orsett Cock junction as this closure will encourage more traffic to temporarily use the junction via Baker Street to access Orsett.</p> <p>Further specific assessment and mitigation is required for the following:</p> <ul style="list-style-type: none"> • Consideration of long-term noise monitoring on Baker Street. • The results of intrusive surveys need to be considered to properly determine the significance of the heritage assets at Murrells Cottage to be impacted and to inform the mitigation requirements. • Assessment to determine if there are any new direct/indirect effects on the nearby LWS (Blackshots Nature Area, Orsett Camp Quarry and Mucking Heath/Orsett Golf Course).
Hornsby Lane Closure - Design Change 14	<p>As part of this design change, residential properties, local businesses and community facilities in Orsett Heath would no longer be accessible via Hornsby Lane. No detail has been provided in the Environmental Impacts Update on alternative means of access for those affected. Further engagement with local residents and ward councillors to discuss the implications of this change is required. Highways England should also be mindful of potential impacts from fly tipping to residential properties, local businesses and community facilities and consider opportunities to reinstate or improve access, including pedestrian links to the bridleway from Hornsby Lane.</p>
M25 to A13 southbound lane removal - Design Change 15	<p>As part of this design change, further woodland planting is proposed along the southbound lane of the M25, this is likely to be a positive change to noise conditions in the area, e.g. St Mary Magdalene and North Ockendon Conservation Areas. However, green landscaping has been removed from the Supplementary Consultation Scheme when compared to the Statutory Consultation Scheme along the M25, exposing the residential properties on the north side of Ockendon Road. The noise and visual conditions at these properties are unlikely to change from the existing baseline, however, there is a missed opportunity to provide an improvement to these properties. It is understood that noise surveys are yet to be undertaken along this section of the route.</p>
Routing through the Mardyke – Design Change 16	<p>Through the early part of 2019, Highways England held several design workshops on its proposals to provide a longer, higher and better designed viaduct that would remove the need for significant embankments within the valley. Highways England suggested that this would reduce the landscape and visual impacts of the scheme at this location. However, without any further engagement, Highways England has reverted back to a design similar to what was presented at Statutory Consultation despite recognising that there was a better design alternative.</p> <p>A shortened viaduct subsequently means a longer embankment which not only increases the volume of flood compensation but obstructs views through a viaduct. It is concerning that no landscape mitigation measures have been shown that could mitigate the structure within an expansive, flat open landscape. As such, thorough justification for this design change is required.</p> <p>Further specific assessment and mitigation is required for the following:</p> <ul style="list-style-type: none"> • Further detail regarding surface water run-off into Mardyke River and its tributaries should be provided as there is potential elevated levels of hydrocarbons. Surface water run-off should not be able to flow directly into the Mardyke River without some form of filtering e.g. through reedbeds. Such features could be of landscape and ecological benefits if designed appropriately. • Full assessment of the impacts on the bridleway and isolated residential properties as a result of this design change is required. • Appropriate heritage impact assessments including impacts from mitigation measures should be completed for Grove Farm.
The height of the LTC and North Road -	<p>The Environmental Impacts Update states that the design change would be a slight improvement to residential amenity for local communities of North and South Ockendon</p>

Design Change	Summary and Key Points
Design Change 17	<p>as a result of the reduction in height of the route at this location. However, no evidence has been presented to determine how this conclusion has been reached.</p> <p>The Environmental Impacts Update fails to properly assess potential changes to the effects on setting/significance of nearby scheduled monuments and Grade II listed buildings. It is recommended that the contribution of that North Road makes to the setting of the listed buildings, scheduled monuments and Conservation Areas is included in the EIA.</p>
Thames Chase Forest Centre - New Bridge – Design Change 18	<p>While a new bridge would potentially improve east to west connections in the Thames Chase Forest and promote non-motorised use, the benefits for the local community are not fully justified in the Environmental Impacts Update nor is there any detail on the design of the new bridge or PRoW.</p> <p>It should be noted that Highways England refers in the Environmental Impacts Update to the ‘Thames Chase Community Forest’ which is incorrect. The reference ought to be in this instance to the ‘Thames Chase Community Forest Centre’.</p> <p>Further specific assessment and mitigation is required for the following:</p> <ul style="list-style-type: none"> • An assessment of the effects on habitats and species as a result of further habitat loss from the construction of the proposed new route needs to be undertaken. • Design of the new bridge should consider species movement.
M25 junction 29 changes - Design Change 19	<p>Highways England has yet to share its latest traffic model with the Council (due in February 2020) and therefore it has not been possible to analyse the potential effects of the amended layout on traffic flowing into and through the Borough and onto the local road network.</p>

Appendix A Review of Environmental Impacts Update - Design Changes 8 – 19

1.1 Review of Tilbury Proposal

The review of the Tilbury proposals includes Design Changes 8, 9 and 10, as set out in the below table:

Design change ref. (Highways England's reference)	Design change (as per Highways England's Environmental Update Report)	Design change description (as per Highways England's Guide to Supplementary Consultation)
8	Removal of Tilbury junction, the rest and service area and maintenance depot	<ol style="list-style-type: none"> 1. A new route for walkers, cyclists and horse riders is proposed along Muckingford Road. 2. The height of the LTC has been reduced by approximately 1.5 metres under Muckingford Road to tie in with the lower Tilbury alignment. This will reduce earthworks and utilities diversions. 3. Connecting slip roads have been removed. 4. Station Road has been retained and would pass beneath the viaduct with a minimum clearance of 5.3 metres. 5. Removal of Tilbury junction, enabling us to reduce the overall size of the viaduct. This is due to the rest and service area and maintenance depot being removed.
9	Tilbury viaduct length reduced	<ol style="list-style-type: none"> 6. Private maintenance and access roads from the LTC and Station Road to provide access to the tunnel control building.
10	Muckingford Road realignment and green bridge	<p>This structure has been revised.</p> <ol style="list-style-type: none"> 7. Muckingford Road bridge has been upgraded to a green bridge. As a result of the removal of the proposed Tilbury junction, several structures have been revised. 8. Muckingford Road has been moved slightly south to reduce the overall height, while providing the required structural headroom as it crosses over the LTC. 9. Clearance over Tilbury railway, where the viaduct crosses, will be lowered to 6.8 metres. 10. Length of the viaduct has decreased to approximately 660 metres. <p>As a result of the removal of the proposed Tilbury junction, several structures have been revised.</p>

Removal of Tilbury Junction, the rest and service area and maintenance depot - Design Change 8

Summary of design change: Removal of Tilbury junction, the rest and service area and maintenance depot.

Table A.1: Review of Design Change 8

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the Preliminary Environmental Information Report (PEIR) is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the Environmental Statement (ES). Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No assessment of construction phase traffic effects is presented in the Supplementary Consultation documents which may be significant for this scheme. Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. There is a concern that some road links in this area have not been assessed in the PEIR and therefore the assessment of effects presented are misrepresented. 	<div style="background-color: yellow; height: 100%; width: 100%;"></div>
	Operation	<p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by World Health Organisation (WHO) guidelines. It is recommended that a new air quality modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council. The Environmental Impacts Update states that impacts are difficult to predict in the absence of detailed air quality modelling, however, changes have the potential to change the effects reported in the PEIR. Detailed air quality modelling should be undertaken to inform the design. Until such changes have been modelled, the impacts should remain as stated in the PEIR.</p> <p>The assessment in the Environmental Impacts Update and PEIR would suggest that no significant adverse impacts are predicted as no operational mitigation is provided. This remains a concern considering the magnitude of the scheme and the absence of a standalone Health Impact Assessment (HIA). A full and comprehensive HIA has been requested by the Council and the Director of Public Health. Highways England has confirmed that this will be provided in the form of a combined Health and Equalities Impact Assessment (HEIA).</p>	

		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> • A HEIA is not provided in the Supplementary Consultation documents, which is a substantial omission, considering the significant potential health impacts of this scheme. It is understood that a HEIA is being submitted as part of the Development Consent Order (DCO) Application. However, the Council is yet to receive any information on the assessment of the HEIA or recommendations to mitigate potential health effects. • Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. • Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. • The PEIR did not assess all relevant road links and receptors in this area. Therefore, the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. • No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}) 	
Noise and Vibration	Construction	<p>As stated in Paragraph 13.4.20 of the PEIR, no baseline noise surveys were undertaken during the PEIR assessment along this section of the route. It is therefore unclear how the assessment has been undertaken. The Environmental Impacts Update states that there remain temporary significant adverse effects. Construction techniques should be explored to design out significant adverse effects. Construction effects are proposed to be controlled through mitigation measures set out in the Code of Construction Practice (CoCP) and a Construction Environmental Management Plan (CEMP), however no details of the proposed measures have been provided.</p> <p>The Environmental Impacts Update also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects from noise and vibration during the construction phase</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Construction methods should be explored to design out significant adverse impacts. • Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. • Night-time construction activities proposed should be fully considered and, where appropriate, should be limited to reduce potential effects. 	

		<ul style="list-style-type: none"> • Lack of information provided to enable an informed view of the project to be made. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
	Operation	<p>The lack of noise assessment remains a concern. The removal of Tilbury junction and subsequent reduction in height of the Tilbury viaduct potentially moves the route closer to potential noise sensitive receptors.</p> <p>The Environmental Impacts Update states that there is unlikely to be a material difference to the potential road traffic noise effects as described in the PEIR and potential mitigation measures described in the PEIR would remain appropriate. The mitigation measures outlined in the PEIR are generic. It is therefore unclear which noise sensitive receptors would continue to experience a change.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. • Potential impacts during the operational phase on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
Cultural Heritage	Construction	<p>Potential impacts to cultural heritage and archaeology are likely to see an improvement due to the removal of the previously proposed rest and service area (RaSa). However, it is unclear if the removal of Tilbury junction presents a change in significant detrimental impact to heritage features such as views from West Tilbury and East Tilbury Conservation Areas, Coalhouse Fort, East Tilbury Battery or Tilbury Fort Scheduled Monuments. The secondary impact of operational measures such as land raising, and ecological mitigation will need to be defined and assessed.</p> <p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets.</p> <p>Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>Furthermore, Highways England have not taken the opportunity to share further information regarding the likely significant effects to archaeological remains. An incomplete archaeological desk-based assessment has only just been released and no trial trenching has yet to commence in this area.</p>	

		<p>Impact of construction stage (including compounds) remains a serious concern.</p> <p>The future of Coalhouse Fort is uncertain at present following the charity which managed the heritage asset folding in February 2020. The construction phase may impact upon the number of potential viable uses of the heritage asset going forward.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. • Much greater consideration is needed of the impact upon the historic environment (including the setting of heritage assets) during construction phase including temporary compounds, access and the storage of spoil and equipment. The heritage assessment should consider Historic Landscape. • The assessment should extend to significant non designated assets. • Intrusive surveys need to be undertaken to properly determine the significance of the heritage assets to be impacted and understand mitigation requirements. • There is concern that the sensitive nature of the area of the gravel terraces and interface with the grazing marsh is not fully acknowledged with the submitted documentation. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	<p>Operation</p>	<p>Potential impacts to cultural heritage and archaeology are likely to see an improvement due to the removal of the previously proposed rest and service area. However, it is unclear if the removal of Tilbury junction presents a change in significant detrimental impact to heritage features such as views from West Tilbury and East Tilbury Conservation Areas, Coalhouse Fort, East Tilbury Battery or Tilbury Fort Scheduled Monuments. The secondary impact of operational measures such as land raising, and ecological mitigation will need to be defined and assessed.</p> <p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets.</p> <p>Furthermore, Highways England have not taken the opportunity to share further information regarding the likely significant effects to archaeological remains. An incomplete archaeological desk-based assessment has only just been released and no trial trenching has yet to commence in this area.</p> <p>It is unclear at present whether there will be provision provided for a local junction to be built at a later date designing into the scheme.</p>	

		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. • The heritage assessment should consider Historic Landscape. • The assessment should extend to significant non designated assets. • Intrusive surveys need to be undertaken in order to properly determine the significance of the heritage assets to be impacted and understand mitigation requirements. • There is concern that the sensitive nature of the area of the gravel terraces and interface with the grazing marsh is not fully acknowledged with the submitted documentation. • The only available meaningful mitigation measure to preserve the setting of numerous heritage assets in this highly sensitive location remains for the tunnel to be extended beneath the railway. Now that the service area has been removed this should be reconsidered. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The Environmental Impacts Update states that there is likely to still be a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors as a result of this design change. It also states that the widespread nature of the construction activity would continue to be experienced in close proximity to the visual receptors but fails to acknowledge what the visual receptors are and if any new receptors have been assessed</p> <p>The Environmental Impacts Update refers to fen landscape restoration; however, there is no indication showing what this might entail. There is concern that in this area (and throughout the route) that heavily engineered balancing ponds are being proposed which would have limited landscape and biodiversity benefit and unlikely to achieve fen landscape restoration.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The Landscape and Visual Impacts Assessment (LVIA) should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. 	
	Operation	<p>The Environmental Impacts Update states that operational impacts are likely to ‘slightly improve’ as a result of the design change of the viaduct, although these will continue to result in major negative landscape change. However, it is unclear which receptors will experience a change.</p>	

		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. • The Supplementary Consultation documents state that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. • Early indication of operational mitigation proposals presented in the PEIR suggested they may not be adequate or effective to mitigate against adverse landscape and visual impacts. 	
<p>Biodiversity (terrestrial and marine)</p>	<p>Construction</p>	<p>The Environmental Impacts Update states that the design change would reduce the need for the mitigation measures described in the PEIR. The Environmental Impacts Update goes on to state that, the design change “<i>would not lead to a reduction in the significance level of the assessment conclusion</i>”. It is unclear how the design change would lead to the reduction of mitigation, as there would still be direct impacts on Low Street Local Wildlife Site (LWS). The impacts remain as stated in the PEIR. However, there is a lack of level of significance assigned to effects within the assessment provided within the PEIR to be able to make a comparison.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p> <p>The balancing ponds seem to be positioned where they are needed to meet engineering needs, designed with steep sides and no intention for integration into the existing landscape. They will likely become a features with the sole function of draining water and as a result there is a missed opportunity to deliver additional biodiversity mitigation (enhancement).</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. • An assessment of an effects would need to be provided to determine which habitats and species are affected. • No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with National Planning Policy Framework (NPPF) 2018, Highways England policy and local policy. • Where flood prevention measures are needed, they should integrate balancing ponds with ecology, landscape and leisure features so that they are visually pleasing and useful features beyond their flood 	

		<p>prevention purposes. Figures 5.53 and 5.54 of the Guide to Supplementary Consultation shows this intention but it is not reflected with certainty.</p> <ul style="list-style-type: none"> Balancing ponds should have less steep sides to allow for better integration as wildlife habitats and other uses with amenity value rather than the standard 'deep ditch' balancing pond detail. 	
	Operation	<p>The Environmental Impacts Update states that the design change would reduce the extent of the air quality change and noise/visual disturbance reported in the PEIR. However, the effects set out in the PEIR are considered to have several potential significant effects misrepresented or excluded because of flawed assumptions or inconsistencies.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> An assessment of an effects would need to be provided to determine which habitats and species are affected. Further work should be provided to show a commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy, and local policy. Further information on what mitigation is proposed to be removed. The extent of surveys has fallen short of minimum standards in the case of Barn Owl studies. 	
Road drainage and the water environment	Construction	<p>Although the benefits of this design change would result in a reduction in the construction footprint within the defended floodplain and a reduction in impermeable land take, in the area previously proposed for the RaSa, Tilbury junction is still located in Flood Zone 3. Furthermore, the Application Boundary has changed substantially, that this cannot be regarded as an improvement from the Statutory Consultation scheme.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the Environmental Impact Assessment (EIA) will be underpinned by a whole system water balance approach. 	
	Operation	<p>As stated in the Environmental Impacts Update <i>"The design change would prevent minor adverse effects on the rainfall runoff/land drainage regime locally and would remove land use activity with a pollution risk."</i> There would still be a land use activity with a pollution risk in this locality from the new highway. It is unclear how this conclusion has been reached.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	

Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR. No assessment has been provided within the Environmental Impacts Update to demonstrate that a 'no change' assessment is feasible.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects A minerals safeguarding assessment and Preliminary Sources Study Report (PSSR) have not been included in the PEIR which are important sources of information that would assist stakeholders. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. 	
	Operation	<p>The Environmental Impacts Update states that design change would have a negligible effect on the assessment presented in the PEIR. No assessment has been provided within the Environmental Impacts Update to demonstrate that a 'no change' assessment is feasible.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further detail is required. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features 	
Materials and Waste	Construction	<p>Although the benefits of this design change would result in a reduction in construction material and waste in this locality, the Application Boundary has changed substantially, that this cannot be regarded as an improvement from the Statutory Consultation scheme.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detailed required for use of rail and river for movement of material, plant and equipment and the environmental and transport impacts of this movement. The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. 	

		<ul style="list-style-type: none"> Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. The assessment does not state where material will be reused to minimise the need for off-site haulage and handling. There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	It is agreed that the change in design is likely to have a negligible effect on the assessment in the PEIR.	
People and Communities	Construction	<p>The Environmental Impacts Update states that “Overall, there would be a beneficial effect and an improvement to those effects reports in the PEIR at this location.” It is agreed that there is likely to be an improvement to the effects reported in the PEIR, as there will be less construction work and the removal of the RaSA, however, it is unclear how the design change would result in a beneficial effect.</p> <p>There is no mention of the mitigation works for the wider area or that they will exist, which would be realised under a s106 agreement in most developments, which is concerning.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. More detail on the development sites in the area which will be considered in the assessment is required An update on design principles and wider planning obligations would be helpful. A skills and employment plan that aims to train, employ, and up-skill existing residents would benefit the Borough. This should be included as a DCO Requirement. A business support strategy that aims to give local businesses access to contracts associated with the construction of the road and ancillary activities. 	
	Operation	<p>The Environmental Impacts Update states that “Overall, there would be a beneficial effect and an improvement to those effects reports in the PEIR at this location.” The construction of the LTC would continue to form a major linear intervention within this area, it is unclear how an overall beneficial effect has been concluded for People and Communities. The removal of Tilbury Junction is an impediment to economic development in the Tilbury area. A link road could have improved access to Tilbury Port and provided an alternative route away from residential areas for traffic. Also, there should be a potential to create a route through to East Tilbury and Coalhouse Fort.</p> <p>It is unclear how the Local Residents Discount Scheme (LRDS) will benefit the people of Thurrock, as the road cuts straight through the borough and, in combination with other largescale infrastructure, bypasses the residents and causes further disconnection.</p>	

		<p>The removal of the Tilbury junction will actually likely have a negative impact on people and communities in terms of the economic benefits the proposed road is meant to bring to the borough. There is no consideration of the negative impact for Tilbury and the Docks, identified as a growth sector for employment and business. This area is an area of high deprivation and poor health outcomes which now appears to be further impacted by not being able to benefit from the new crossing. Any potential benefit of new supporting infrastructure as a result of the scheme has now been reduced.</p> <p>The removal of the access also means that operationally there will be an over-reliance on the existing road network to the Port and other industry in the area. This could increase the negative impacts on health and well-being to residents living close to these existing routes. This needs to be adequately assessed in the HEIA.</p> <p>While removal of the RaS is supported, the removal of the junction places pressure upon the Council to identify, fund and maintain any link road provision that will facilitate growth and access in Tilbury.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • More detail on the development sites in the area which will be considered in the assessment is required. • 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. • Highways England should consider other discount schemes, such as a hypothecated toll fund, which the Dartford crossing used to have. • Where flood prevention measures are needed, they should integrate balancing ponds with ecology, landscape and leisure features so that they are visually pleasing and useful features beyond their flood prevention purposes. Figures 5.53 and 5.54 on page 74 of the Guide to Supplementary Consultation show this intention but the it is not reflected with certainty. This will have beneficial health and well-being impacts if properly designed. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p>	

		<ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. There is no mention in the PEIR and Supplementary Consultation Documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	

Tilbury viaduct length reduced - Design Change 9

Summary of design change: Reduction in the height and length of the viaduct that crosses over the railway line to the north of the tunnel entrance.

Table A.2: Review of Design Change 9

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No assessment of construction phase traffic effects is presented in the supplementary consultation documents which may be significant for this scheme. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. There is concern that some road links in this area have not been assessed in the PEIR and therefore the assessment of effects presented are misrepresented. 	
	Operation	<p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>The Environmental Impacts Update states that impacts are difficult to predict in the absence of detailed air quality modelling, however, changes have the potential to change the effects reported in the PEIR. Detailed air quality modelling should be continuously undertaken to inform the design. Until such changes have been modelled, the impacts should remain as stated in the PEIR.</p> <p>The assessment in the Environmental Update and PEIR would suggest that no significant adverse impacts are predicted as no operational mitigation is provided. This remains a concern considering the magnitude of the scheme and the absence of a standalone HIA. A full and comprehensive HIA has been requested by the Council and the Director of Public Health. Highways England has confirmed that this will be provided in the form of a combined HEIA.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> A HEIA is not provided in the supplementary consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. It is understood that a HEIA is being submitted as part of the DCO application. The Council is yet to receive any information on the assessment of the HEIA or recommendations to mitigate health effects. Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. The PEIR did not assess all relevant road links and receptors in this area. Therefore, the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}) 	

Topic	Phase	Review findings	RAG
Noise and Vibration	Construction	<p>As stated at Paragraph 13.4.20 in the PEIR, no baseline noise surveys were undertaken during the PEIR assessment along this section of the route. It is therefore unclear how the assessment has been undertaken. The Environmental Impacts Update states that there remain temporary significant adverse effects, construction techniques should be explored to design out significant adverse effects. Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>It also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects from noise and vibration during the construction phase.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Construction methods should be explored to design out significant adverse impacts. • Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. • Night-time construction activities proposed should be fully considered and, where appropriate, should be limited to reduce potential effects. • Lack of information provided to enable an informed view of the project to be made. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform Thurrock Council ('the Council') and other stakeholders of the significance of impacts identified. 	
	Operation	<p>The lack of noise assessment remains a concern. The removal of Tilbury junction and subsequent reduction in height of the Tilbury viaduct potentially moves the route closer to potential noise sensitive receptors.</p> <p>The Environmental Impacts Update states that there is unlikely to be a material difference to the potential road traffic noise effects as described in the PEIR and potential mitigation measures described in the PEIR would remain appropriate. The mitigation measures outlined in the PEIR are generic. It is therefore unclear which noise sensitive receptors would continue to experience a change.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> • Potential impacts during the operational phase on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
Cultural Heritage	Construction	<p>It is unclear if the removal of Tilbury junction and subsequent reduction in height of the Tilbury viaduct presents a change in significant detrimental impact to heritage features such as views from West Tilbury and East Tilbury Conservation Areas, Coalhouse Fort, East Tilbury Battery or Tilbury Fort Scheduled Monuments together with listed buildings in close proximity.</p> <p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets.</p> <p>Furthermore, Highways England have not taken the opportunity to share further information regarding the likely significant effects to archaeological remains. An incomplete archaeological desk-based assessment has only just been released and no trial trenching has yet to commence in this area.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. • The heritage assessment should consider Historic Landscape and effects from vibration the fabric of heritage assets. • The assessment should extend to significant non designated assets. • Intrusive surveys need to be undertaken to properly determine the significance of the heritage assets to be impacted and understand mitigation requirements. • There is concern that the sensitive nature of the area of the gravel terraces and interface with the grazing marsh is not fully acknowledged with the submitted documentation. • Much greater consideration is needed of the impact upon the historic environment (including the setting of heritage assets) during construction phase including temporary compounds, access and the storage of spoil and equipment. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	

Topic	Phase	Review findings	RAG
	Operation	<p>It is unclear if the removal of Tilbury junction and subsequent reduction in height of the Tilbury viaduct presents a change in significant detrimental impact to heritage features such as views from West Tilbury and East Tilbury Conservation Areas, Coalhouse Fort, East Tilbury Battery or Tilbury Fort Scheduled Monuments together with listed buildings in close proximity. The secondary impact of operational measures such as land raising, and ecological mitigation will need to be defined and assessed. It remains unclear the aesthetic impact together with the overall height (lighting, sound barriers, gantries and signage etc)</p> <p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets.</p> <p>Furthermore, Highways England have not taken the opportunity to share further information regarding the likely significant effects to archaeological remains. An incomplete archaeological desk-based assessment has only just been released and no trial trenching has yet to commence in this area.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. • Further verified views need to be agreed as soon as possible • The heritage assessment should consider Historic Landscape and effects from vibration the fabric of heritage assets. • The only available meaning full mitigation measure to preserve the setting of numerous conservation areas and listed buildings in this highly sensitive location remains for the tunnel to be extended beneath the railway. Now that the service area has been removed this should be reconsidered. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The change in the design of the viaduct is likely to have a change in the landscape views, however, this is not reported in the Environmental Impacts Update nor the Guide to Supplementary Consultation. Impacts are likely to remain a major negative change for a range of visual receptors.</p> <p>As yet no detailed design of the structure, including acoustic fencing, lighting and gantries has been provided. Map Book 3: Engineering Plans only provides an indicative elevation out of context with the surrounding landscape features.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. 	
	Operation	<p>The Environmental Impacts Update states that operational impacts are likely to 'slightly improve' as a result of the design change of the viaduct. While the overall height of the viaduct is to be reduced no illustrations have been provided showing the proposed design including fencing, lighting and gantries, therefore a slight improvement is unlikely. It is unclear which receptors will experience a change.</p> <p>The Environmental Impacts Update refers to fen landscape restoration; however, there is no indication showing what this might entail. There is concern that in this area (and throughout the route) that heavily engineered balancing ponds are being proposed which would have limited landscape and biodiversity benefit and unlikely to achieve fen landscape restoration.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. The Supplementary Consultation documents state that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. Early indication of operational mitigation proposals presented in the PEIR suggested they may not be adequate or effective to mitigate against adverse landscape and visual impacts 	
Biodiversity (terrestrial and marine)	Construction	<p>The design change of viaduct height and length is unlikely to change the impacts set out in the PEIR. It is unclear how species and habitats within close proximity to the viaduct will be impacted due to the design change i.e. severance through woodland and potential changes in shading impacts.</p> <p>Furthermore, the Environmental Impacts Update is silent on potential impacts from the reconfiguration of the reservoirs as set out on Sheet 9 within Map Book 1: General Arrangements.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. An assessment of an effects would need to be provided to determine which habitats and species are affected. 	

Topic	Phase	Review findings	RAG
	Operation	<ul style="list-style-type: none"> No reference in the PEIR and Supplementary Consultation Documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy <p>The design change of viaduct height and length is unlikely to change the impacts set out in the PEIR. It is unclear how species and habitats within close proximity to the viaduct will be impacted due to the design change i.e. severance through woodland and potential changes in shading impacts.</p> <p>Furthermore, the Environmental Impacts Update is silent on potential impacts from the reconfiguration of the reservoirs as set out on Sheet 9 within Map Book 1: General Arrangements.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. An assessment of an effects would need to be provided to determine which habitats and species are affected. No reference in the PEIR and Supplementary Consultation Documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
Road drainage and the water environment	Construction	<p>The Environmental Impacts Update states that the design change would not further impact road drainage and the water environment during the construction when compared to the Statutory Consultation scheme. Construction effects are proposed to be controlled through mitigation measures set out in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>Figure 5.33 within the Guide to Supplementary Consultation shows a single pond on the western side of the route. Whereas during Statutory Consultation there were two ponds, one either side of the route. It is unclear why the flood storage has been reduced in this area.</p> <p>The Environmental Impacts Update is silent on potential impacts from the reconfiguration of the reservoirs as set out on Sheet 9 within Map Book 1: General Arrangements.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). 	

Topic	Phase	Review findings	RAG
Geology and Soils	Construction	<ul style="list-style-type: none"> It is not clear if the EIA will be underpinned by a whole system water balance approach. <p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR on ground conditions during the construction phase.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided. It also states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Highways England have not shared any detail of initial findings from its ground investigations campaign which commenced in August 2019.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further detail is required. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
Materials and Waste	Construction	<p>The Environmental Impacts Update states that the design change would have a negligible effect to the assessment reported in the PEIR on materials and waste during construction. Mitigation measures for materials and waste remains as described in the PEIR.</p>	

Topic	Phase	Review findings	RAG
		<p>The Environmental Impacts Update also states that measures to manage the storage of construction materials and wastes on site would be detailed in the ES, CoCP and CEMP. No evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to the storage, transport and/or handling of construction materials and waste.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Further detail required for use of rail and river for the movement of materials, plant and equipment and waste and the environmental and transport impacts of these movements. • The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. • HE to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. • Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. • There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	<p>The Environmental Impacts Update states that there would be negligible effect on the assessment reported in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Further detail required on potential materials management requirements and targets/objectives that will be written into contractual documentation. 	
People and Communities	Construction	<p>The Environmental Impacts Update states that the design change would lessen the temporary adverse construction impacts on local communities, such as East Tilbury and West Tilbury and would result in a beneficial effect.</p> <p>The design change is likely to be an improvement from that of the Statutory Consultation scheme to these communities, but it is unclear how the construction phase of the LTC in this area is constitutes a beneficial effect.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. • More detail on the development sites in the area which will be considered in the assessment is required. 	

Topic	Phase	Review findings	RAG
	Operation	<p>The Environmental Impacts Update states that the design change would result in a beneficial effect to local communities such as East Tilbury and West Tilbury by reducing amenity impacts. Also, the report states that as the design change <i>“would minimise land take required for the project, which would lessen the effects on local communities and businesses and lessen the requirement for mitigations measures”</i>. Taking into consideration the significant environmental impacts (as stated in the Environmental Impacts Update) likely to remain significant, it is not clear how Highways England have concluded that the operation of the LTC would result in beneficial impacts to local communities and why the requirement for mitigation would be reduced.</p> <p>Furthermore, the reduction in height of the viaduct results in a close proximity to the overhead lines relating to the railway line. There is no assessment on potential hazards within the Supplementary Consultation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • More detail on the development sites in the area which will be considered in the assessment are required. • 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. • More detail on the health and well-being impacts on the local community. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme’s overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance ‘EIA Guide to Climate Change Resilience and Adaptation’, the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. • There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	

Topic	Phase	Review findings	RAG
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	

Muckingford Road realignment and green bridge - Design Change 10

Summary of design change: Muckingford Road has moved slightly south to reduce the overall height, while providing the required structural headroom as it crosses over the LTC. It has also been upgraded to a green bridge with provision for walkers, cyclist and horse riders.

Table A.3: Review of Design Change 10

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • No assessment of construction phase traffic effects is presented in the Supplementary Consultation documents which may be significant for this scheme. • Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. • There is concern that some road links in this area have not been assessed in the PEIR and therefore the assessment of effects presented are misrepresented. 	

Topic	Phase	Review findings	RAG
	Operation	<p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>The Environmental Impacts Update states that impacts are difficult to predict in the absence of detailed air quality modelling, however, changes have the potential to change the effects reported in the PEIR. Detailed air quality modelling should be undertaken to inform the design. Until such changes have been modelled, the impacts should remain as stated in the PEIR.</p> <p>The assessment in the Environmental Impacts Update and PEIR would suggest that no significant adverse impacts are predicted as no operational mitigation is provided. This remains a concern considering the magnitude of the scheme and the absence of a standalone HEIA.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • No standalone HEIA is provided in the Supplementary Consultation documents, which is a substantial omission, considering the potential significant health impacts of this scheme. It is understood that a standalone HEIA is being submitted as part of the DCO Application. The Council is yet to receive any information on the assessment of the HEIA or recommendations to mitigate potential health effects. • Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. • Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. • The PEIR did not assess all relevant road links and receptors in this area. Therefore, the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. • No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}) 	
Noise and Vibration	Construction	<p>The proposed construction work is likely to be closer to noise sensitive receptors, e.g. dwellings along Muckingford Road as a result of this design change. Temporary significant adverse impacts are predicted within the Environmental Impacts Update; however, no specific mitigation is provided. Construction techniques should be explored to design out significant adverse effects.</p> <p>It is unclear if noise monitoring around the Muckingford Road has been undertaken. The information in Figure 13.2 in Volume 3 of the PEIR is poorly presented. The noise monitoring locations are presented on a low-</p>	

Topic	Phase	Review findings	RAG
		<p>resolution map of the whole route which makes it difficult for the reviewer to understand where the monitoring locations are.</p> <p>The Environmental Impacts Update also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects from noise and vibration during the construction phase.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Construction methods should be explored to design out significant adverse impacts. • Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. • Night-time construction activities proposed should be fully considered and, where appropriate, should be limited to reduce potential effects. • Lack of information provided to enable an informed view of the project to be made. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
	Operation	<p>The area surrounding Muckingford Road is considered to be tranquil. The LTC would pass through this area with Muckingford Road raised over the LTC as embankment/green bridge. The LTC route has moved slightly closer to the properties on the north side of Muckingford Road, whereby their access is affected but the properties are retained.</p> <p>It is unclear if noise monitoring around the Muckingford Road has been undertaken. The information in Figure 13.2 in Volume 3 of the PEIR is poorly presented. The noise monitoring locations are presented on a low-resolution map of the whole route which makes it difficult for the reviewer to understand the locations of the monitoring points.</p> <p>The impacts outlined within the PEIR are not specific to individual receptors, which makes it challenging to quantify if the design change would further effect noise sensitive receptors in the area.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
Cultural Heritage	Construction	<p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets.</p> <p>Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>Furthermore, Highways England have not haven't taken the opportunity to share further information regarding the likely significant effects to archaeological remains. An incomplete archaeological desk-based assessment has only just been released and no trial trenching has yet to commence in this area.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. Further verified views need to be agreed as soon as possible especially from West and East Tilbury The heritage assessment should consider Historic Landscape. The results of intrusive surveys need to be considered to properly determine the significance of the heritage assets to be impacted and to inform the mitigation requirements. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets.</p> <p>Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. Further verified views need to be agreed as soon as possible especially from West and East Tilbury The heritage assessment should consider Historic Landscape. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> The results of intrusive surveys need to be considered to properly determine the significance of the heritage assets to be impacted and to inform the mitigation requirements. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The Environmental Impacts Update states that there is likely to still be a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors as a result of this design change. It also states that the widespread nature of the construction activity would continue to be experienced in close proximity to the visual receptors but fails to acknowledge what the visual receptors are and if any new receptors have been assessed.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. 	
	Operation	<p>The Environmental Impacts Update states that there is likely to still be a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors as a result of this design change. It is noted the benefits of this design change in terms of the provision of a green bridge; although as yet no detail has been provided to indicate the overall design of this structure and what the extent of the 'green' components will be.</p> <p>The report also states that some mitigation proposals previously presented are no longer being taken forward, such as false cuttings with slackened slopes due to engineering constraints. As the project would continue to form a major linear intervention within this area, it would be expected that further mitigation would be provided and that at this stage of the project, the mitigation should be specific to the impacts, which it is not.</p> <p>The LTC route has moved slightly closer to the properties on the north side of Muckingford Road, whereby their access is affected but the properties are retained. Further options should be explored to lower the LTC to preserve the tranquil nature of the area.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. The Supplementary Consultation documents state that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> • Early indication of operational mitigation proposals presented in the PEIR suggested they may not be adequate or effective to mitigate against adverse landscape and visual impacts. Despite this it is implied that the false cuttings which form part of the mitigation might be reduced. 	
Biodiversity (terrestrial and marine)	Construction	<p>The area surrounding Muckingford Road is considered to be tranquil, made up of arable landscape. The LTC would pass through this area in false cutting with Muckingford Road raised over the LTC as embankment/green bridge. The LTC route has moved slightly closer to the properties on the north side of Muckingford Road, whereby their access is affected but the properties are retained.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. • An assessment of an effects would need to be provided to determine which habitats and species are affected. • No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy 	
	Operation	<p>It is noted the potential benefits of this design change in terms of the green bridge and increase in habitat provision. The green bridge will allow species to traverse the LTC; however, no indication is given as to the structure and extent of any habitat provision.</p> <p>Potential receptor sites for translocation of protected species is illustrated within Map Book 1 General Arrangements Sheet 10. It is unclear which species these sites are designed for and if the site layout, size, orientation of the receptor sites has been thought through. i.e. a potential receptor site for translocation of protected species, is adjacent to two urban areas - East Tilbury and Linford.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • An assessment of an effects would need to be provided to determine which habitats and species are affected. • Further work should be provided to show a commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy, and local policy. • Further information on what mitigation is proposed to be removed is required. • The extent of surveys has fallen short of minimum standards in the case of Barn Owl studies. 	
Road drainage and	Construction	The realignment of Muckingford Road and green bridge would not alter the construction impact on Road Drainage and the Water Environment set out in the PEIR.	

Topic	Phase	Review findings	RAG
the water environment		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>Sheet 10 of Map Book 1: General Arrangements identifies a new pond located close to residential properties. Careful design, layout and orientation should be considered to not cause undue flood risk to nearby receptors.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR. No assessment has been provided within the Environmental Impacts Update to demonstrate that a 'no change' assessment is feasible.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. 	
	Operation	<p>The Environmental Impacts Update states that design change would have a negligible effect on the assessment presented in the PEIR. No assessment has been provided within the Environmental Impacts Update to demonstrate that a 'no change' assessment is feasible.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further detail is required. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
Materials and Waste	Construction	<p>Although the benefits of this design change would result in a reduction in construction material and waste in this locality, the Application Boundary has changed substantially, that this cannot be regarded as an improvement from the Statutory Consultation scheme.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detailed required for use of rail and river for movement of material, plant and equipment and the environmental and transport impacts of this movement. The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	It is agreed that the change in design is likely to have a negligible effect on the assessment in the PEIR.	
People and Communities	Construction	<p>The Environmental Impacts Update states that "<i>overall, there would be a beneficial effect and an improvement to those effects reports in the PEIR at this location.</i>" It is agreed that there is likely to be an improvement to the effects reported in the PEIR, however, it is unclear how the design change would result in a beneficial effect.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. More detail on the development sites in the area which will be considered in the assessment is required. 	
	Operation	<p>The Environmental Impacts Update states that "<i>overall, there would be a beneficial effect and an improvement to those effects reports in the PEIR at this location.</i>" Whilst the green bridge would represent some form of mitigation in terms of severance for people and communities and walking/cycling active connections, it is dependent on how the green bridge is designed, planted and maintained to encourage public use. Furthermore, the construction of the LTC would still continue through this area, therefore an overall beneficial effect is considered unlikely.</p>	

Topic	Phase	Review findings	RAG
		<p>Furthermore, the proposed route for walking, cycling horse riding along Muckingford Road should connect Linford and Chadwell St Mary. However, the route currently stops between Low Street and Blue Anchor Lane.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • More detail on the development sites in the area which will be considered in the assessment is required. • 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. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. • There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the Council as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	

1.2 Review of the A13/A1089 junction proposals

The review of the A13/A1089 junction proposals includes Design Changes 11,12,13 and 14, as set out in the below table:

Design change ref. (Highways England reference)	Design change (as per Highways England's Environmental Update Report)	Design change description (as per Highways England's Guide to Supplementary Consultation)
11	LTC route realignment near Chadwell St Mary and Linford	1. Green Lane has been moved slightly north due to the changes to the A13 westbound and A1089 northbound slip roads, which join the LTC northbound.
12	A13/A1089 junction changes	2. Stifford Clays Road has been moved slightly south due to the changes to the A13 westbound and A1089 northbound slip roads, which join the LTC northbound.
13	Rectory Road realignment	3. The slip roads from the LTC northbound and southbound, to the A13 eastbound and Orsett Cock junction, have been redesigned removing the need for drivers to change lanes on the A13.
14	Hornsby Lane closure	4. A13 junction slip roads have been designed to tie into the Orsett Cock junction improvement works, which are currently under construction.
		5. The Rectory Road diversion shown during statutory consultation has been removed so the alignment follows the existing Rectory Road.
		6. A new link road north of the A13 has been included to provide access from the LTC northbound and southbound to the Orsett Cock junction.
		7. The A13 eastbound has been reduced to two lanes from four lanes, near the Orsett Cock roundabout. This removes the need for drivers to change lanes on the A13.
		8. Improved slip road layout for drivers heading north on the A1089 or west on the A13 wishing to head north on the LTC.
		9. We have identified two potential locations for the relocation of the travellers' site. One is adjacent to its current location with access off Long Lane, the other is further to the west along Long Lane opposite the junction with Kerry Road. These locations are shown in the Map Book 1: General Arrangements.
		10. A13 westbound to LTC northbound link road has been moved further north and further away from the A1013 and local properties.

Design change ref. (Highways England reference)	Design change (as per Highways England's Environmental Update Report)	Design change description (as per Highways England's Guide to Supplementary Consultation)
		<p>11. A shared path for walkers and cyclists is proposed along the A1013 Stanford Road.</p> <p>12. The A1013 has been moved closer to its existing position.</p> <p>13. Gammonfields Way has been realigned to connect into Long Lane, which could provide access to the relocated travellers site.</p> <p>14. The A1013 from the north of Whitecroft Care Home to the west side of the A1089 has been moved. It will run over the A1089, LTC and link roads to ease traffic management during construction.</p> <p>15. The A1089 northbound to LTC northbound slip road has been moved further north to reduce the impact on a local school.</p> <p>16. Baker Street will be moved so it runs under the LTC link roads and connects to the existing A1013 slightly further east of its current position. This is because the new LTC runs through this section of Baker Street. Its realignment will also help construction of the bridges.</p> <p>17. Heath Road has been moved to tie in with the redesigned A1013. Emergency access off Heath Road to the A1089 southbound has been provided so emergency services can maintain response times from the fire station at Orsett Cock junction to Tilbury Port.</p> <p>18. The A13 westbound to the LTC southbound link road has been moved further west increasing the distance between this road and the Whitecroft Care Home on the A1013.</p> <p>19. The A13 westbound slip road to the A1089 southbound has been revised to improve traffic movements between A-roads and the LTC.</p> <p>20. Part of Hornsby Lane would be permanently closed, with areas provided for turning either side of the LTC. This closure would avoid having to move some overhead lines.</p> <p>21. Emergency access will be provided from Brentwood Road on to the LTC northbound and southbound to improve response times for services from Orsett and Grays. Access to properties will be maintained.</p> <p>22. The LTC east of Chadwell St. Mary has been moved approximately 60 metres north-east to avoid moving some overhead cables and pylons.</p> <p>As a result of revisions to the A13/A1089 junction, several structures have been revised.</p> <p>23. The viaduct across the Orsett Fen Sewer has been increased in length from 50 metres to 200 metres to manage the risk of flooding.</p> <p>24. Green Lane bridge upgraded to a green bridge.</p> <p>25. A new underbridge has been included to take the slip roads underneath the A13.</p> <p>26. The A1013 on the west side of the A1089 has been revised to reduce the impact on the proposed school sports field development and move the route further away from local properties. This allows the new bridge over the A1089 to be built off the local road network, without the existing road having to be closed.</p>

Design change ref. (Highways England reference)	Design change (as per Highways England's Environmental Update Report)	Design change description (as per Highways England's Guide to Supplementary Consultation)
		<p>27. A new Rectory Road bridge will be built over the A13. The height has been increased to achieve clearance over the slip roads connecting into the Orsett Cock roundabout.</p> <p>28. Removal of Hornsby Lane bridge.</p> <p>29. Holford Road has been realigned to protect existing laneway and structure upgraded to a green bridge.</p> <p>30. The LTC has been raised by approximately one metre under Holford Road, so Holford Road crosses the LTC with sufficient structural headroom and avoids a watercourse diversion.</p>

LTC route realignment near Chadwell St. Mary and Linford – Design Change 11

Summary of design change: The route has moved to the south of the A13 and east of Chadwell St. Mary, approximately 60 metres closer to Linford to avoid having to move some overhead cables and pylons.

Table A.4: Review of Design Change 11

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No assessment of construction phase traffic effects is presented in the Supplementary Consultation documents which may be significant for this scheme. Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. Effects on receptors during construction are currently unknown. 	Yellow
	Operation	<p>The Environmental Impacts Update states that no change in operational air quality effects reported in the PEIR are anticipated from this change as there are no receptors within 200 metres of this alignment change. However, it appears from the maps presented that some properties in Linford could be within 200 metres.</p>	Red

Topic	Phase	Review findings	RAG
		<p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>The impact to the Linford community would need to be properly assessed. At present there is no detail on potential impact and specific mitigation in terms of air quality.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • No standalone HEIA is provided in the Supplementary Consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. It is understood that a standalone HEIA is being submitted as part of the DCO application. The Council is yet to receive information on the assessment of the HEIA or recommendations to mitigate potential health effects. • Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. • Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. • The PEIR did not assess all relevant road links and receptors in this area. Therefore, there the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. • No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}). • The Environmental Impacts Update does not explain whether there are any new direct/indirect air quality effects on the site proposed for the translocation of protected species. 	
Noise and Vibration	Construction	<p>The Environmental Impacts Update states that there is the potential for temporary adverse effects to arise during the construction period as a result of the proximity to noise sensitive receptors (e.g. local residents in Linford) and the scale of the construction works. Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>It also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects from noise and vibration during the construction phase.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> • Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Construction methods should be explored to design out significant adverse impacts. • Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. • Construction hours should be restricted to avoid significant noise effects during construction if necessary. • Lack of information provided to enable an informed view of the project to be made. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
	Operation	<p>The Environmental Impacts Update states that no material differences from the potential effects from road traffic described in the PEIR is expected to arise from this design change as a result of the movement toward Linford.</p> <p>It states that operational mitigation measures described in the PEIR remain appropriate and would be incorporated into the design, however no details of the proposed measures have been provided. The impact to the Linford community would need to be properly assessed. At present there is no detail on potential impact and specific mitigation in terms of noise and vibration.</p> <p>The Environmental Impacts Update also states noise and vibration continues to be assessed and will be presented in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to noise and vibration.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. • The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. • Impacts from the scheme's operation on other sensitive receptors, such as the proposed translocation sites for protected species, should be considered. 	
Cultural Heritage	Construction	The Environmental Impacts Update states that there would be no significant change to the assessment described in the PEIR. It also states that mitigation of impacts on archaeological remains would follow the approach set out in the PEIR.	

Topic	Phase	Review findings	RAG
		<p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets. It is concerning that the Environmental Impacts Update does not explicitly confirm whether there are any new direct or indirect effects on the nearby scheduled monument (Neolithic Causewayed Enclosure and Anglo-Saxon cemetery) considering the footprint of the development appears to be in closer proximity to this asset. (the identified compound immediately to the south of the Scheduled Monument will have a serious impact on the setting of the monument).</p> <p>Furthermore, Highways England have not taken the opportunity to share further information regarding the likely significant effects to archaeological remains, or provide any detail on the proposed mitigation measures, given that an incomplete archaeological desk-based assessment has only just been released and trial trenching evaluation works are underway.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. • The heritage assessment should consider the effects on the setting of the Scheduled Monument. • The assessment should extend to significant non-designated assets. • The results of intrusive surveys need to be considered to properly determine the significance of the heritage assets to be impacted and to inform the mitigation requirements. • It is concerning that the sensitive nature of the Causewayed Enclosure and Anglo-Saxon cemetery is not fully acknowledged in the Supplementary Consultation material. • Much greater consideration is needed of the impact upon the historic environment (including the setting of heritage assets) during construction phase including temporary compounds, access and the storage of spoil and equipment. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>The Environmental Impacts Update states that there would be no significant change to the assessment described in the PEIR. However, it is unclear if it has considered any new impacts to the setting of the nearby scheduled monument (Anglo-Saxon cemetery).</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets. Both areas should be expanded. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> • The assessment should extend to assessing the significance of non-designated assets. • It is concerning that the sensitive nature of the Causewayed Enclosure and Anglo-Saxon cemetery is not fully acknowledged in the Supplementary Consultation documents. • In developing this design change and the landscape strategy, consideration should be given to the location of the Scheduled Monument to minimise any impacts on its setting. Where possible screening vegetation and earthworks should be proposed. • The likely effects on the Scheduled Monument should be considered in the cumulative assessment. • The assessment should acknowledge all appropriate guidance principles – including Historic England’s GPA2 and GPA3 principles • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The Environmental Impacts Update states that the nature of the effects would be similar to those reported in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors). It also states that the widespread nature of the construction activity would continue to be experienced in close proximity to the visual receptors. The report fails to acknowledge what the visual sensitive receptors are and if any new receptors have been assessed as a result of moving the route 60 metres closer to Linford.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. 	
	Operation	<p>The Environmental Impacts Update states that the nature of the effects would be similar to those reported in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors). It states that some mitigation proposals previously presented are no longer being taken forward, such as false cuttings with slackened slopes, but does not provide justification or explanation for this. As the project would continue to form a major linear intervention within this area, it would be expected that further mitigation would be provided and that at this stage of the project, the mitigation should be specific to the impacts, which it is not.</p> <p>Furthermore, it also states that a full assessment supported by representative photomontages will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant landscape and visual effects related to the scheme’s operation.</p>	

Topic	Phase	Review findings	RAG
		<p>The impact to the Linford community would need to be properly assessed. At present there is no detail on potential impact and specific mitigation in terms of landscape and views.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. • The Environmental Impacts Update states that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. • The report does not explicitly state the visual receptors and if any new receptors have been assessed as a result of moving the route 60 metres closer to Linford. • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The Council still does not know whether there will be acoustic fencing and what the visual and noise effects will be for local people. • The Council is still waiting for modelling showing the visual effects of the project on local viewpoints, so is unable to make an informed view of the potential effects yet. 	
Biodiversity (terrestrial and marine)	Construction	<p>The Environmental Impacts Update states that the extent of habitat loss in this area would be reduced compared to that presented in the PEIR as a result of avoiding utilities works but the design change would not lead to a reduction in the significance level of the assessment conclusion. However, there is a lack of level of significance assessment provided within the PEIR to be able to make a comparison.</p> <p>None of the Supplementary Consultation documents refer to the effect on Rainbow Shaw LWS which is ancient woodland. Highways England has acknowledged that the realignment will result in the permanent loss of part of this site although as, yet no detail has been provided as to the extent of this loss of priority habitat. This loss will require additional woodland creation of an appropriate scale to compensate for this habitat loss.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
	Operation	<p>The Environmental Impacts Update states that there would be no significant change to the assessment described in the PEIR. However, there is a lack of level of significance assigned to effects within the assessment provided within the PEIR to be able to make a comparison.</p> <p>Operational effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided.</p> <p>A green bridge is proposed on Hoford Road however no design detail has been provided so it is not possible to determine if it will provide meaningful ecological connectivity.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, Barn Owl studies. Further information required on the proposed sites for translocation of protected species. Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. No reference in the PEIR and Supplementary Consultation Documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
Road drainage and the water environment	Construction	<p>The Environmental Impacts Update states that the design change would not further impact road drainage and the water environment during the construction when compared to the Statutory Consultation scheme. Construction effects are proposed to be controlled through mitigation measures set out in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>The Environmental Impacts Update states that the minor adverse effect reported in the PEIR would be reduced as the realignment would allow for an open waterbody to be partially retained.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR on ground conditions during the construction phase.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided. It also states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Highways England have not shared any detail of initial findings from its ground investigations campaign which commenced in August 2019.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. The study area outlined in the PEIR is 250 m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further detail is required. The study area outlined in the PEIR is 250 m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	

Topic	Phase	Review findings	RAG
Materials and Waste	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR on materials and waste during construction. Mitigation measures for materials and waste remains as described in the PEIR.</p> <p>The Environmental Impacts Update also states that measures to manage the storage of construction materials and wastes on site would be detailed in the ES, CoCP and CEMP. No evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to the storage, transport and/or handling of construction materials and waste.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Further detail required for use of rail and river for the movement of materials, plant, equipment and waste and the environmental and transport impacts of these movements. • The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. • Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be ‘swamped’ with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. • Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. • There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	Yellow
	Operation	<p>The Environmental Impacts Update states that there would be negligible effect on the assessment reported in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Further detail required on potential materials management requirements and targets/objectives that will be written into contractual documentation. 	
People and Communities	Construction	<p>The Environmental Impacts Update states that this design change may increase the temporary adverse construction effects experienced by residents of Linford due to the route moving 60 metres closer to the area, whilst potentially reducing adverse effects on local residents of Chadwell St. Mary. The Environmental Impacts Update then suggests that this would result in an improvement to the effects set out in the PEIR. It is not clear how this conclusion has been reached and which receptors are affected (e.g. community open space, community severance, economy, health).</p>	Yellow

Topic	Phase	Review findings	RAG
		<p>The Environmental Impacts Update also states that assessments continue to be undertaken in relation to the design change to develop mitigation measures. Therefore, no evidence has been presented in the Supplementary Consultation which confirms appropriate mitigation measures at this location.</p> <p>Furthermore, some mitigation has been removed (false cuttings) without justification or an assessment of the change. There does not appear to be anything other than minimum mitigation in place, it is unclear how Highways England intend to compensate and improve the residential amenity</p> <p>The impact to the Linford community would need to be properly assessed. At present there is no detail on potential impact and specific mitigation for this community.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. • Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. • More detail on the development sites in the area which will be considered in the assessment is required. 	
	Operation	<p>The Environmental Impacts Update states this design change would reduce the operational impacts of the project on local residents of Chadwell St. Mary, but residents of Linford may experience potential impacts of the project due to the increased proximity of the project. It then suggests that this would result in an improvement to the effects presented in the PEIR but fails to identify what the improvements are and the justification behind this. Therefore, this design change cannot be regarded as an improvement from the Statutory Consultation scheme.</p> <p>The Environmental Impacts Update also states that assessments continue to be undertaken in relation to the design change to develop mitigation measures. Therefore, no evidence has been presented in the Supplementary Consultation documents which confirms appropriate mitigation measures at this location.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • More detail on the development sites in the area which will be considered in the assessment is required. • 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. 	

Topic	Phase	Review findings	RAG
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme’s overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance ‘EIA Guide to Climate Change Resilience and Adaptation’, the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. • There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR.</p> <p>It also states carbon modelling is being undertaken to understand the scheme’s overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance ‘EIA Guide to Climate Change Resilience and Adaptation’, the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	

A13/A1089 junction changes - Design Change 12

Summary of design change: Changes to the layout of the A13 junctions and modification of a number of connections at the junction between LTC, A13, A1089 and A1013. These changes include, moving roads away from nearby properties and improving safety at the junctions.

Table A.5: Review of Design Change 12

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • No assessment of construction phase traffic effects is presented in the supplementary consultation documents which may be significant for this scheme. • Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. • There is concern that some road links in this area have not been assessed in the PEIR and therefore the assessment of effects presented are misrepresented. 	
	Operation	<p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>The Environmental Impacts Update states that impacts are difficult to predict in the absence of detailed air quality modelling, however, changes have the potential to change the effects reported in the PEIR. Detailed air quality modelling should be undertaken to inform the design. Until such changes have been modelled, the impacts should remain as stated in the PEIR.</p> <p>The assessment in the Environmental Impacts Update and PEIR would suggest that no significant adverse impacts are predicted as no operational mitigation is provided. This remains a concern considering the magnitude of the scheme and the absence of a standalone HEIA.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> • No standalone HEIA is provided is provided in the Supplementary Consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. It is understood that a standalone HEIA is being submitted as part of the DCO Application. The Council is yet to receive information on the assessment of the HEIA or recommendations to mitigate potential health effects (namely to communities surrounding Whitcrofts, Orsett Heath, Baker Street and North of Chadwell St Mary). • Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. • Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. • The PEIR did not assess all relevant road links and receptors in this area. Therefore, there the assessment of effects discussed in the Supplementary Consultation Documents could be misrepresented. • No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}) 	
Noise and Vibration	Construction	<p>As stated in Paragraph 13.4.20 of the PEIR, no baseline noise surveys were undertaken during the PEIR assessment along this section of the route. It is therefore unclear how the assessment has been undertaken. The Environmental Impacts Update states that there remain temporary significant adverse effects, construction techniques should be explored to design out significant adverse effects. Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>It also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects from noise and vibration during the construction phase.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Construction methods should be explored to design out significant adverse impacts. • Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. • Night-time construction activities proposed should be fully considered and, where appropriate, should be limited to reduce potential effects. • Lack of information provided to enable an informed view of the project to be made. 	

Topic	Phase	Review findings	RAG
	Operation	<ul style="list-style-type: none"> There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. <p>Significant changes have occurred to the junction of the A13, A1089 and LTC. It is clear from a review of Map Book 2: Land Use Plans, that further buildings are required for demolition as part of the Supplementary Consultation design changes, however, it is unclear if there are further receptors now included within the noise and vibration assessment. The lack of noise assessment remains a concern</p> <p>The Environmental Impacts Update states that there is unlikely to be a material difference to the potential road traffic noise effects as described in the PEIR and potential mitigation measures described in the PEIR would remain appropriate. The mitigation measures outlined in the PEIR are generic. It is therefore unclear which noise sensitive receptors would continue to experience a change.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. Potential impacts during the operational phase on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
Cultural Heritage	Construction	<p>Specific mitigation remains to be presented in order to reduce the impacts to Orsett Crop Mark Complex Scheduled Ancient Monument. The route directly impacts this Scheduled Ancient Monument, which is a permanent loss and a significant impact.</p> <p>Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>It is concerning that the sensitive nature of the Orsett cropmark complex is not fully acknowledged in the Supplementary Consultation documents.</p> <p>No comment is given on the impact on listed buildings, and in at least two cases they are not identified on the maps provided in Map Book 1: General Arrangements (see Sheet 12 and 13).</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. • The heritage assessment should consider Historic Landscape and effects from vibration the fabric of heritage assets. Appropriate assessment and identification of the listed buildings together with all available potential mitigation measures. • Much greater consideration is needed of the impact upon the historic environment (including the setting of heritage assets) during construction phase including temporary compounds, access and the storage of spoil and equipment. • The assessment should extend to significant non designated assets. • The results of intrusive surveys need to be considered to properly determine the significance of the heritage assets to be impacted and to inform the mitigation requirements. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>Specific mitigation remains to be presented in order to reduce the impacts to Orsett Crop Mark Complex Scheduled Ancient Monument. The route directly impacts this Scheduled Ancient Monument, which is a permanent loss and a significant impact.</p> <p>Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets. Both areas should be expanded. • The assessment should extend to assessing the significance of non-designated assets. • In developing this design change and the landscape strategy, consideration should be given to the Orsett Crop Mark Complex Scheduled Ancient Monument to minimise its impacts. • Appropriate assessment of the listed buildings • Agree appropriate view locations and extent with the Council. • The assessment should acknowledge all appropriate guidance principles - including Historic England's GPA 2 and GPA3 principles • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	

Topic	Phase	Review findings	RAG
Landscape and Visual	Construction	<p>The Environmental Impacts Update states that the nature of the effects would be similar to those reported in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors). It also states that the widespread nature of the construction activity would continue to be experienced in close proximity to the visual receptors. The report fails to acknowledge what the visual sensitive receptors are and if any new receptors have been assessed.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. 	
	Operation	<p>A moderate to major negative change is still experienced to a range of visual receptors. No further construction related mitigation is provided.</p> <p>The junction would continue to result in the encroachment of road infrastructure, including structures, embankments, signs, gantries and street lighting into the local landscape as a result of the intertwined string of new link road connecting the A13 with the LTC.</p> <p>It is unclear why mitigation has been removed in the assessment presented in the Environmental Impacts Update considering the impacts have not changed from the PEIR.</p> <p><i>“There are mitigation proposals that are no longer being taken forward (landscape earthworks strategy at the A13 Junction, and false cutting earthworks to the perimeter of the junction)”.</i></p> <p>In addition to the removal of earthworks and false cuttings, Figures 5.44 and 5.45 of the Guide to Supplementary Consultation show a significant reduction in the amount of tree planting.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. • The Supplementary Consultation documents state that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme and it appears that this mitigation has been further reduced since the PIER. • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • Early indication of operational mitigation proposals presented in the PEIR suggested they may not be adequate or effective to mitigate against adverse landscape and visual impacts. 	

Topic	Phase	Review findings	RAG
Biodiversity (terrestrial and marine)	Construction	<p>The Application Boundary has changed drastically, especially around the area of the A13/A1089 junction. It is unclear how this change impacts species and habitats loss. Significant amount of land take is proposed in this area which includes the loss of woodland. The Environmental Impacts Update does not provide any further detail of quantum and quality of habitat loss or species disturbance.</p> <p>The plans provided as part of the Supplementary Consultation do not indicate the extent of effects on Blackshots Nature Area LWS and whether these will result in any direct habitat loss. It is understood that this site has not been surveyed.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. Blackshots Nature Area Local Nature Park is designated in part for its invertebrate interest and therefore appropriate surveys should be carried out to information what mitigation/compensation is required. • Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. • No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
	Operation	<p>The Application Boundary has changed drastically, especially around the area of the A13/A1089 junction. It is unclear how this change impacts species and habitats loss. Significant amount of land take is proposed in this area which includes the loss of woodland. The Environmental Impacts Update does not provide any further detail of quantum and quality of habitat loss or species disturbance.</p> <p>Operational effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, Owl studies and invertebrate assessments 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
Road drainage and the water environment	Construction	<p>The Environmental Impacts Update states that the design change would not further impact road drainage and the water environment during the construction when compared to the Statutory Consultation scheme. Construction effects are proposed to be controlled through mitigation measures set out in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>The Environmental Impacts Update states that the minor adverse effect reported in the PEIR would be reduced as the realignment would allow for an open waterbody to be partially retained.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR on ground conditions during the construction phase.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided. It also states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Highways England have not shared any detail of initial findings from its ground investigations campaign which commenced in August 2019.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further details are required. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
Materials and Waste	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR on materials and waste during construction. Mitigation measures for materials and waste remains as described in the PEIR.</p> <p>The Environmental Impacts Update also states that measures to manage the storage of construction materials and wastes on site would be detailed in the ES, CoCP and CEMP. No evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to the storage, transport and/or handling of construction materials and waste.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required for use of rail and river for the movement of materials, plant, equipment and waste and the environmental and transport impacts of these movements. The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	<p>The Environmental Impacts Update states that there would be negligible effect on the assessment reported in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required on potential materials management requirements and targets/objectives that will be written into contractual documentation. 	
People and Communities	Construction	<p>The Environmental Impacts Update states that there would be a reduction in impacts on nearby properties in terms of land take, access and construction impacts. However, the assessment is silent on the impact of the relocation of the traveller site.</p> <p>As stated above within the Noise and Vibration section of this table, it is clear that there are further buildings subject to demolition than compared to the Statutory Consultation scheme. The Environmental Impacts Update states that there is likely to be a beneficial effect and the Supplementary Consultation scheme would result in a beneficial effect. It is unclear how the assessment has concluded this.</p> <p>Blackshots Nature Area is an important natural greenspace that is well-used by local residents for dog walking and other recreational activities. No consideration is given to the effects on recreational use of this site.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. A HEIA is required for the DCO Application and should include impact on the Traveller community. Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. More detail on the development sites in the area which will be considered in the assessment is required. 	
	Operation	<p>The Environmental Impacts Update states that there would be a reduction in impacts on nearby properties in terms of land take, access and construction impacts. However, the assessment fails to mention the impact of the scheme on the relocation of the traveller site.</p>	

Topic	Phase	Review findings	RAG
		<p>As stated above within the Noise and Vibration section of this table, it is clear that there are further buildings subject to demolition than compared to the Statutory Consultation scheme. The Environmental Impacts Update states that there is likely to be a beneficial effect and the Supplementary Consultation scheme would result in a beneficial effect. It is unclear how the assessment has concluded this.</p> <p>Does this design change lead to a lane gain / designated lane arrangement for traffic travelling on the A13 (from the east) and accessing LTC south? The arrangement is confusing and could lead to weaving / merging. It is unclear how the LTC scheme will mitigate against weaving and possible safety concerns.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • More detail on the development sites in the area which will be considered in the assessment is required. • Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. A HEIA is required for the DCO Application and should include impact on the Traveller community. • 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. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. • There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	

Topic	Phase	Review findings	RAG
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR.</p> <p>It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	

Rectory Road Realignment - Design Change 13

Summary of design change: The Rectory Road diversion presented at Highways England's Statutory Consultation in 2018 has been removed so the alignment follows the existing Rectory Road.

Table A.6: Review of Design Change 13

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • No assessment of construction phase traffic effects is presented in the Supplementary Consultation documents which may be significant for this scheme. In particular, if the Old Rectory Road will be closed during the construction of LTC, Highways England should demonstrate the implications for air quality on the Orsett Cock junction as this closure will encourage more traffic to temporarily use the junction via Baker Street to access Orsett. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration Effects on receptors during construction are currently unknown. 	
	Operation	<p>The Environmental Impacts Update states that no change in the adverse operational air quality effects reported in the PEIR are anticipated from this change based on the distance between Rectory Road and receptors on Stanford Road.</p> <p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No standalone HEIA is provided in the Supplementary Consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. It is understood that a standalone HEIA is being submitted as part of the DCO application. The Council has still not received any information on the assessment of the HEIA or recommendations to mitigate potential health effects. Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. The PEIR did not assess all relevant road links and receptors in this area. Therefore, the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}). 	
Noise and Vibration	Construction	<p>The Environmental Impacts Update states that there is the potential for temporary adverse effects to arise during the construction period as a result of the proximity to noise sensitive receptors on Rectory Road. Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>It also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects from noise and vibration during the construction phase.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Impacts from construction on other sensitive receptors such as schools, health centres and hospitals should be considered. • Construction methods should be explored to design out significant adverse impacts. • Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. • Construction hours should be restricted to avoid significant noise effects during construction if necessary • Explanation of Noise Important Areas should be included. • Reference is made to the mitigation set out in the PEIR, however the PEIR only provides generic techniques for mitigating effects. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
	Operation	<p>The Environmental Impacts Update states that no material differences from the potential effects from road traffic noise described in the PEIR is expected to arise from this design change. However, it is not clear what is meant by 'material differences' and what noise sensitive receptors on Rectory Road will experience these 'material differences'.</p> <p>The Environmental Impacts Update also states that operational mitigation measures described in the PEIR remain appropriate and would be incorporated into the design, however no details of the proposed measures have been provided.</p> <p>Furthermore, noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation documents which confirms or otherwise the likely significant effects related to noise and vibration.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. • The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. • Consideration for a long-term monitor in Baker Street. 	

Topic	Phase	Review findings	RAG
Cultural Heritage	Construction	<p>The Environmental Impacts Update states that there would be a reduction in the area of land required and, therefore, a minor improvement in the adverse effects to archaeological remains reported in the PEIR. Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The results of intrusive surveys need to be considered to properly determine the significance of the heritage assets at Murrells Cottage to be impacted and to inform the mitigation requirements. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>The Environmental Impacts Update states that no significant change to the assessment described in the PEIR. Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment should extend to assessing the significance of non-designated assets. • The assessment should acknowledge all appropriate guidance principles – including Historic England's GPA2 and GPA3 principles. • The A13 junction will require significant visual and noise mitigation. In developing the mitigation strategy, consideration should be given to the location of built heritage and historic landscape to minimise any impacts on the asset's sitting. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The Environmental Impacts Update states that the nature of the effects would be similar to those reported in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors) as the altered structure's location would still require the same level of construction. Mitigation is referred back to the PEIR, which does not provide specific design mitigation for significant adverse impacts to receptors.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. 	

Topic	Phase	Review findings	RAG
	Operation	<ul style="list-style-type: none"> • The LVIA should consider ‘distant’ viewpoints including identified strategic and local views from the settlements of Orsett. <p>The Environmental Impacts Update states that the nature of the effects would be similar to those reported in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors). It states that some mitigation proposals previously presented are no longer being taken forward, such as the landscape earthworks strategy at the A13 junction and false cuttings with slackened slopes but does not explain the implications of this. Given the nature of the effects, it would be expected that further mitigation would be provided and that at this stage of the project, the mitigation should be specific to the impacts, which it is not.</p> <p>Furthermore, it also states that a full assessment supported by representative photomontages will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant landscape and visual effects related to the scheme’s operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. • The LVIA should consider ‘distant’ viewpoints including identified strategic and local views from the settlements of Orsett. • The Environmental Impacts Update states that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The Council still does not know whether there will be acoustic fencing and what the visual and noise effects will be for local people. • The Council is still waiting for modelling showing the visual effects of the project on local viewpoints, so is unable to make an informed view of the potential effects yet. 	
Biodiversity (terrestrial and marine)	Construction	<p>The Environmental Impacts Update states that removing the diversion would reduce the extent of habitat loss in this area compared to that presented in the PEIR. It also states that, although beneficial, the design change would not lead to a reduction in the significance level of the assessment conclusion. However, there is a lack of level of significance assessment provided within the PEIR to be able to make a comparison.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. No reference in the PEIR and Supplementary Consultation Documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
	Operation	<p>The Environmental Impacts Update states that there would be no significant change to the assessment described in the PEIR. However, there is a lack of level of significance assessment provided within the PEIR to be able to make a comparison. Furthermore, the Environmental Impacts Update does not explain whether there are any new direct/indirect effects on the nearby LWS (Blackshots Nature Area, Orsett Camp Quarry and Mucking Heath/Orsett Golf Course) as a result of the Supplementary Consultation design changes.</p> <p>Operational effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Additional surveys required as the extent of surveys to date has fallen short of minimum standards. Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
Road drainage and the water environment	Construction	<p>The Environmental Impacts Update states that the effects reported in the PEIR remain. Construction effects are proposed to be controlled through mitigation measures set out in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. No reference in the PEIR and Supplementary Consultation documents on the methodology for assessing cumulative effects. 	

Topic	Phase	Review findings	RAG
	Operation	<p>The Environmental Impacts Update states that the effects reported in the PEIR remain. It also states that mitigation measures presented in the PEIR remain appropriate.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). • It is not clear if the EIA will be underpinned by a whole system water balance approach. • No reference in the PEIR and Supplementary Consultation documents on the methodology for assessing cumulative effects. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant changes to the assessment and effects reported in the PEIR.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided. It also states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Highways England have not shared any detail of initial findings from its ground investigations campaign which commenced in August 2019.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects. • A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. • The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. • The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further detail is required. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
Materials and Waste	Construction	<p>The Environmental Impacts Update states the change in design is likely to have a negligible effect on the assessment reported in the PEIR. Mitigation measures for materials and waste remains as described in the PEIR.</p> <p>The Environmental Impacts Update states that Highways England continues to refine their approach to balancing earthworks across the project to maximise the re-use of excavated materials onsite and within the design proposals. It also states that measures to manage the storage of construction materials and wastes on site would be detailed in the ES, CoCP and CEMP. No evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to the storage, transport and/or handling of construction materials and waste.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required for use of rail and river for the movement of materials, plant, equipment and waste and the environmental and transport impacts of these movements. The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	<p>The Environmental Impacts Update states that there would be negligible effect on the assessment reported in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required on potential materials management requirements and targets/objectives that will be written into contractual documentation. 	

Topic	Phase	Review findings	RAG
People and Communities	Construction	<p>The Environmental Impacts Update states that there would be an improvement to those effects reported in the PEIR at this location due to the reduction in construction land take. It also states that this design change would remove the impact on Orsett Showground and, therefore, no mitigation is required as a result of this change. However, the construction of the LTC would still continue through this area, including potential utility works, therefore negative effects could still occur, and appropriate mitigation measures should be considered.</p> <p>Furthermore, the proposed roads suggested for closure and use by construction vehicles could limit access to hospitals.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. Further impacts on health and well-being need to be assessed • Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. • More detail on the development sites in the area which will be considered in the assessment is required. • Long term closure of Rectory Road will cause significant disruption for the residents of Orsett. With Baker Street also scheduled for a long-term closure and the works planned for Stifford Clays Road suggesting the need for weekend/night closures, the timing of these works will need to be carefully considered to reduce the impact on the residents of Orsett. • The long-term closure of Rectory Road and planned works to other access points into Orsett could reduce the ability to deliver housing growth in Orsett in the first 5 years of the Local Plan due to the reduction in local highway capacity and resilience during the construction phase of the LTC. 	
	Operation	<p>The Environmental Impacts Update states that there would be a material improvement to the effects reported in the PEIR as the route would no longer pass directly through Orsett Showground. It is not clear how this conclusion has been reached and which receptors are affected (e.g. community open space, community severance, economy, health) as the Environmental Impacts Update presents no significance assessment to be able to make a comparison.</p> <p>It also states that as this change would remove the impact on Orsett Showground, then no mitigation is required. However, utility works are proposed in this area. Therefore, appropriate mitigation measures should be considered.</p> <p>Furthermore, the overall design of this route is important as it is one of the main access routes into Orsett. It is also a key link for walkers, cyclists and horse riders.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. Further impacts on health and well-being need to be assessed More detail on the development sites in the area which will be considered in the assessment is required. 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. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	

Hornsby Lane Closure - Design Change 14

Summary of design change: Part of Hornsby Lane would be permanently closed, as the bridge to carry Hornsby Road has been removed. Areas provided for turning either side of the LTC. Alternative access would be via Heath Road or the A1013. This closure would avoid disruption caused by having to move overhead lines.

Table A.7: Review of Design Change 14

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No assessment of construction phase traffic effects is presented in the Supplementary Consultation documents which may be significant for this scheme. Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. Effects on receptors during construction are currently unknown. 	
	Operation	<p>The Environmental Impacts Update states that no change in operational air quality effects reported in the PEIR are anticipated from this change as there are no air quality receptors included along Hornsby Lane.</p> <p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> • No standalone HEIA is provided is provided in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. It is understood that a standalone HEIA is being submitted as part of the DCO application. • Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. • Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. • The PEIR did not assess all relevant road links and receptors in this area. Therefore, there the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. • No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}) • The Environmental Impacts Update does not explain whether there are any direct/indirect air quality effects on the site proposed for the translocation of protected species. 	
Noise and Vibration	Construction	<p>The Environmental Impacts Update states that there is the potential for temporary adverse effects in the vicinity of the works but fails to set out which noise sensitive receptors will be affected. Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no specific details of the proposed measures have been provided.</p> <p>It also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects from noise and vibration during the construction phase.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Baseline noise surveys and subsequent noise modelling should be undertaken, and construction methods should be explored to design out significant adverse impacts. Measures to control and monitor construction noise should be detailed in the CoCP. • Construction hours should be restricted to avoid significant noise effects during construction if necessary. 	
	Operation	<p>The Environmental Impacts Update states that no material differences from the potential effects from road traffic described in the PEIR is expected from this design change. It states that operational mitigation measures described in the PEIR remain appropriate and would be incorporated into the design, however no details of the proposed measures have been provided.</p> <p>The Environmental Impacts Update also states noise and vibration continues to be assessed and will be presented in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to noise and vibration.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> The PEIR referenced potential mitigation measures such as low-noise road surfaces and environmental barriers. These details of the anticipated effects and any detailed plans for mitigation have not been shared. Impacts from the scheme's operation on other sensitive receptors, such as the proposed translocation sites for protected species, should be considered. 	
Cultural Heritage	Construction	<p>The Environmental Impacts Update states that there would be a reduction in the works area and, therefore, a minor beneficial improvement in the adverse effects to archaeological remains reported in the PEIR. Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no specific details of the proposed measures have been provided.</p> <p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified nor is 100 m for collecting condition information on designated heritage assets – both areas should be expanded. Heritage assessment should consider the setting of Heath Place. The assessment should extend to significant non-designated assets. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>The Environmental Impacts Update states that the removal of the overbridge from the proposed development would be a marginal improvement to the adverse Grade II listed Heath Place reported in the PEIR, resulting from the change to setting. It also states that the closure of this route would result in a marginal worsening of the adverse effects reported in the PEIR to the historic landscape. However, it is not clear how these conclusions have been reached.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets. Both areas should be expanded. In developing this design change and the landscape strategy, consideration should be given to the historic landscape and the location of the Grade II listed Heath Place to minimise any impacts. The assessment should acknowledge all appropriate guidance principles – including Historic England's GPA2 and GPA3 principles Opportunities to reinstate or improve access including pedestrian links to the bridleway from Hornsby Lane. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The Environmental Impacts Update states that the nature of the effects would be similar to those reported in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors).</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. 	
	Operation	<p>The Environmental Impacts Update states that there would be a slight benefit to the reported effects set out in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range or visual receptors). As a result of the associated structural and design changes in this area, the report suggests that there would be a reduced direct impact on the setting to the Grade II listed Heath Place within this rural landscape.</p> <p>It states that some mitigation proposals previously presented are no longer being taken forward, such as false cuttings with slackened slopes. At this stage of the project, the mitigation should be specific to the impacts, which it is not.</p> <p>Furthermore, it also states that a full assessment supported by representative photomontages will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant landscape and visual effects related to the scheme's operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. The Environmental Impacts Update states that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. Highways England should confirm with the Council whether there will be acoustic fencing and what the visual and noise effects will be for local people. Modelling showing the visual effects of the project on local viewpoints, so is unable to make an informed view of the potential effects yet should be issued to the Council, when available 	

Topic	Phase	Review findings	RAG
Biodiversity (terrestrial and marine)	Construction	<p>The Environmental Impacts Update states that the extent of habitat loss in this area would be reduced compared to that presented in the PEIR as a result of avoiding utilities works but the design change would not lead to a reduction in the significance level of the assessment conclusion. However, there is a lack of level of significance assessment provided within the PEIR to be able to make a comparison.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. • Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. • No reference in the PEIR and Supplementary Consultation Documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
	Operation	<p>Highways England do not expect this design change to alter the assessment of effects described in the PEIR. However, there is a lack of level of significance assigned to effects within the assessment provided within the PEIR to be able to make a comparison.</p> <p>Operational effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. • Further information required on the proposed sites for translocation of protected species. • Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. • No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	

Topic	Phase	Review findings	RAG
Road drainage and the water environment	Construction	<p>The Environmental Impacts Update states that the design change would not further impact road drainage and the water environment during the construction when compared to the Statutory Consultation scheme. Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>The Environmental Impacts Update states that the design change would not further impact road drainage and the water environment during the scheme's operation when compared to the Statutory Consultation scheme. Operational effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR on ground conditions during the construction phase.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided. It also states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Highways England have not shared any detail of initial findings from its ground investigations campaign which commenced in August 2019.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further detail is required. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
Materials and Waste	Construction	<p>The Environmental Impacts Update states that the change would result in a slight improvement on the scenario presented in the PEIR due to a reduction in the demand for construction materials, but this would remain as a negligible effect. Mitigation measures for materials and waste remains as described in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required for use of rail and river for the movement of materials, plant, equipment and waste and the environmental and transport impacts of these movements. The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be ‘swamped’ with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	<p>The Environmental Impacts Update states that there would be negligible effect on the assessment reported in the PEIR.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Further detail required on potential materials management requirements and targets/objectives that will be written into contractual documentation. 	
People and Communities	Construction	<p>Residential properties, local businesses and community facilities in Orsett Heath would no longer be accessible via Hornsby Lane from the north but an alternative means of access would remain available. As such, the Environmental Impacts Update suggests that no additional adverse effect is considered as a result of the closure. However, it is not clear how this has been assessed.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. Further impact on health and well-being to be understood. 	
	Operation	<p>Residential properties, local businesses and community facilities in Orsett Heath would no longer be accessible via Hornsby Lane from the north but an alternative means of access would remain available. As such, the Environmental Impacts Update suggests that no additional adverse effect is considered as a result of the closure. However, it is not clear how this has been assessed.</p> <p>The Environmental Impacts Update also states that engagement with local stakeholders is ongoing to fully understand the implications of the closure of Hornsby Lane at this location and develop appropriate mitigation. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise of the likely significant effects.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Expect a consultation with residents and Ward councillors regarding the proposed closure. Main concern is about fly tipping as it will block the road and block the residents in. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR.</p> <p>It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	

1.3 Review of the LTC/M25 junction proposals

The review of the LTC/M25 junction proposals includes Design Changes 15, 16, 17, and 18, as set out in the below table:

Design change ref. (Highways England reference)	Design change (as per Highways England's Environmental Update Report)	Design change description (as per Highways England's Guide to Supplementary Consultation)
15	M25 to A13 southbound lane removal	1. One lane has been removed from the M25 to A13 southbound. 2. Added a shared path along North Road to provide better access to the wider network of public rights of way. 3. Changes to the height of the LTC and North Road to reduce impact on properties.
16	Routing through the Mardyke	4. Road moved approximately 200 metres south-west. 5. The viaduct across the Mardyke River and Golden Bridge Sewer river has been shortened from approximately 450 metres to 350 metres.
17	The height of the LTC and North Road	As a result of revisions to the LTC/M25 junction, several structures have been revised. 6. A new bridge suitable for horse riders to connect the east and west side of Thames Chase Forest over the M25.
18	Thames Chase Community Forest – new bridge	7. Footpath 252 has been moved south and now consists of two bridges, one to cross the railway line and another to cross over the LTC. The new location ties in more effectively with existing routes for walkers, cyclists and horse riders. North Road upgraded to a green bridge and includes shared cycle and footpath facilities. 8. Footpath 136 over the LTC has been realigned because the LTC route has moved south-west. 9.

M25 to A13 southbound lane removal - Design Change 15

Summary of design change: One lane has been removed southbound between the M25 and A13 junctions, reducing the number of lanes from three to two. The design change further results in there no longer being a need to realign Ockendon Road or make changes to the bridge where the road passes over the M25.

Table A.8: Review of Design Change 15

Topic	Phase	Review findings	RAG
Air Quality	Construction	The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the ES Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> No assessment of construction phase traffic effects is presented in the Supplementary Consultation documents which may be significant for this scheme. Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. There is concern that some road links in this area have not been assessed in the PEIR and therefore the assessment of effects presented are misrepresented. 	
	Operation	<p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>The Environmental Impacts Update states that impacts are difficult to predict in the absence of detailed air quality modelling, however, changes have the potential to change the effects reported in the PEIR. Detailed air quality modelling should be undertaken to inform the design. Until such changes have been modelled, the impacts should remain as stated in the PEIR.</p> <p>The assessment in the Environmental Impacts Update and PEIR would suggest that no significant adverse impacts are predicted as no operational mitigation is provided. This remains a concern considering the magnitude of the scheme and the absence of a standalone HEIA.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No standalone HEIA is provided is provided in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. It is understood that a standalone HEIA is being submitted as part of the DCO application. The Council has still not received any information on the assessment of the HEIA or recommendations to mitigate health effects. Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> The PEIR did not assess all relevant road links and receptors in this area. Therefore, the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}) 	
Noise and Vibration	Construction	<p>As stated in the PEIR (Para 13.4.20), no baseline noise surveys were undertaken during the PEIR assessment along this section of the route. It is therefore unclear how the assessment has been undertaken. The Environmental Impacts Update states that there remain temporary significant adverse effects, construction techniques should be explored to design out significant adverse effects. Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>It also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects from noise and vibration during the construction phase.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. Construction methods should be explored to design out significant adverse impacts. Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. Night-time construction activities proposed should be fully considered and, where appropriate, should be limited to reduce potential effects. Lack of information provided to enable an informed view of the project to be made. There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
	Operation	<p>As part of this design change, further woodland planting is proposed along the southbound lane of the M25, this is likely to be a positive change to noise conditions in the area, e.g. St Mary Magdalene and North Ockendon Conservation Areas.</p> <p>However, green landscaping has been removed from the Supplementary Consultation Scheme when compared to the Statutory Consultation Scheme along the M25, exposing the residential properties on the north side of Ockendon Road. The noise and visual conditions at these properties are unlikely to change from the existing baseline, however, there is a missed opportunity to provide an improvement to these properties.</p>	

Topic	Phase	Review findings	RAG
		<p>Furthermore, it is our understanding that noise surveys are yet to be undertaken along this section of the route.</p> <p>The lack of noise assessment remains a concern. The Environmental Impacts Update states that there is unlikely to be a material difference to the potential road traffic noise effects as described in the PEIR and potential mitigation measures described in the PEIR would remain appropriate. The mitigation measures outlined in the PEIR are generic. It is therefore considered that further evidence should be provided to demonstrate a no change effect.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. • Potential impacts during the operational phase on other sensitive receptors such as ecological receptors, school's health centres and hospitals, should be considered. • Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. • The Environmental Impacts Update does not explain whether there are any new direct/indirect air quality effects on the site proposed for the translocation of protected species. 	
Cultural Heritage	Construction	<p>There is likely to be less disruption to the heritage setting, due to there no longer being a need to realign Ockendon Road or make changes to the bridge where the road passes over the M25. However, this has not been re-assessed.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>As part of this design change, further woodland planting is proposed along the southbound lane of the M25, this is likely to be a positive change to cultural heritage assets in the area, e.g. St Mary Magdalene and North Ockendon Conservation Areas and listed buildings. However, this is not reported in the Environmental Impacts Update.</p>	

Topic	Phase	Review findings	RAG
		<p>Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The nature of effects would be similar to those stated in the PEIR i.e. a major to moderate negative landscape change and a typically minor to major negative change in views for visual receptors, even with the removal of a lane and reduction in modifications to existing road infrastructure.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment 	
	Operation	<p>Green landscaping has been removed from the Supplementary Consultation scheme when compared to the Statutory Consultation scheme along the M25, exposing the residential properties on the north side of Ockendon Road to the M25. The conditions at these properties are unlikely to change from the existing baseline, however, there is potential for the design to provide a betterment to these properties</p> <p>Design change 15 within the Environmental Impacts Update discusses viaducts and embankments crossing floodplain for the construction landscape section. Design change 15 relates to the M25 to A13 southbound lane removal. Therefore, it is unclear if the correct design change has been assessed in this section.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. The Environmental Impacts Update states that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. Early indication of operational mitigation proposals presented in the PEIR suggested they may not be adequate or effective to mitigate against adverse landscape and visual impacts 	

Topic	Phase	Review findings	RAG
Biodiversity (terrestrial and marine)	Construction	<p>The Environmental Impacts Update states that the design change is “<i>unlikely to lead to a reduction in the significance level of the assessment conclusion</i>”. However, there is a lack of level of significance assigned to effects within the assessment provided within the PEIR to be able to make a comparison.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. • An assessment of an effects would need to be provided to determine which habitats and species are affected. • No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
	Operation	<p>The Environmental Impacts Update states that it is not expected that the change will alter the assessment of effects. However, there is a lack of level of significance assigned to effects within the assessment provided within the PEIR to be able to make a comparison.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. • An assessment of an effects would need to be provided to determine which habitats and species are affected. • No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
Road drainage and the water environment	Construction	<p>The Environmental Impacts Update states that the minor to moderate adverse effects in the PEIR would be reduced as a result of the design change, due to a reduced footprint and a reduction of the effects on local drainage, but also on watercourse crossings and culverts would be shorter in length. However, there is a lack of detail/assessment within the Environmental Impacts Update and Guide to Supplementary Consultation.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>The Environmental Impacts Update states that the minor adverse effect reported in the PEIR would be reduced, however, there is a lack of detail/assessment within the Environmental Impacts Update and Guide to Supplementary Consultation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR on ground conditions during the construction phase.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided. It also states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Highways England have not shared any detail of initial findings from its ground investigations campaign which commenced in August 2019.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects. A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further detail is required. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
Materials and Waste	Construction	<p>The Environmental Impacts Update states that there would result in a slight improvement, due to the reduction in demand for construction material. No evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to the storage, transport and/or handling of construction materials and waste.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required for use of rail and river for the movement of materials and waste and the environmental and transport impacts of these movements. The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	<p>The Environmental Impacts Update states that there would be negligible effect on the assessment reported in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required on potential materials management requirements and targets/objectives that will be written into contractual documentation. 	
People and Communities	Construction	<p>The Environmental Impacts Update states that the design change would result in an improvement effects to agricultural land and businesses. However, it is not clear how this has been assessed and how much land is no longer being developed as a result of the design change. No justification has been provided to validate that the assessment would see improved outcomes.</p>	

Topic	Phase	Review findings	RAG
		<p>Furthermore, new residential properties along Ockendon Road are subject to demolition. Therefore, it is unlikely that the design change would result in improvement to the impacts reported in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. More detail on the development sites in the area which will be considered in the assessment is required. 	
	Operation	<p>The Environmental Impacts Update states that the design change would result in an improvement effects to agricultural land and businesses. However, it is not clear how this has been assessed and how much land is no longer being developed as a result of the design change. Ockendon Road is no longer being realigned, which would mean less disturbance to the community, however this is not addressed in the Environmental Impacts Update.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. More detail on the development sites in the area which will be considered in the assessment is required. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> (UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR.</p> <p>It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	

Routing through the Mardyke – Design Change 16

Summary of design change: The viaduct across the Mardyke River and Golden Bridge Sewer river has been shortened from approximately 450 metres to 350 metres; and, the route has moved approximately 200 metres south-west to reduce the diversion work required to move an existing gas main. Changes to the structures over the Mardyke River, Golden Bridge Sewer and the Orsett Fen Sewer have been developed.

Table A.9: Review of Design Change 16

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The route has moved approximately 200m south-west, closer to South Ockendon. It is unclear if new receptors have been identified and assessed.</p> <p>The Environmental Impacts Update states that, with mitigation in place, there should be no significant adverse impacts arising from dust. The assessment remains to address potential impacts from construction traffic on the local highway network. No detail provided regarding any alterations to construction traffic routing.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health effects, and whether Highways England anticipate changes to this from these design changes is not mentioned in the consultation material. This is a substantial omission considering the significant health impacts of this scheme. No assessment of construction phase traffic effects which may be significant for a scheme like LTC. Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. Effects on receptors during construction are currently unknown. 	
	Operation	<p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>The assessment in the Environmental Impacts Update and PEIR would suggest that no significant adverse impacts are predicted as no operational mitigation is provided. This remains a concern considering the magnitude of the scheme and the absence of a standalone HEIA.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No standalone HEIA is provided as part of the Supplementary Consultation material, which is a substantial omission, considering the potentially significant health impacts of this scheme. Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the assessment. Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. Not all relevant road receptors have been assessed following modelled changes in traffic. No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}). 	
Noise and Vibration	Construction	<p>No baseline noise surveys were undertaken during the PEIR assessment along this section of the route (as stated Para 13.4.20 of PEIR). Therefore, there is no evidence to support the rationale that receptors north-east of the route would have reduced impacts as a result of this design change (as stated within the Environmental Impacts Update). The Environmental Impacts Update states that there remains temporary significant adverse effects south-west, there is a lack of information regarding which receptors are subject to a significant adverse impact.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Construction methods should be explored to design out significant adverse impacts. • Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. • Night-time construction activities proposed should be fully considered and, where appropriate, should be limited to reduce potential effects. • Lack of information provided to enable an informed view of the project to be made. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified 	
	Operation	<p>The route has moved approximately 200 metres south-west to reduce the work required to move an existing gas main. As stated in the Environmental Impacts Update there is a larger magnitude of change in road traffic noise to receptors south-west of the route, however no change to the significance is predicted.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. • Potential impacts during the operational phase on other sensitive receptors such as ecological receptors, school's health centres and hospitals, should be considered. • Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. • The Environmental Impacts Update does not explain whether there are any new direct/indirect air quality effects on the site proposed for the translocation of protected species. 	
Cultural Heritage	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment described in the PEIR. It also states that mitigation of impacts on archaeological remains would follow the approach set out in the PEIR.</p> <p>Given that the nature of the design change will have the potential to affect the setting of built heritage assets, these will need to be assessed. Furthermore, Highways England have not taken the opportunity to share further information regarding the likely significant effects to archaeological remains, or provide any detail on</p>	

Topic	Phase	Review findings	RAG
		<p>the proposed mitigation measures, given that an incomplete archaeological desk-based assessment has only just been released and trial trenching evaluation works are due to start.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The results of intrusive surveys need to be considered to properly determine the significance of the heritage assets and to understand the mitigation requirements. • Appropriate heritage impact assessments including impact from mitigation measures should be completed for Grove Farm • Much greater consideration is needed of the impact upon the historic environment (including the setting of heritage assets) during construction phase including temporary compounds, access and the storage of spoil and equipment. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>It is unclear if any new heritage receptors have been identified as a result of the realignment in this area, or whether effects on known assets have changed. The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR, however detail on specific receptors affected by the realignment is absent from the consultation documents.</p> <p>Furthermore, Highways England have not taken the opportunity to share further information regarding the likely significant effects to archaeological remains, or provide any detail on the proposed mitigation measures, given that an incomplete archaeological desk-based assessment has only just been released. A programme of trenching has been proposed but has not commenced.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Findings of the archaeological desk-based assessment are required to understand the potential effects of the realignment in this area. • Appropriate heritage impact assessments including impact from mitigation measures should be completed for Grove Farm • The results of intrusive surveys need to be considered to properly determine the significance of the heritage assets and to understand the mitigation requirements. • The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	The Environmental Impacts Update states that the nature of the effects would be similar to those reported in the PEIR (i.e. a major negative landscape change and typically a moderate to major negative change in views	

Topic	Phase	Review findings	RAG
		<p>for a range of visual receptors). It suggests that the main impact would occur within the Orsett Fen as construction activities associated with the viaduct and embankments would be prominent and affect a number of rural reports including Public Rights of Way (PRoW) and isolated residential properties.</p> <p>Throughout the early part of 2019 Highways England dedicated several design workshops to their proposals to provide a longer, higher and better designed viaduct that would remove the need for significant embankments within the valley which they believed would reduce the landscape and visual impacts of the scheme. Without any further discussion however, the scheme has reverted back to a broadly similar design as proposed at Statutory Consultation despite the Highways England design team recognising that there was a better alternative. Thorough justification for this design change rather than the alternative discussed has not been provided in the Supplementary Consultation documents.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. • The PEIR sites a number of mitigation measures which will be ‘considered’ however no confirmation of what measures are to be implemented in this location have been provided. 	
	Operation	<p>The Environmental Impacts Update states that the nature of the effects would be similar to those set out in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors) due to the elevated nature of the project. It states that mitigation proposals continue to reflect those presented in the PEIR but does not confirm what measures are to be implemented in this location. It would be expected that at this stage of the project, the mitigation should be specific to the impacts, which it is not.</p> <p>The viaduct across the Mardyke River and Golden Bridge Sewer river has been shortened from approximately 450m to 350m. As reiterated in the Council’s response on the Statutory Consultation scheme <i>“Including a viaduct gives a more open aspect reducing the visual impact in this open area; A combination of viaduct and embankment is a more cost-effective solution than a viaduct over the whole of the valley; A shorter viaduct will be less of a long-term maintenance issue than the longer viaduct while it will still present an opportunity for architectural treatment that minimises visual impact; Reducing the length of embankment reduces the volume of flood compensation and consequently the amount of land compared to the preferred route and option 1 making it easier to find suitable land.”</i> The shortened viaduct subsequently means a longer embankment. Therefore, not only increasing the volume of flood compensation, but “closing” off views which would have been otherwise through a viaduct in this location.</p>	

Topic	Phase	Review findings	RAG
		<p>It is not clear if the elevation of the viaduct has been altered.</p> <p>No landscape mitigation measures have been shown that could mitigate this structure within an expansive, flat open landscape.</p> <p>Recommendation:</p> <ul style="list-style-type: none"> • While the Supplementary Consultation documents suggest that a balance has been struck between the solutions of a viaduct or embankment, both still offer significant adverse impacts on the landscape in terms of visual amenity and substantial land modification, with all of its associated risks. Thorough justification for this design change rather than the alternative discussed in 2019 has not been provided in the Supplementary Consultation documents. • It is not apparent that options to form a tunnel for all or part of the route have been considered in order to eliminate these environmental impacts. • Significance of the expected effects needs to be confirmed in order to determine whether the design change has provided sufficient mitigation, and whether likely significant effects remain for landscape characters and visual receptors in this area. • The Council is still waiting for modelling showing the visual effects of the project on local viewpoints, so is unable to make an informed view of the potential effects yet. • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. 	
Biodiversity (terrestrial and marine)	Construction	<p>The Environmental Impacts Update states that the extent of habitat loss in this area would be reduced compared to that presented in the PEIR, however, no quantum is provided. It is not clear how a larger embankment as part of these proposals results in a reduction of habitat loss. Despite the reduction in habitat loss predicted, the design change would not lead to a reduction in the significance level of the assessment conclusion presented in the PEIR. However, there is a lack of level of significance assessment provided within the PEIR to be able to make a comparison.</p> <p>The assumption stated in the Environmental Impacts Update that “<i>the structures over the Mardyke River would support greater botanical diversity in this area</i>” has no evidence to support this.</p> <p>Figure 5.54 of the Guide to Supplementary Consultation shows some areas of wetland creation. Map Book 1: General Arrangements shows areas for potential protected species receptors within this area. It is noted however that there are engineered balancing ponds situated on either side of the LTC which are disconnected from the ecological mitigation areas. It is considered that such an approach is a significant missed opportunity to achieve meaningful ecological and landscape benefits while addressing water management and road</p>	

Topic	Phase	Review findings	RAG
		<p>runoff issues. Overall there is no firm proposals as to what the extent of any mitigation would be in this sensitive area.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. It is not detailed if new areas of compensation are commensurate with the loss caused by the project. It is also not identified if further work to identify such areas will be the subject of engagement with stakeholders such as the Council. No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
	Operation	<p>The Environmental Impacts Update states that the design change would not alter the assessment of effects reported in the PEIR. It is unclear how a larger embankment over a flood plain would result in no change to the assessment. As reiterated in the Council's response on the Statutory Consultation scheme "... <i>Reducing the length of embankment reduces the volume of flood compensation and consequently the amount of land compared to the preferred route and option 1 making it easier to find suitable land.</i>" Therefore, this design change would require an increase in flood compensation, i.e. an increase in habitat loss.</p> <p>The Environmental Impacts Update also notes that the landscape design would incorporate a more diverse habitat proposals in this area which would be beneficial to the overall Environmental Masterplan design and the project's biodiversity value. Operational effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Agreement should be reached on the suitability of the proposed sites for translocation of protected species and their long-term use and maintenance. Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, Barn Owl studies. Further information required on the proposed sites for translocation of protected species. Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
Road drainage	Construction	It is stated in the Environmental Impacts Update that detailed hydraulic modelling of the Mardyke River, Golden Bridge Sewer and the Orsett Fen Sewer has reduced the moderate adverse effects assessed in the	

Topic	Phase	Review findings	RAG
and the water environment		<p>PEIR. However, in the PEIR it suggests that an increased embankment would increase the flood compensation required.</p> <p>The route crosses the Mardyke flood plain for 2km with about 1.5km of embankment up to 7.5m high and a 450m long viaduct across the Mardyke river and nearby Golden Bridge Sewer.</p> <p>Design changes to the proposed crossing of the Mardyke River and its tributaries would reduce flood risk and hydromorphology, however, further information on the assessment conclusion is required.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Further information of the hydraulic modelling is required to determine the level of accuracy of the revised Road and Water Environment construction assessment • Further detail regarding any changes to run-off should be provided as there is potential for is to contain higher levels of hydrocarbons etc. and this should not be able to flow directly into the Mardyke without some form of filtering e.g. through reedbeds. Such features could be of landscape and ecological benefits if designed appropriately. • Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). • It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>As stated in the Environmental Impacts Update, the moderate adverse impacts reported in the PEIR would be reduced due to these design changes (as stated under the construction section). There is insufficient evidence presented in the Environmental Impacts Update to demonstrate the change in assessment.</p> <p>As stated within Table 3.3 of the PEIR (Volume 1) <i>“Reducing the length of embankment would need less flood compensation”</i>. Therefore, it is unclear whether further flood compensation is required as a result of this design change.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). • It is not clear if the EIA will be underpinned by a whole system water balance approach. • Further assessment should confirm the amount of flood compensation for the scheme. 	

Topic	Phase	Review findings	RAG
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant changes to the assessment and effects report in the PEIR and reiterates that construction effects would be controlled through a CoCP and a CEMP.</p> <p>It states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects. A minerals safeguarding assessment and Potential Sources Study Report have not been included in the PEIR which are important sources of information that would assist stakeholders. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. Appropriateness of any proposed mitigation measures can only be confirmed once the outcomes of the ground investigations have been shared. 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No recommendations can be made in absence of further assessment and confirmation of effects. 	
Materials and Waste	Construction	<p>A slight worsening of the impacts to materials and waste a result of this design change is predicted within the Environmental Impacts Update. However, it states that the level of impact remains the same as the PEIR (negligible).</p> <p>The Environmental Impacts Update also states that measures to manage the storage of construction materials and wastes on site would be detailed in the ES, CoCP and CEMP. No evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to the storage, transport and/or handling of construction materials and waste.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required for use of rail and river for the movement of materials, plant, equipment and waste and the environmental and transport impacts of these movements. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No recommendations can be made in absence of further assessment and confirmation of effects. 	
People and Communities	Construction	<p>As stated in the Environmental Impacts Update, the proposed design change would reduce the impact to 'the wildness' (an area of woodland) and would move the route further from local footpaths. It states that the change would reduce the impact on local recreational users in this area and represent an improvement to those effects reported in the PEIR. However, the report does not demonstrate if change to recreational users is likely north of South Ockendon or what other receptors could be affected by this change.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further evidence should be provided to demonstrate that recreational users north of South Ockendon will not be impacted due to the change in location of the route. Health is not mentioned in the supplementary consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. Impact on the bridleway and isolated residential properties would need full assessment. Further information on the design and mitigation measures proposed for North Road Green Bridge. Further information of the mitigation measures should be provided. 	
	Operation	<p>As stated in the Environmental Impacts Update, the proposed design change would reduce the impact to 'the wildness' (an area of woodland) and would move the route further from local footpaths. It states that the change would reduce the impact on local recreational users in this location and represent an improvement to those effects reported in the PEIR. However, the report does not demonstrate if change to recreational users is likely north of South Ockendon or what other receptors could be affected by this change.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> • Further evidence should be provided to demonstrate that recreational users north of South Ockendon will not be impacted due to the change in location of the route. • Health is not mentioned in the supplementary consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. • Further information of the mitigation measures should be provided. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The United Kingdom Climate Projections 2018 (UKCP18) have been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. • There is no mention in the PEIR and Supplementary Consultation Documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR.</p> <p>It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. Further impacts to climate as a result of the design change cannot be ruled out until a detailed hydraulic modelling assessment has been provided for review. 	

The height of the LTC and North Road - Design Change 17

Summary of design change: The LTC has been lowered by two metres and, as a result, North Road has also been lowered by two metres.

Table A.10: Review of Design Change 17

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be presented in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health effects, and whether Highways England anticipate changes to this from these design changes is not mentioned in the consultation material. This is a substantial omission considering the potentially significant health impacts of this scheme. No assessment of construction phase traffic effects which may be significant for a scheme like LTC. Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. Effects on receptors during construction are currently unknown. 	
	Operation	<p>The Environmental Impacts Update states that no change in operational air quality effects reported in the PEIR are anticipated from this design change, as vertical alignments are not included in the dispersion modelling.</p> <p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is</p>	

Topic	Phase	Review findings	RAG
		<p>undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • No standalone HEIA is provided as part of the consultation material, which is a substantial omission, considering the potentially significant health impacts of this scheme. The Council has still not received any information on the assessment of the HEIA or recommendations to mitigate potential health effects. • Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the assessment. • Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. • Not all relevant road receptors have been assessed following modelled changes in traffic. • No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}). 	
Noise and Vibration	Construction	<p>The Environmental Impacts Update states that there remains potential for temporary adverse effects to arise during the construction period.</p> <p>Construction effects are proposed to be controlled through mitigation measures in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Baseline noise surveys and subsequent noise modelling should be undertaken, and construction methods should be explored to design out significant adverse impacts. Measures to control and monitor construction noise should be detailed in the CoCP. • Construction hours should be restricted to avoid significant noise effects during construction if necessary. 	
	Operation	<p>The Environmental Impacts Update states that no material differences from the potential effects from road traffic noise described in the PEIR to arise from this design change.</p> <p>It states that operational mitigation measures described in the PEIR remain appropriate and would be incorporated into the design.</p> <p>The PEIR referenced potential mitigation measures such as low-noise road surfaces and environmental barriers. These details of the anticipated effects and any detailed plans for mitigation have not been shared.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Details of the anticipated effects and significance of those effects have not been reported, these will be required to understand what design changes may be required to mitigate any potential adverse effects. Appropriate mitigation to avoid or reduce any adverse effects need to be established. 	
Cultural Heritage	Construction	<p>Assuming the footprint of the development has not changed (which is not explicitly confirmed in the Supplementary Consultation material) it is agreed that there would be no significant change to the assessment reported in the PEIR for construction effects on cultural heritage.</p> <p>Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Agree viewpoints from Scheduled Monuments, listed buildings and Conservation Areas. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>Assuming the footprint of the development has not changed (which is not explicitly confirmed in the Supplementary Consultation documents) it is agreed that there would be no significant change to the assessment reported in the PEIR for operational effects on cultural heritage.</p> <p>No comment is provided regarding any change to the effects on setting / significance of nearby scheduled monuments and Grade II listed buildings.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The significance of likely effects has not been reported in the PEIR or the Supplementary Consultation documents, an informed view of likely changes to the assessment of cultural heritage assets therefore cannot be made. Assessment of the contribution north road makes to the setting of the listed buildings, scheduled monument and Conservation Areas. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The Environmental Impacts Update states that the nature of the effects would be similar to those reported in the PEIR (i.e. a major negative landscape change and a moderate to major negative change in the view for a range of visual receptors).</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
	Operation	<ul style="list-style-type: none"> The PEIR sites a number of mitigation measures which will be ‘considered’ however no confirmation of what measures are to be implemented in this location have been provided. <p>The Environmental Impacts Update states that there would be a slight benefit to the nature of effects reported in the PEIR (i.e. a moderate negative landscape change and a moderate to minor negative change in the view for a range of visual receptors) as a result of moving the alignment in the shallow cutting. This reduction in adverse effect is welcomed.</p> <p>It states that some mitigation proposals previously presented are no longer being taken forward, such as false cuttings with slackened slopes, but does not explain the implications of this. It would be expected that at this stage of the project, the mitigation should be specific to the impacts, which it is not.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Significance of the expected effects needs to be confirmed in order to determine whether the design change has provided sufficient mitigation, and whether likely significant effects remain for landscape characters and visual receptors in this area. Justification for no longer taking forward certain mitigation measures, and the alternatives that have been considered should be shared and discussed with consultees. 	
Biodiversity (terrestrial and marine)	Construction	<p>Assuming the footprint of the development has not changed (which is not explicitly confirmed in the Supplementary Consultation material) it is agreed that there would be no significant change to the assessment reported in the PEIR for construction effects on terrestrial biodiversity arising from this design change.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The extent of either temporary or permanent habitat disturbance or loss needs to be confirmed. 	
	Operation	<p>Assuming the footprint of the development has not changed (which is not explicitly confirmed in the Supplementary Consultation documents) it is agreed that there would be no significant change to the assessment reported in the PEIR for operational effects on terrestrial biodiversity arising from this design change.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The extent of either temporary or permanent habitat disturbance or loss needs to be confirmed. 	
Road drainage and the water environment	Construction	<p>The Environmental Impacts Update states that initial assessments indicate a negligible change to the effects reported in the PEIR. It also states that a hydrogeological risk assessment will continue to be informed by ongoing ground investigations and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects during the construction phase.</p>	

Topic	Phase	Review findings	RAG
		<p>Pollution risks are proposed to be controlled through mitigation measures set out in the CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Specific effects on locally groundwater dependent features in this area need to be confirmed. • Mitigation measures should be confirmed once the ongoing ground investigations, and any assessments they may inform, are complete. 	
	Operation	<p>The Environmental Impacts Update states that initial assessments indicate a negligible change to the effects reported in the PEIR. It also states that a hydrogeological risk assessment will continue to be informed by ongoing ground investigations and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects during the scheme's operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Mitigation measures should be confirmed once the ongoing ground investigations, and any assessments they may inform, are complete. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant changes to the assessment and effects report in the PEIR and reiterates that construction effects would be controlled through a CoCP and a CEMP.</p> <p>It states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects. • A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. • The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. • The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. • Appropriateness of any proposed mitigation measures can only be confirmed once the outcomes of the ground investigations have been shared. 	

Topic	Phase	Review findings	RAG
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No recommendations can be made in absence of further assessment and confirmation of effects. 	
Materials and Waste	Construction	<p>It states in the Environmental Impacts Update that the change in design is likely to have a negligible effect on the assessment reported in the PEIR. Mitigation measures for materials and waste remains as described in the PEIR.</p> <p>It notes that Highways England continue to refine its approach to balancing earthworks across the project to maximise the re-use of excavated materials onsite and within the design proposals and that measures to manage construction materials and wastes will be detailed in the ES, CoCP and CEMP.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> It is not clear what impact, if any, this design change has on assumptions made relating to construction traffic numbers and movements. The detail of the measures proposed to be included in the COCP should be discussed and confirmed with the Council. 	
	Operation	<p>It is agreed that the change in design is likely to have a negligible effect on the assessment in the PEIR.</p> <p>Recommendation & Observation:</p> <ul style="list-style-type: none"> Further detail required on potential materials management and any targets/objectives that will be written into contractual documentation. 	
People and Communities	Construction	<p>The Environmental Impacts Update states that the temporary adverse construction effects on local residents and communities in the North and South Ockendon area would remain as presented in the PEIR. It also states that Highways England are continuing to assess the impact of the proposed change to develop mitigation measures and lessen any negative impact. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects to the local community during the construction phase.</p> <p>Recommendation & Observation:</p> <ul style="list-style-type: none"> The people and communities' chapter include a wide range of topics, notably the communities in the North and South Ockendon areas may be affected by construction works in this location. The extent of those effects is unknown and further consultation with the Council is required. 	

Topic	Phase	Review findings	RAG
	Operation	<p>The Environmental Impacts Update states that there would be an improvement to residential amenity for local communities of North and South Ockendon as a result of a reduction in the height of the route at this location. The report also states that assessments are being undertaken to develop mitigation measures and lessen the negative impact. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects on the local community.</p> <p>Recommendation & Observation:</p> <ul style="list-style-type: none"> • Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. Further impact on health and wellbeing should be assessed. • The people and communities' chapter include a wide range of topics, notably the communities in the North and South Ockendon areas may be affected by the scheme in this location. The nature and extent of those effects are not confirmed in the Environmental Impacts Update. 	
Climate	Construction	<p>It is agreed that the change in design is likely to have a negligible effect on the assessment in the PEIR.</p> <p>Recommendation & Observation:</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. • Carbon modelling to understand the projects contributions to climate change is ongoing and therefore climate effects currently remain unknown. 	
	Operation	<p>It is agreed that the change in design is likely to have a negligible effect on the assessment in the PEIR.</p> <p>Recommendation & Observation:</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the LPA as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. • Carbon modelling to understand the projects contributions to climate change is ongoing and therefore climate effects currently remain unknown. 	

Thames Chase Forest Centre - New Bridge – Design Change 18

Summary of design change: A new bridge suitable for walkers, cyclists and horse rider is proposed to connect the east and west side of the Thames Chase Forest. It should be noted that Highways England refer in the documentation to the Thames Chase Community Forest, which is incorrect, the reference ought to be in this instance to the Thames Chase Forest Centre.

Table A.11: Review of Design Change 18

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The new bridge which is proposed to cross the LTC and the M25 for Non-Motorised Users (NMU's) of the Thames Chase Forest Centre, results in new provisions of a PRoW further to the east and west of the route. The construction of the new PRoW is close to residential properties in North Ockendon. No further receptors have been identified as part of the Environmental Impacts Update.</p> <p>Potential temporary impacts from construction in terms of air quality within Thames Chase Forest Centre should does not appear to have been considered within the Environmental Impacts Update.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • No assessment of construction phase traffic effects is presented in the Supplementary Consultation documents which may be significant for this scheme. • Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. • There is concern that some road links in this area have not been assessed in the PEIR and therefore the assessment of effects presented are misrepresented. 	Yellow
	Operation	<p>The new bridge is unlikely to have a further operational impact on air quality. Therefore, there is unlikely to be a change to air quality impacts. However, no further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • No standalone HEIA is provided in the supplementary consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. It is understood that a standalone HEIA is being submitted as part of the DCO application. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> • Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. • Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. • The PEIR did not assess all relevant road links and receptors in this area. Therefore, there the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. • No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM2.5). 	
Noise and Vibration	Construction	<p>The new bridge to cross the LTC and the M25 for NMU of the Thames Chase Forest Centre, results in new provisions of a PRoW further to the east and west of the route. The construction of the new PRoW is close to residential properties in North Ockendon. No further receptors have been identified as part of the Environmental Impacts Update.</p> <p>Potential temporary impacts from construction noise within Thames Chase Community Forest does not appear to have been considered within the Environmental Impacts Update.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. • Construction methods should be explored to design out significant adverse impacts. • Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. • Night-time construction activities proposed should be fully considered and, where appropriate, should be limited to reduce potential effects. • Lack of information provided to enable an informed view of the project to be made. • There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
	Operation	<p>The new bridge is unlikely to be further operational impacts from noise and vibration. Therefore, there is unlikely to be a change to the impacts reported in the PEIR. However, the lack of noise assessment remains a concern.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> The Environmental Impacts Update does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. Potential impacts during the operational phase on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. The Environmental Impacts Update does not explain whether there are any new direct/indirect air quality effects on the site proposed for the translocation of protected species. 	
Cultural Heritage	Construction	<p>It is unclear if the Environmental Impacts Update has considered the likely effects of this design change on built heritage and historic landscapes, as well as appropriate mitigation measures for these heritage assets.</p> <p>Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>It is unclear how the construction of the proposed new route would impact on any unknown buried archaeology.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. The heritage assessment should consider Historic Landscape effects. The assessment should extend to significant non designated assets. Intrusive surveys need to be undertaken in order to properly determine the significance of the heritage assets to be impacted and understand mitigation requirements. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>The new bridge is unlikely to have a further operational impact on built cultural heritage.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets – both areas should be expanded. The heritage assessment should consider Historic Landscape effects 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The design change has the potential to result in temporary construction impacts closer to communities (i.e. North Ockendon) in terms of visual intrusion from construction equipment, e.g. cranes, etc</p> <p>Views within Thames Chase Forest Centre are likely to be impacted. The Environmental Impacts Update does not provide further assessment on potentially sensitive visual /landscape receptors.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment. 	
	Operation	<p>It is noted the benefits of this design change in terms of the provision of a bridge. However, no information on the design of the new bridge is provided. The design of the new bridge should be sensitive to the surrounding area in terms of the operational views within Thames Chase Community Forest.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The assessment fails to explicitly cite which guidance it is using for its assessment methodology. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the Thurrock Landscape Capacity Study. The Supplementary Consultation documents state that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. The LVIA should consider all relevant landscape character area, features, key characteristics, key landscape qualities and key landscape conditions as set out in the draft Landscape Character Assessment Early indication of operational mitigation proposals presented in the PEIR suggested they may not be adequate or effective to mitigate against adverse landscape and visual impacts. 	
Biodiversity (terrestrial and marine)	Construction	<p>The Application Boundary further encroaches into Thames Chase Community Forest as a result of the new bridge and PRoW. Further habitat loss and impacts from the construction of the PRoW have not been taken into consideration in the Environmental Impacts Update.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. • An assessment of an effects would need to be provided to determine which habitats and species are affected. • No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. 	
	Operation	<p>It is noted the benefits of this design change in terms of the provision of a bridge. However, the Environmental Impacts Update and Guide to Supplementary Consultation is silent on the design of the new bridge and PRoW. The new bridge provides a connection to the east and west sections of the Thames Chase Forest Centre, the design of the new bridge should therefore be considered in terms of species movement.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • An assessment of an effects would need to be provided to determine which habitats and species are affected. • Further work should be provided to show a commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy, and local policy. • Further information on what mitigation is proposed to be removed. • The extent of surveys has fallen short of minimum standards in the case of Barn Owl studies. 	
Road drainage and the water environment	Construction	<p>The Application Boundary further encroaches into Thames Chase Community Forest as a result of the new bridge and PRoW. Further loss of land and potential flood storage during the construction of the new PRoW has not been considered in the Environmental Impacts Update.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). • It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>The new bridge is unlikely to have a further operational impact on road drainage and the water environment. Therefore, there is unlikely to be a change to the impacts reported in the PEIR.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment reported in the PEIR. No assessment has been provided within the Environmental Impacts Update to demonstrate that a 'no change' assessment is feasible.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. 	
	Operation	<p>The Environmental Impacts Update states that design change would have a negligible effect on the assessment presented in the PEIR. No assessment has been provided within the Environmental Impacts Update to demonstrate that a 'no change' assessment is feasible.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further detail is required. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features 	
Materials and Waste	Construction	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment reported in the PEIR on materials and waste during construction. Mitigation measures for materials and waste remain as described in the PEIR.</p> <p>The Environmental Impacts Update also states that measures to manage the storage of construction materials and wastes on site would be detailed in the ES, CoCP and CEMP. No evidence has been presented</p>	

Topic	Phase	Review findings	RAG
		<p>in the Supplementary Consultation which confirms or otherwise the likely significant effects related to the storage, transport and/or handling of construction materials and waste.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Further detail required for use of rail and river for the movement of materials and waste and the environmental and transport impacts of these movements. • The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. • Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. • Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. • The assessment does not state what material will be reused to minimise the need for off-site haulage and handling. • There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	<p>The Environmental Impacts Update states that there would be negligible effect on the assessment reported in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Further detail required on potential materials management requirements and targets/objectives that will be written into contractual documentation. 	
People and Communities	Construction	<p>As stated above, there is the potential impact to new receptors within North Ockendon as construction works are closer to this community.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. • Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. • More detail on the development sites in the area which will be considered in the assessment is required. 	
	Operation	<p>The new bridge across the M25 and the LTC would have a positive impact on the local communities. The assessment within the Environmental Impacts Update is accepted.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the significant health impacts of this scheme. Further information of the mitigation measures should be provided. 	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>The Environmental Impacts Update report states this design change would have a negligible effect on the assessment presented in the PEIR.</p> <p>It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the Council as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant effects related to greenhouse gases. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> UKCP18 has been released. The scenario used within the assessment will need to be agreed with the Council as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	

1.4 Review of the M25 junction 29 proposals

The review of the M25 junction 29 proposals includes Design Change 19, as set out in the below table:

Design change ref. (Highways England reference)	Design change (as per Highways England's Environmental Update Report)	Design change description (as per Highways England's Guide to Supplementary Consultation)
19	M25 junction 29 changes	<ol style="list-style-type: none"> M25 southbound slip road shortened to approximately 580 metres, to shorten the scheme and reduce impact on Folkes Lane footbridge. Segregated turning lanes moved closer to the roundabout. The following structure has been revised. Franks Farm rail bridge has been raised.

M25 junction 29 changes - Design Change 19

Summary of design change: The layout at junction 29 of the M25 has been altered to reduce the amount of overhead cable diversions. As a result of this design change, the M25 southbound slip road has been shortened to approximately 580 metres and the segregating turning lanes have been moved closer to the roundabout. Franks Farm rail bridge has been raised by approximately 1.6 metres to match the height of the existing bridge over the Upminster to Shoeburyness railway.

Table A.12: Review of Design Change 19

Topic	Phase	Review findings	RAG
Air Quality	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that construction vehicle modelling is being undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which confirms or otherwise the likely significant air quality effects arising from construction traffic.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No assessment of construction phase traffic effects is presented in the supplementary consultation documents which may be significant for this scheme. Reference is made to the mitigation set out in the PEIR, however the PEIR only provides standard techniques for mitigating effects such as construction dust but omits numerous effective techniques that warrant consideration. Effects on receptors during construction are currently unknown. 	Yellow
	Operation	<p>The Environmental Impacts Update states that no change in operational air quality effects reported in the PEIR are anticipated from this change as there are no receptors within 200 metres of this junction.</p> <p>No further detail has been provided since Statutory Consultation. No further consideration has been given to assessing a key pollutant with known health effects (PM_{2.5}), recommended by WHO guidelines in the Supplementary Consultation documents. It is recommended that a new air modelling assessment is undertaken across the Borough which considers changes in PM_{2.5} and PM₁₀ concentrations and this is presented to the Council.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No standalone HEIA is provided in the supplementary consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. It is understood that a standalone HEIA is being submitted as part of the DCO Application. The Council is yet to receive any information on the assessment of the HEIA or recommendations to mitigate potential health effects. Most local authorities monitor air quality on a rolling annual basis (as stated in the PEIR), therefore baseline conditions should be updated and reflected in the air quality assessment. Techniques for mitigation during operational stage will only be considered if the ES determines there will be significant effects. It is currently assumed that there won't be so the analysis does not speculate as to what these might be in the scheme. The PEIR did not assess all relevant road links and receptors. Therefore, there the assessment of effects discussed in the Supplementary Consultation documents could be misrepresented. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> No further consideration has been given to assessing a key pollutant with known health effects, recommended by WHO guidelines (PM_{2.5}) The Environmental Impacts Update does not explain whether there are any new direct/indirect air quality effects on the site proposed for the ancient woodland compensation. 	
Noise and Vibration	Construction	<p>The Environmental Impacts Update states that there is the potential for temporary adverse effects to arise during the construction period. Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>It also states that noise and vibration assessments continue to be undertaken and will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which aids confirmation or otherwise that likely significant effects from noise and vibration during the construction phase are not expected.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Impacts from construction on other sensitive receptors such as ecological receptors, schools, health centres and hospitals, should be considered. Construction methods should be explored to design out significant adverse impacts. Further surveys should be undertaken during daytime, evening and night-time periods to gather background/ambient noise levels for the assessment of ventilation and construction during different time periods as some construction activities may require extended hours or night-time operations. Night-time construction activities proposed should be fully considered and, where appropriate, should be limited to reduce potential effects. There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. 	
	Operation	<p>The Environmental Impacts Update states that no material differences from the potential effects from road traffic described in the PEIR is expected to arise from this design change. It states that operational mitigation measures described in the PEIR remain appropriate and would be incorporated into the design, however no details of the proposed measures have been provided.</p> <p>The Environmental Impacts Update also states noise and vibration continues to be assessed and will be presented in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which aids confirmation or otherwise of likely significant effects related to noise and vibration.</p> <p>Recommendation & Observation</p>	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Mitigation options should explore means of designing out adverse noise effects through, for example, speed restrictions. The Environmental Impacts Update Report does not provide any detail about how noise conditions have changed or if new noise sensitive receptors have been identified as a result of the design change, further baseline noise surveys and modelling should be undertaken. There is no quantitative description of the number of noise sensitive receptors that could be impacted, which fails to inform the Council and other stakeholders of the significance of impacts identified. Impacts from the scheme's operation on other sensitive receptors. 	
Cultural Heritage	Construction	<p>The Environmental Impacts Update states that there would be no significant change to the assessment described in the PEIR. Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets. Both areas should be expanded. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
	Operation	<p>The Environmental Impacts Update states that no significant change to the assessment reported in the PEIR. Mitigation of impacts on archaeological remains the same as the approach outlined in the PEIR, however no details of the proposed measures have been provided.</p> <p>There is no mention on potential effects on built heritage as a result of this design change despite the footprint of the development appearing to be in close proximity to a Grade II listed building.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> The study area, outlined in the PEIR, of 1km is not justified, nor is 100m for collecting condition information on designated heritage assets. Both areas should be expanded. The assessment should acknowledge all appropriate guidance principles – including Historic England's GPA2 and GPA3 principles. The Supplementary Consultation is limited in scope to the design changes and therefore does not respond to concerns raised during the previous consultation. The Supplementary Consultation reflects an earlier scheme and therefore comments provided do not respond to the scheme as it has developed. 	
Landscape and Visual	Construction	<p>The Environmental Impacts Update states that the nature of the effects would be worse to those reported in the PEIR (i.e. a minor negative landscape change and a major negative change to isolate receptors) as a</p>	

Topic	Phase	Review findings	RAG
		<p>result of the removal of vegetation at this junction. However, it fails to explain which receptors will be most affected.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions- • It is not clear if the footprint of the development has changed but the LVIA should consider 'distant' viewpoints including identified strategic and local views from the settlements of Cranham. 	
	Operation	<p>The Environmental Impacts Update states that there would be new adverse effects compared to those reported in the PEIR for a range of visual receptors. However, the report fails to explain which receptors will be affected and whether there are any new direct/indirect visual effects from raising the Frank Farm rail bridge.</p> <p>The Environmental Impacts Update states that there will be new mitigation proposals in this location, where possible, but does not explain what proposals are being considered. Given the nature of the effects, it would be expected that further mitigation would be provided and that at this stage of the project, the mitigation should be specific to the impacts, which it is not.</p> <p>Furthermore, it also states that a full assessment supported by representative photomontages will be reported in the ES. Therefore, no evidence has been presented in the Supplementary Consultation which aids confirmation or otherwise that likely significant landscape and visual effects related to the scheme's operation are or are not expected.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • The LVIA should consider all relevant landscape character areas, features, key characteristics, key landscape qualities and key landscape conditions. • It is not clear if the footprint of the development has changed but the LVIA should consider 'distant' viewpoints including identified strategic and local views from the settlements of Cranham. • The Supplementary Consultation documents state that mitigation, if appropriate, will be in line with the proposals set out in the PEIR. However, the operational mitigation proposals presented in the PEIR are not considered adequate or effective to mitigate against potential negative impacts from the scheme. • The assessment fails to explicitly cite which guidance it is using for its assessment methodology. • The Council still does not know whether there will be acoustic fencing and what the visual and noise effects will be for local people. 	

Topic	Phase	Review findings	RAG
Biodiversity (terrestrial and marine)	Construction	<ul style="list-style-type: none"> The Council is still waiting for modelling showing the visual effects of the project on local viewpoints, so is unable to make an informed view of the potential effects yet. <p>The Environmental Impacts Update states that avoiding utilities works would reduce the extent of habitat loss in this area compared to that presented in the PEIR. It also states that, although beneficial, the design change would not lead to a reduction in the significance level of the assessment conclusion. However, there is a lack of level of significance assessment provided within the PEIR to be able to make a comparison.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided, and the extent of any temporary disturbance to habitats is not clear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Additional surveys required as the extent of surveys to date has fallen short of minimum standards. For example, 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. Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. The Environmental Impacts Update does not explain whether there are any new direct/indirect effects on the nearby LWS, LNRs or Ancient Woodland as a result of the design changes. 	
	Operation	<p>The Environmental Impacts Update states that the extent of habitat loss in this area would be reduced compared to that presented in the PEIR as a result of avoiding utilities works but the design change would not lead to a reduction in the significance level of the assessment conclusion. However, there is a lack of level of significance assessment provided within the PEIR to be able to make a comparison.</p> <p>Operational effects are proposed to be controlled through mitigation measures set out in the PEIR, however no details of the proposed measures have been provided.</p> <p>There are areas which have been identified as potential receptor sites for ancient woodland compensation, however the Supplementary Consultation documents do not set out the process for selecting and assessing the effectiveness of these areas as forms of mitigation in light of the design changes.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Additional surveys required as the extent of surveys to date has fallen short of minimum standards. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Recreating particular habitats is offered as potential mitigation in the PEIR, including LWS sites. The effectiveness of habitat recreation is highly limited in some cases and more detail is required to understand the proposals for this. No reference in the PEIR and Supplementary Consultation documents to any commitment to delivering a Biodiversity Net Gain in accordance with NPPF 2018, Highways England policy and local policy. Additional information required on the potential receptor sites for ancient woodland compensation. 	
Road drainage and the water environment	Construction	<p>The Environmental Impacts Update states that the effects on road drainage and the water environment would be the same as those presented in the PEIR. Construction effects are proposed to be controlled through mitigation measures set out in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. 	
	Operation	<p>The Environmental Impacts Update states that the effects on road drainage and the water environment would be the same as those presented in the PEIR. However, there is no reference in the Supplementary Consultation documents to the removal of the Flood Compensation Area in this area and whether there are any new direct/indirect effects as a result of this.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> No reference in the PEIR and Supplementary Consultation documents on the methodology for assessing cumulative effects. Reference to relevant guidance used in the assessment should be stated, such as The Environmental Permitting Regulations (2016), PINS Advice Notes (i.e. Advice Note 18 regarding the Water Framework Directive) and The Land Drainage Act (1991). It is not clear if the EIA will be underpinned by a whole system water balance approach. Further detail on proposed Flood Compensation Areas is required. 	
Geology and Soils	Construction	<p>The Environmental Impacts Update states that there would be no significant changes to the assessment and effects reported in the PEIR. Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided. It also states that should any contamination be encountered during ground investigations that an assessment and remediation strategy would be developed if required.</p> <p>Highways England have not shared any detail of initial findings from its ground investigations campaign which commenced in August 2019.</p>	

Topic	Phase	Review findings	RAG
		<p>Recommendation & Observation:</p> <ul style="list-style-type: none"> Initial findings of ground investigations would be useful to understand the emerging findings and likely significant effects A minerals safeguarding assessment and PSSR have not been included in the PEIR which are important sources of information that would assist stakeholders. The assessment should consider leachate and cavity formation in made ground, which are environmental risks that should be considered. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
	Operation	<p>The Environmental Impacts Update states that there would be a negligible effect on the assessment presented in the PEIR, which reported that it was unlikely there would be significant effects on geology and soils during operation.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Mitigation measures are predicated on the findings of future studies and risk assessments which are yet to be undertaken and as such potential measures have still not been cited. The statement that the effect is not likely to be significant will depend wholly on the findings of those studies and mitigation provided. Further details are required. The study area outlined in the PEIR is 250m, this is insufficient as it may not capture areas outside the buffer that may contain high risk features. 	
Materials and Waste	Construction	<p>The Environmental Impacts Update states that the change in design is likely to have a negligible effect on the assessment reported in the PEIR. Mitigation measures for materials and waste remains as described in the PEIR.</p> <p>The Environmental Impacts Update states that Highways England continue to refine their approach to balancing earthworks across the project to maximise the re-use of excavated materials onsite and within the design proposals. It also states that measures to manage the storage of construction materials and wastes on site would be detailed in the ES, CoCP and CEMP.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required for use of rail and river for the movement of materials, plant, equipment and waste and the environmental and transport impacts of these movements. The use of highly sustainable and innovative methods of movements should be appraised, such as the use of clean fuel and hybrid vehicles in the supply chain and on site. 	

Topic	Phase	Review findings	RAG
		<ul style="list-style-type: none"> Highways England to fully study where material can be re-used for the benefit of Thurrock, to include consideration for when the market might be 'swamped' with other material from cumulative schemes and identify the specific sources for materials and detailed construction impacts of these. Highways England should make commitments, secured in an appropriate DCO Requirement to local sourcing, extending to materials, workers, plant and equipment, where possible. There is little evidence that the requirements for materials has been researched and that a robust supply, use and disposal strategy established. 	
	Operation	<p>The Environmental Impacts Update states that there would be negligible effect on the assessment reported in the PEIR.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Further detail required on potential materials management requirements and targets/objectives that will be written into contractual documentation. 	
People and Communities	Construction	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that assessments are being undertaken in relation to the proposed design change to develop mitigation measures and lessen the negative impact.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health is not mentioned in the supplementary consultation documents, which is a substantial omission, considering the potentially significant health impacts of this scheme. Further evidence of the numbers provided in the PEIR of employment, residential and development within the local and wider region is required, as well as an update on whether they are still relevant in light of proposed design changes. More detail on the development sites in the area which will be considered in the assessment is required. 	
	Operation	<p>The Environmental Impacts Update states that the preliminary assessment of effects presented in the PEIR is unaffected by this change. It also states that assessments are being undertaken in relation to the proposed design change to develop mitigation measures and lessen the negative impact.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> Health is not mentioned in the Supplementary Consultation documents, which is a substantial omission, considering the significant potential health impacts of this scheme. More detail on the development sites in the area which will be considered in the assessment is required. 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 	

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		<p>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.</p>	
Climate	Construction	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Construction effects are proposed to be controlled through mitigation measures set out in the CoCP and a CEMP, however no details of the proposed measures have been provided.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the Council as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. • There is no mention in the PEIR and Supplementary Consultation documents of local greenhouse gas emissions to the scheme or embodied carbon from the construction industry. 	
	Operation	<p>The Environmental Impacts Update states this design change would have a negligible effect on the assessment presented in the PEIR. It also states carbon modelling is being undertaken to understand the scheme's overall contribution to climate through greenhouse gas emissions. Furthermore, the scope of greenhouses gases being assessed remains unclear.</p> <p>Recommendation & Observation</p> <ul style="list-style-type: none"> • UKCP18 has been released. The scenario used within the assessment will need to be agreed with the Council as the high emissions scenario at the 50% probability level using UKCP09 is no longer applicable. • In accordance with IEMA guidance 'EIA Guide to Climate Change Resilience and Adaptation', the in-combination effects of climate change with the likely significant impacts of the proposed development should be assessed. 	