

# Lower Thames Crossing

## 6.1 Environmental Statement

### Chapter 17 – Summary

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## 6.1 Environmental Statement

### Chapter 17 – Summary

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## 17 Summary

### 17.1 Introduction

- 17.1.1 This chapter summarises all likely significant effects of the A122 Lower Thames Crossing (the Project) reported in the topic chapters of this Environmental Statement (ES). These are termed ‘residual effects’ as they take into account embedded mitigation included within the Design Principles (Application Document 7.5) and good practice and essential mitigation, which are both included in the Code of Construction Practice, First iteration of Environmental Management Plan (Appendix 2.2, Application Document 6.3).
- 17.1.2 As described in detail in Chapter 4: EIA Methodology, effects considered significant in the context of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) are typically those categorised as of moderate or higher significance.
- 17.1.3 Table 17.1 to Table 17.10 identify the environmental receptors and the mitigation measures proposed as part of the implementation of the Project, and state whether there would be adverse or beneficial significant residual effects once the Project is constructed and then operational.
- 17.1.4 Following the application of mitigation measures, no significant effects are identified for the following environmental topics and therefore no summary tables are provided for them:
- Marine Biodiversity (Chapter 9)
  - Climate (Chapter 15)
- 17.1.5 Human health outcomes are reported in Table 17.8. The human health assessment methodology does not define effects as significant or not significant; instead, it identifies negative, positive, neutral and uncertain health outcomes. The negative and positive health outcomes are reported in this summary.
- 17.1.6 Further detail on mitigation measures is provided in the following documents, which are submitted with and secured by the Development Consent Order application:
- Figure 2.4: Environmental Masterplan, which maps the mitigation proposals (Application Document 6.2)
  - Design Principles, which provide written background detail to the mitigation proposals (Application Document 7.5)
  - Appendix 6.9: Draft Archaeological Mitigation Strategy and Outline Written Scheme of Investigation, which sets out the archaeological and heritage mitigation (Application Document 6.3)
  - Appendix 2.2: Code of Construction Practice (CoCP), First iteration of Environmental Management Plan which incorporates the Register of Environmental Actions and Commitments (REAC). The REAC comprises a record of all good practice and essential mitigation to be applied during the construction phase (Application Document 6.3).

- e. Outline Landscape and Ecology Management Plan (oLEMP), which sets out the proposed management of the landscape and ecological elements of the Project (Application Document 6.7)
- f. Appendix 2.2: Code of Construction Practice (CoCP) Annex A: Outline Site Waste Management Plan (oSWMP) (Application Document 6.3)
- g. Framework Construction Travel Plan (FCTP), which sets out a framework to reduce the impact of the Project's construction workforce on the road network (Application Document 7.13)
- h. Outline Traffic Management Plan for Construction (oTMPfC), which sets out the approach to carrying out temporary traffic management for the safe construction of the Project (Application Document 7.14)
- i. Stakeholder Actions and Commitments Register (SACR), which provide a list of construction and/or design and/or operational related commitments given to stakeholders that are secured within the DCO and are not included in other documents or agreements (Application Document 7.21)

**Table 17.1 Summary of likely significant effects detailed in Chapter 5: Air Quality**

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<p><b>Chapter 5: Air Quality</b> - The Project is considered to have a significant adverse effect on designated habitats for ecology because of an increase in nitrogen deposition during operation. South of the river: 4no. SSSIs; 19no. ancient woodlands; 1no. local wildlife site North of the river: 3no. ancient woodlands; 2no. local wildlife site</p>					
<p><b>South of the River Thames</b> - see below Table 17.4 Summary of likely significant effects detailed in Chapter 8: Terrestrial Biodiversity</p>					
<p><b>North of the River Thames</b> - see below Table 17.4 Summary of likely significant effects detailed in Chapter 8: Terrestrial Biodiversity</p>					

**Table 17.2 Summary of likely significant effects detailed in Chapter 6: Cultural Heritage**

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 6: Cultural Heritage</b>					
<b>South of the River Thames</b>					
High-value non-designated archaeological asset (3650)	Approximately three quarters of the asset would be removed as a result of gas utility diversion works and construction of the main alignment. The remainder of the asset would be preserved <i>in situ</i> . The permanent impact on this high-value asset would be of major magnitude.	Construction	Archaeological excavation and recording.	Archaeological Mitigation Strategy and Outline WSI	Large adverse
44 medium-value non-designated archaeological assets (774, 775, 1302, 1306, 1362, 1372, 1396, 1474, 1579, 1584, 1595, 1599, 1600, 1604, 1606, 1607, 1608, 1620, 1622, 1813, 1820, 2291, 2308, 3640, 3642, 3643, 3655, 3663, 3667, 3740, 3742, 3743, 3745, 3749, 3751, 3773, 3774, 3793, 3802, 4427, 4428, 4558, 4595, 4745)	Construction of the Project associated earthworks, earthworks to create Chalk Park, the Southern Tunnel Entrance compound, temporary storage stockpiles 1 and 2, and utility diversion works would result in the permanent truncation or removal of these assets. The impact on these medium-value assets would be of moderate magnitude.	Construction	Archaeological excavation and recording.	Archaeological Mitigation Strategy and Outline WSI	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Two high-value geological deposits of archaeological interest (PQ-7, PQ-8)	Minor amounts of Pleistocene terrace deposits would be removed by tunnelling. The permanent impact on these deposits would be of minor magnitude.	Construction	Palaeolithic and geoarchaeological mitigation: boreholes and sampling, or excavations into Palaeolithic deposits.	Archaeological Mitigation Strategy and Outline WSI	Moderate adverse
Five high-value Grade II listed buildings (LB22, LB25, LB30, LB99, LB78)	The construction activity associated with the Project would temporarily adversely change elements of setting of these assets that contribute to their value; this would cause an impact on these assets. The impact on these high-value assets would be of temporary moderate magnitude.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC	Moderate adverse
Five medium-value non-designated buildings (1132, 1133, 1134, 1147, 1449)	The construction activity associated with the Project would temporarily adversely change elements of setting of these assets that contribute to their value; this would cause an impact on these assets. The impact on these medium-value assets would be of temporary moderate magnitude.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC	Moderate adverse
Thong Conservation Area (CA10)	CA10 would experience a temporary change to its setting as a result of construction activities associated with the Project. This would temporarily introduce additional noise, lighting and visible construction activity and machinery to the asset's settings (Application Document 6.2, Figure 6.6, Viewpoint S-25). This would result in a temporary impact of moderate adverse magnitude and a temporary moderate adverse effect on this medium-value asset.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC	Moderate adverse



Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Thong Conservation Area (CA10)	<p>The operation of the Project would change the rural setting that contributes to the value of the asset. Changes would occur to some key views, approaches to the Conservation Area, lighting, noise, and replacement of rural land with road infrastructure.</p> <p>The impact on this medium-value Conservation Area would be of permanent moderate magnitude.</p>	Operation	<p>Embedded landscape mitigation, inclusive of earthworks and planting.</p> <p>Years 1-5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.</p>	<p>Environmental Masterplan</p> <p>Design Principles</p> <p>REAC</p>	Moderate adverse
<b>North of the River Thames</b>					
Causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place (SM6)	<p>This asset is located immediately to the north of the proposed Brentwood Road compound and utility diversion works. These activities would introduce temporary noise and visual intrusion into the setting of the asset and introduce intrusive features in views from the asset to the south, which contribute to its value.</p> <p>The temporary impact on this high-value asset would be of moderate magnitude.</p>	Construction	<p>Project-wide good practice measures and essential mitigation for specific activities and/or compounds.</p>	<p>Design Principles</p> <p>REAC</p>	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Eight high-value Grade II listed buildings (LB37, LB41, LB48, LB49, LB52, LB57, LB60, LB66)	The construction activity associated with the Project would temporarily adversely change elements of setting of these assets that contribute to their value; this would cause an impact on these assets. This would cause a temporary moderate magnitude impact on these high-value assets.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC	Moderate adverse
Grade I listed building Church of St Mary Magdalene (LB69)	The construction activity associated with the Project would temporarily adversely change elements of setting of these assets that contribute to their value; this would cause an impact on these assets. This would cause a temporary minor magnitude impact on this high-value asset.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC	Moderate adverse
North Ockendon (CA4), East Tilbury (CA6) and West Tilbury (CA7) Conservation Areas	Construction activity would cause temporary changes to the setting of these Conservation Areas by introducing additional noise, lighting and visible construction machinery. The impact on these high-value Conservation Areas would be of temporary moderate magnitude.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC	Moderate adverse
Crop Mark Complex (SM1), scheduled monument	The majority of the scheduled monument area would be physically impacted by construction, which would remove the buried archaeological remains from this multi-period site. The setting of the cropmark complex would also change due to the visual and noise disturbance of	Construction	Archaeological excavation and recording.	Archaeological Mitigation Strategy and Outline WSI	Large adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	construction activity within the scheduled monument area and in adjacent areas to the north and south. The impact on this high-value asset would be of major magnitude.				
Three non-designated high-value archaeological assets (247, 325 and 4626)	These assets would be physically impacted through removal due to construction activities. The impact on these high-value assets would be of major magnitude.	Construction	Archaeological excavation and recording.	Archaeological Mitigation Strategy and Outline WSI	Large adverse
Two non-designated high-value archaeological assets (496 and 2078)	These assets would be physically impacted through partial removal due to construction activities. The impact on these high-value assets would be of moderate magnitude.	Construction	Archaeological excavation and recording.	Archaeological Mitigation Strategy and Outline WSI	Moderate adverse
Two non-designated high-value archaeological assets (7 and 210)	The north and south edges of these assets would be physically impacted by Brentwood Road compound, utility diversions and main alignment construction. Overall, a small proportion of the overall area would experience a physical impact. The impact on these high-value assets would be of minor magnitude.	Construction	Archaeological excavation and recording.	Archaeological Mitigation Strategy and Outline WSI	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
54 non-designated medium-value archaeological assets (29, 104, 117, 219, 342, 356, 482, 595, 3553, 3567, 3572, 3575, 3589, 3592, 3594, 3598, 3601 3619, 3624, 3627, 3670, 3671, 3675, 3677, 3682, 3713, 3722, 3723, 3726, 3729, 3732, 3733, 3820, 3835, 3836, 3841, 3848, 3870, 3902, 3903, 3904, 3905, 3906, 3907, 3908, 3914, 3916, 3918, 3920, 3926, 3936, 3940, 3959, 4763)	<p>Permanent physical impacts to these assets include partial and complete removal of archaeological remains through construction of main alignment, construction compounds, earthworks, multi-utility works, landscaping and associated impacts caused through changes to setting.</p> <p>The impact on these medium-value assets would be of moderate magnitude.</p>	Construction	Archaeological excavation and recording.	Archaeological Mitigation Strategy and Outline WSI	Moderate adverse
Grade II listed 1 and 2 Greys Corner Cottages (LB89), Thatched Cottage (LB58) and Murrells Cottages (LB96)	<p>These properties would be completely demolished during construction to enable construction of the A13/A1089/A122 Lower Thames Crossing junction and associated link roads.</p> <p>The impact on these high-value assets would be of permanent major magnitude.</p>	Construction	Historic Building Recording.	Archaeological Mitigation Strategy and Outline WSI	Large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Five non-designated locally listed low-value built heritage assets (4153, 4154, 4155, 4156, 4157)	These locally listed buildings would be completely demolished to enable construction of the A122 Lower Thames Crossing/M25 junction. The impact on these low-value assets would be of permanent major magnitude.	Construction	Historic Building Recording.	Archaeological Mitigation Strategy and Outline WSI	Moderate adverse
Three non-designated low-value built heritage assets (4159, 4775, 4776)	These non-designated buildings would be completely demolished to enable construction of the A122 Lower Thames Crossing/M25 junction. The impact on these low-value assets would be of permanent major magnitude.	Construction	Historic Building Recording.	Archaeological Mitigation Strategy and Outline WSI	Moderate adverse
Orsett Crop Mark Complex (SM1), scheduled monument	SM1 would be largely removed as a result of construction activity. The remaining element of the asset would experience a change to its setting caused by the introduction of further large road infrastructure within the scheduled monument area. The impact on this high-value asset would be of moderate magnitude.	Operation	Archaeological excavation and recording.	Archaeological Mitigation Strategy and Outline WSI	Moderate adverse
Causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place scheduled monument (SM6)	There would be clear views from the location of SM6 towards the Project, although the Project would be located within a false cutting that would somewhat restrict views of the road and associated traffic. However, increased traffic noise would be audible from the asset as a result of operation.	Operation	Embedded landscape mitigation.	Environmental Masterplan Design Principles REAC	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	Several Prehistoric to Roman archaeological sites associated with SM6 would be removed within the Order Limits and replaced by the operational alignment. These changes in setting would have a permanent impact on this high-value asset would be of moderate magnitude.				
One non-designated high-value archaeological asset (247)	Aural and visual impacts would permanently alter the asset's setting and relationship with associated features. However, the asset's association with SM1 would remain. The impact on this high-value asset would be of moderate magnitude.	Operation	None identified	N/A	Moderate adverse
One non-designated high-value archaeological asset (496)	Aural and visual impacts would permanently alter the asset's setting and historical relationship with associated features. Tilbury Viaduct and Tilbury link junction would reduce the spatial and visual relationship between this asset and the West Tilbury Marshes. The impact on this high-value asset would be of minor magnitude.	Operation	None identified	N/A	Moderate adverse
Three non-designated medium-value archaeological assets (104, 3832, 3952)	Presence of the operational alignment would permanently change the setting of these assets and impede the understanding of their relationship with other associated assets nearby. The impact on these medium-value assets would be of moderate magnitude.	Operation	None identified	N/A	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
North Ockendon (CA4), East Tilbury (CA6) and West Tilbury (CA7) Conservation Areas	<p>The operation of the Project would result in the presence of a new road and associated earthworks in the setting of these Conservation Areas.</p> <p>The impact on these high-value Conservation Areas would be of permanent moderate magnitude.</p>	Operation	<p>Embedded landscape mitigation, inclusive of earthworks and planting.</p> <p>Years 1-5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.</p>	<p>Environmental Masterplan Design Principles REAC</p>	Moderate adverse
Three Grade II listed buildings (LB37, LB57 and LB153)	<p>The construction activity associated with the Project would temporarily adversely change elements of setting of these assets that contribute to their value; this would cause an impact on these assets.</p> <p>The impact on these high-value assets would be of permanent moderate magnitude.</p>	Operation	<p>Embedded landscape mitigation, inclusive of earthworks and planting.</p> <p>Years 1-5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.</p>	<p>Environmental Masterplan Design Principles REAC</p>	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Three Historic landscapes (reclaimed marshland, Open land, commons, heaths and fens, Farming)	<p>The operational alignment and creation of ecological habitats would permanently alter the historic function and identity of reclaimed marshland, open common land, and the agricultural landscape.</p> <p>The impact on these medium-value historic landscapes would be of moderate magnitude.</p>	Operation	<p>Embedded landscape mitigation, inclusive of earthworks and planting.</p> <p>Years 1-5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.</p>	<p>Environmental Masterplan Design Principles REAC</p>	Moderate adverse



**Table 17.3 Summary of likely significant effects detailed in Chapter 7: Landscape and Visual**

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 7: Landscape and Visual</b>					
<b>Landscape effects – national character</b>					
National Character Area (NCA) 113: North Kent Plain	Adverse change in landscape character due to loss of vegetation and arable land, the perception of large-scale construction activity for the new M2/A2/A122 Lower Thames Crossing junction, including substantial earthworks and associated light sources, resulting in a further reduction in relative tranquillity.  The impact on the high sensitivity NCA would be of moderate magnitude.	Construction	Reduce loss of existing vegetation wherever practicable. Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Moderate adverse
NCA 81: Greater Thames Estuary	Adverse change in landscape character due to loss of farmland and hedgerows, the perception of conspicuous construction activity, including substantial earthworks at the North Portal and associated light sources, resulting in a further reduction in relative tranquillity.  The impact on the medium sensitivity NCA would be of moderate magnitude.	Construction	Reduce loss of existing vegetation wherever practicable. Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Landscape effects – Kent Downs Area of Outstanding Natural Beauty (AONB)</b>					
West Kent Downs Landscape Character Area (LCA) 1A (comprising the sub areas of Shorne and Cobham)	Adverse change in landscape character due to partial loss of mature woodland, the perception of large-scale construction activity along the existing A2/M2 corridor and associated light sources, resulting in a further reduction in relative tranquillity.  The impact on the very high sensitivity LCA would be of moderate magnitude.	Construction	Reduce loss of existing vegetation wherever practicable.  Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Large adverse
<b>Landscape effects – setting of the Kent Downs AONB and Green Belt</b>					
Higham Arable Farmland (sub area Thong) local landscape character area (LLCA)	Adverse change in landscape character due to loss of arable land and mature woodland, and the perception of large-scale construction activity for the M2/A2/A122 Lower Thames Crossing junction, including substantial earthworks and associated light sources, resulting in a further reduction in relative tranquillity.  The impact on the high sensitivity LLCA would be of major magnitude.	Construction	Reduce loss of existing vegetation wherever practicable.  Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Very large adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Istead Arable Farmlands LLCA	Adverse change in landscape character due to loss of vegetation to the north within Claylane Wood, Gravelhill Wood and the A2 corridor, and the perception of large-scale construction activity for the M2/A2/A122 Lower Thames Crossing junction and associated light sources within the Higham Arable Farmland (sub area Thong LLCA), resulting in a further reduction in relative tranquillity.  The impact on the medium sensitivity LLCA would be of moderate magnitude.	Construction	Reduce loss of existing vegetation wherever practicable.  Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Moderate adverse
Higham Arable Farmland (sub area Chalk) LLCA	Adverse change in landscape character due to substantial loss of arable land, and the perception of large-scale construction activity for the South Portal, including substantial earthworks and associated light sources, resulting in a further reduction in relative tranquillity.  The impact on the high sensitivity LLCA would be of major magnitude.	Construction	Reduce loss of existing vegetation wherever practicable.  Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Very large adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Tilbury Marshes LLCA	<p>Adverse change in landscape character due to loss of some scrub and hedgerow vegetation, substantial loss of arable and pastoral land, the perception of large-scale construction activity for the North Portal, including associated light sources, and substantial earthworks for the sculptural landscape mounding, resulting in a further reduction in relative tranquillity.</p> <p>The impact on the low sensitivity LLCA would be of major magnitude.</p>	Construction	<p>Reduce loss of existing vegetation wherever practicable.</p> <p>Project-wide good practice measures and essential mitigation for specific activities and/or compounds.</p>	Design Principles REAC CoCP	Moderate adverse
Chadwell Escarpment Urban Fringe LLCA	<p>Adverse change in landscape character due to loss of woodland/scrub at Tilbury Viaduct and some hedgerow vegetation, small-scale loss of arable land, and the perception of conspicuous construction activity along the Project route, including earthworks adjoining Tilbury Viaduct and construction light sources, resulting in a further reduction in relative tranquillity.</p> <p>The impact on the medium sensitivity LLCA would be of moderate magnitude.</p>	Construction	<p>Reduce loss of existing vegetation wherever practicable.</p> <p>Project-wide good practice measures and essential mitigation for specific activities and/or compounds.</p>	Design Principles REAC CoCP	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Landscape effects – Green Belt/areas beyond the setting of the Kent Downs AONB</b>					
West Tilbury Urban Fringe LLCA	Adverse change in landscape character due to loss of woodland at Readmans Industrial Estate and some hedgerows, substantial loss of arable farmland, and the perception of conspicuous construction activity for the Project route, including Tilbury Viaduct, substantial earthworks and associated light sources, resulting in a further reduction in relative tranquillity.  The impact on the medium sensitivity LLCA would be of major magnitude.	Construction	Reduce loss of existing vegetation wherever practicable.  Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Large adverse
White Croft/Orsett Heath Urban Fringe LLCA	Adverse change in landscape character due to loss of existing vegetation along the A13 and field boundary hedgerows, substantial loss of arable land, and the perception of conspicuous construction activity for the Project route and southern part of the A13/A1089/A122 Lower Thames Crossing junction, including substantial earthworks and associated light sources, resulting in a	Construction	Reduce loss of existing vegetation wherever practicable.  Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Large adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	further reduction in relative tranquillity. The impact on the medium sensitivity LLCA would be of major magnitude.				
Orsett Lowland Farmland LLCA	Adverse change in landscape character due to loss of roadside vegetation, including at the A13/A1089/A122 Lower Thames Crossing junction, substantial loss of pasture and arable farmland, and the perception of conspicuous construction activity along the Project route and for the northern part of the A13/A1089/A122 Lower Thames Crossing junction, including substantial earthworks and associated light sources, resulting in a further reduction in relative tranquillity. The impact on the medium sensitivity LLCA would be of moderate magnitude.	Construction	Reduce loss of existing vegetation wherever practicable. Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Moderate adverse
Thurrock Reclaimed Fen (sub area Mardyke) LLCA	Adverse change in landscape character due to loss of tree belt along the Mardyke, some hedgerows and part of The Wilderness woodland block, substantial loss of arable farmland, and the perception	Construction	Reduce loss of existing vegetation wherever practicable. Project-wide good practice measures and essential mitigation for specific	Design Principles REAC CoCP	Large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>of large-scale construction activity for the Project route on embankment and the Orsett Fen and Mardyke Viaducts, including associated light sources in a largely dark area, resulting in a reduction in the level of tranquillity within the former fen landscape.</p> <p>The impact on the high sensitivity LLCA would be of major magnitude.</p>		<p>activities and/or compounds.</p>		
<p>Thurrock Reclaimed Fen (sub area Thames Chase) LLCA</p>	<p>Adverse change in landscape character, including that of the Thames Chase Forest Centre, due to loss of screen planting along the M25, and the perception of conspicuous construction activity for the widening of the M25 corridor and new slip roads for the Project route, including associated earthworks and light sources, resulting in a further reduction in relative tranquillity.</p> <p>The impact on the medium sensitivity LLCA would be of moderate magnitude.</p>	<p>Construction</p>	<p>Reduce loss of existing vegetation wherever practicable.</p> <p>Project-wide good practice measures and essential mitigation for specific activities and/or compounds.</p>	<p>Design Principles REAC CoCP</p>	<p>Moderate adverse</p>

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Belhus Lowland Quarry Farmland LLCA	Adverse change in landscape character due to loss of woodland screening along the M25, loss of farmland within the footprint of the Project route, and the perception of conspicuous construction activity along the Project route north of South Ockendon and along the M25, including substantial earthworks and associated light sources, resulting in a further reduction in relative tranquillity.  The impact on the medium sensitivity LLCA would be of moderate magnitude.	Construction	Reduce loss of existing vegetation wherever practicable. Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Moderate adverse
<b>Visual effects – South of the River Thames. Section references are set out in ES Fig 2.4 (Environmental Masterplan)</b>					
<b>Section 1</b>					
6 Representative Viewpoints	Views towards widening and realignment works along the A2/M2 corridor, construction works for two green bridges, and installation of new or replacement highway infrastructure. Vegetation removal along the A2/M2 corridor would result in more open views of construction activity.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Very large adverse
5 Representative Viewpoints					Large adverse
1 Transport route or group					Moderate adverse
2 Representative Viewpoints 2 Residential receptors or groups					



Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
2 Recreational routes or groups 1 Recreational area or group 1 Transport route or group					
<b>Section 2</b>					
4 Residential receptors or groups	Views towards construction works for the M2/A2/A122 Lower Thames Crossing junction, widening works along the A2 corridor, and installation of new or replacement highway infrastructure. Vegetation removal along the A2 corridor, at Gravelhill Wood and at Claylane Wood would result in more open views of construction activity.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Very large adverse
2 Representative Viewpoints 5 Residential receptors or groups 1 Recreational area or group 2 Transport routes or groups 1 Other receptor or group					Large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
3 Representative Viewpoints 6 Residential receptors or groups 7 Recreational routes or groups 2 Recreational areas or groups 2 Transport routes or groups 1 Other receptor or group					Moderate adverse
<b>Section 3 and 4</b>					
1 Representative Viewpoints	Views towards the extensive southern tunnel entrance compound, construction works for the South Portal and the approach cutting, and earthworks for the hilltop landform at Chalk Park. Vegetation removal at Southern Valley Golf Club and around the former Hartshill Nursery would result in more open views of construction activity.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Very large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
2 Representative Viewpoints 3 Residential receptors or groups 3 Recreational routes or groups					Large adverse
2 Representative Viewpoints 15 Residential receptors or groups 1 Recreational route or group 3 Transport routes or groups 1 Other receptor or group					Moderate adverse
<b>Visual effects – North of the River Thames</b>					
<b>Section 9</b>					
4 Representative Viewpoints 3 Residential receptors or groups 3 Recreational routes or groups	Views towards the extensive northern tunnel entrance compound, construction works for the North Portal and Tilbury Viaduct, and earthworks associated with a flood compensation area	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Large adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
2 Transport routes or groups	beneath Tilbury Viaduct and for the sculptural landscape mounding at Tilbury Fields. Vegetation removal near Readmans Industrial Estate would result in more open views of construction activity.				
2 Representative Viewpoints					Moderate adverse
2 Residential receptors or groups					
2 Recreational routes or groups					
2 Transport routes or groups					
1 Other receptor or group					
<b>Section 10</b>					
3 Representative Viewpoints	Views towards construction works for the Project route, Muckingford Road and Hoford Road green bridges and Brentwood Road overbridge, and installation of new highway infrastructure. Vegetation removal at Rainbow Wood ancient woodland and along a watercourse west of Linford would result in more open views of construction activity.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Large adverse
8 Residential receptors or groups					
7 Recreational routes or groups					
1 Recreational area or group					
1 Transport route or group					
5 Representative Viewpoints					Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
9 Residential receptors or groups 1 Recreational route or group 2 Recreational areas or groups 4 Transport routes or groups					
<b>Section 11</b>					
7 Representative Viewpoints 13 Residential receptors or groups 1 Recreational route or group 6 Transport routes or groups 2 Other receptors or groups	Views towards construction works for the Project route, the FP79 WCH bridge, Green Lane green bridge and the A13/A1089/A122 Lower Thames Crossing junction, earthworks for landscape mounds at the junction, and installation of new highway infrastructure. Vegetation removal along the A13 and at the existing A13/A1089 junction would result in more open views of construction activity.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Large adverse
3 Representative Viewpoints 8 Residential receptors or groups 2 Transport routes or groups 3 Other receptors or groups					Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Section 12</b>					
2 Representative Viewpoints	Views towards construction works for the Project route, the Orsett Fen and Mardyke Viaducts, the FP136 bridge and North Road green bridge, earthworks associated with a flood compensation area at Orsett Fen, and installation of new highway infrastructure. Vegetation removal at The Wilderness woodland block and along the Mardyke Way would result in more open views of construction activity.	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Very large adverse effect
1 Representative Viewpoints					Large adverse
3 Residential receptors or groups					
6 Recreational routes or groups					
4 Representative Viewpoints					Moderate adverse
8 Residential receptors or groups					
3 Recreational routes or groups					
1 Other receptor or group					
<b>Sections 13 and 14</b>					
1 Representative Viewpoint	Views towards construction works for the Project route, the A122 Lower Thames Crossing/M25 junction and several WCH bridges, widening and realignment works along the M25 corridor, and installation of new or replacement highway infrastructure. Vegetation	Construction	Project-wide good practice measures and essential mitigation for specific activities and/or compounds.	Design Principles REAC CoCP	Large adverse effect
1 Residential receptor or group					
1 Recreational route or group					
3 Representative Viewpoints					Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
5 Residential receptors or groups 4 Recreational routes or groups 1 Recreational area or group 3 Transport routes or groups 2 Other receptors or groups	removal along the M25 corridor, at Thames Chase Forest Centre and at M25 junction 29 would result in more open views of construction activity.				
<b>Landscape effects – national character</b>					
NCA 113: North Kent Plain	Adverse change in landscape character due to a continued partial absence of mature woodland along the A2 corridor and at Claylane Wood, and the perception of substantial earthworks, structures and highway infrastructure at the prominent M2/A2/A122 Lower Thames Crossing junction and along the new transport corridor, which would bisect the open landscape character between the urban area of Gravesend and Shorne Woods Country Park, resulting in a further reduction in relative tranquillity.	Operation	New woodland along the A2 corridor to compensate for that lost and two new green bridges to reduce the perception of severance resulting from the widened A2 corridor.  Retention of some of the open landscape character around the village of Thong and the former airfield at RAF Gravesend, while at the same time providing compensatory woodland planting for vegetation removed during construction and for screening of the M2/A2/A122 Lower Thames Crossing junction.	Environmental Masterplan Design Principles REAC oLEMP	Moderate adverse effect in opening year reducing to slight adverse effect in design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>The impact on the high sensitivity NCA would be of moderate magnitude in the opening year and minor magnitude in the design year.</p>		<p>Slackening the gradient of the tops of the chalk cutting slopes on the approach to the South Portal to soften the transition with adjoining ground levels in conjunction with natural colonisation of the chalk substrate. Locating the new open space at the edge of Gravesend on a hilltop landform, in order to capitalise on outward views of the Thames Estuary and to reflect other wooded hilltops in the locality.</p>		



Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Landscape effects – Kent Downs AONB</b>					
West Kent Downs LCA 1A (comprising the sub areas of Shorne and Cobham)	Adverse change in landscape character due to the continued absence of mature woodland along the A2 corridor and localised change in wooded character, perceived in the context of new woodland planting, and the perception of greater landscape severance north and south of the modified A2, resulting in a further reduction in relative tranquillity due to the increased prominence of the modified A2 corridor and highway infrastructure. The impact on the very high sensitivity LCA would be of moderate magnitude in the opening year and minor magnitude in the design year.	Operation	New woodland along the A2 corridor to compensate for that lost and two new green bridges to reduce the perception of severance resulting from the widened A2 corridor.	Environmental Masterplan Design Principles REAC oLEMP	Large adverse effect in opening year reducing to moderate adverse effect in design year
Mid Kent Downs (sub area Bredhurst) LLCA	Increase in the amount of woodland within the LLCA and reduction in the prominence of communications masts and overhead lines. The impact on the very high sensitivity LLCA would be of negligible magnitude in the opening year and moderate magnitude in the design year.	Operation	Reflecting the wooded nature of the LLCA in the compensatory planting, while maintaining key vistas and reducing the effects of overshadowing to residential properties.	Environmental Masterplan Design Principles REAC oLEMP	Neutral effect in opening year increasing to moderate beneficial effect in design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Landscape effects – setting of the Kent Downs AONB and Green Belt</b>					
Shorne Wooded Slopes LLCA	Increase in the amount of woodland within the LLCA and, in some instances, reduction in the prominence of telegraph poles and surrounding built form within Shorne and Higham.  The impact on the high sensitivity LLCA would be of negligible magnitude in the opening year and moderate magnitude in the design year.	Operation	Reflecting the wooded nature of the LLCA in the compensatory planting, while maintaining key vistas and reducing the effects of overshadowing to residential properties.	Environmental Masterplan Design Principles REAC oLEMP	Neutral effect in opening year increasing to moderate beneficial effect in design year
Higham Arable Farmland (sub area Thong) LLCA	Adverse change in landscape character due to the continued partial absence of mature woodland along the A2 corridor and at Claylane Wood, and the perception of substantial earthworks, structures, and highway infrastructure at the prominent M2/A2/A122 Lower Thames Crossing junction and along the new transport corridor, which would bisect the open landscape character between the urban area of Gravesend and Shorne Woods Country Park, resulting in a further reduction in relative tranquillity.	Operation	Retention of some of the open landscape character around the village of Thong and the former airfield at RAF Gravesend, while at the same time providing compensatory woodland planting for vegetation removed during construction and for screening of the M2/A2/A122 Lower Thames Crossing junction.	Environmental Masterplan Design Principles REAC oLEMP	Very large adverse effect in opening year reducing to large adverse effect in design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	The impact on the high sensitivity LLCA would be of major magnitude in both the opening year and design year.				
Istead Arable Farmlands LLCA	Adverse change in landscape character due to a continued localised reduction in the wooded backdrop to the north-east, and a very limited, further reduction in relative tranquillity due to the increased prominence of the modified A2 corridor and new M2/A2/A122 Lower Thames Crossing junction.  The impact on the medium sensitivity LLCA would be of moderate magnitude in the opening year and minor magnitude in the design year.	Operation	Compensatory planting reflects former field boundaries and maintains the open landscape character adjoining St Margaret's Church listed building, with vistas incorporated towards the church from the east.	Environmental Masterplan Design Principles REAC oLEMP	Moderate adverse effect in opening year reducing to slight adverse effect in design year
Higham Arable Farmland (sub area Chalk) LLCA	Adverse change in landscape character due to the conspicuous transport corridor, highway infrastructure and substantial cutting slopes approaching the South Portal, which would bisect and partially sever this LLCA from the urban edge of Gravesend, resulting in a further reduction in relative tranquillity.	Operation	Slackening the gradient of the tops of the chalk cutting slopes on the approach to the South Portal to soften the transition with adjoining ground levels in conjunction with natural colonisation of the chalk substrate. Locating the new open space at the edge of Gravesend on a hilltop landform, in order to capitalise on outward views	Environmental Masterplan Design Principles REAC oLEMP	Moderate adverse effect in opening year reducing to slight adverse effect in design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	The impact on the high sensitivity LLCA would be of moderate magnitude in the opening year and minor magnitude in the design year.		of the Thames Estuary, a key characteristic of this LLCA, and with woodland planting to reflect other wooded hilltops in the locality. Woodland planting north of Brummelhill Wood, to reinforce the landscape character of the adjoining Shorne Woods Country Park.		
<b>Landscape effects – Green Belt/areas beyond the setting of the Kent Downs AONB</b>					
West Tilbury Urban Fringe LLCA	Adverse change in landscape character due to the continued absence of woodland adjoining Readmans Industrial Estate, and the perception of substantial earthworks, Tilbury Viaduct, bridge structures and highway infrastructure along the new transport corridor, resulting in a further reduction in relative tranquillity.  The impact on the medium sensitivity LLCA would be of major magnitude in the opening year and moderate magnitude in the design year.	Operation	Reflecting the open character of the existing landscape north and south of Muckingford Road.  Breaking down the linearity of the Project route further north using scrub woodland planting within this LLCA and the adjoining Linford/ Buckingham Hill Urban Fringe LLCA, which also reinforces the small-scale river valley near Hoford Road.	Environmental Masterplan Design Principles REAC oLEMP	Large adverse effect in opening year reducing to moderate adverse effect in design year
White Croft/Orsett Heath Urban Fringe LLCA	Adverse change in landscape character due to the further localised urbanisation of the landscape arising from the	Operation	Retaining the existing open landscape character and reinforcing the hedgerow pattern, along with provision	Environmental Masterplan Design Principles	Large adverse effect in opening year reducing to

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>southern part of the A13/A1089/A122 Lower Thames Crossing junction, and earthworks, bridges, and highway infrastructure along the new transport corridor, resulting in a further reduction in relative tranquillity.</p> <p>The impact on the medium sensitivity LLCA would be of major magnitude in the opening year and moderate magnitude in the design year.</p>		<p>of compensatory planting for the partial loss of Rainbow Wood ancient woodland on the south-eastern edge of the LLCA. To the north, dense woodland planting to reinstate the existing wooded ridgeline character along the A13 corridor and help integrate the new A13/A1089/A122 Lower Thames Crossing junction and slip roads into the landscape.</p>	<p>REAC oLEMP</p>	<p>moderate adverse effect in design year</p>
Orsett Lowland Farmland LLCA	<p>Adverse change in landscape character due to the further localised urbanisation of the landscape arising from the northern part of the A13/A1089/A122 Lower Thames Crossing junction, and earthworks and highway infrastructure along the new transport corridor, resulting in a further reduction in relative tranquillity.</p> <p>The impact on the medium sensitivity LLCA would be of moderate magnitude in the opening year and minor magnitude in the design year.</p>	Operation	<p>Integrating the new A13/A1089/A122 Lower Thames Crossing junction into the landscape with woodland planting, while maintaining the open landscape character around the existing listed windmill west of the Baker Street settlement.</p>	<p>Environmental Masterplan Design Principles REAC oLEMP</p>	<p>Moderate adverse effect in opening year reducing to slight adverse effect in design year</p>

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Thurrock Reclaimed Fen (sub area Mardyke) LLCA	<p>Adverse change in landscape character due to the continued absence of a tree belt along the Mardyke and part of The Wilderness woodland block, and the perception of substantial embankments, the Orsett Fen and Mardyke Viaduct structures, highway infrastructure and vehicle traffic within the flat, open, and relatively remote former fen landscape, resulting in a notable reduction in tranquillity.</p> <p>The impact on the high sensitivity LLCA would be of major magnitude in both the opening year and design year.</p>	Operation	<p>Maintaining the existing open landscape character and maintaining views beneath the two proposed viaducts crossing the former fenland. To help integrate the Orsett Fen Viaduct into the landscape, use of rectangular blocks of woodland planting on the viaduct approach embankments, reflecting similar blocks of woodland found within the surrounding landscape. Restoration of a wetland character alongside stretches of the new road, helping to restore the historic fenland character, including reinforcement of the riparian character along watercourses. Slackening of the northern embankment slopes of Green Lane green bridge to help integrate the bridge into the flat landscape. A linear form to the proposed attenuation basins to help limit the width of the Project footprint crossing the former fen landscape.</p>	<p>Environmental Masterplan Design Principles REAC oLEMP</p>	Very large adverse effect in opening year reducing to large adverse effect in design year
Thurrock Reclaimed Fen	Adverse change in landscape character due to the localised	Operation	Reinstatement and reinforcement of the	Environmental Masterplan	Moderate adverse effect in opening

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
(sub area Thames Chase) LLCA	widening of the existing M25 motorway corridor to accommodate the new Project slip roads, resulting in a further reduction in relative tranquillity due to the increased prominence of the modified M25 corridor.  The impact on the medium sensitivity LLCA would be of moderate magnitude in the opening year and minor magnitude in the design year.		existing woodland character of the Thames Chase Forest Centre and reinstatement of the existing roadside screen planting along the M25 to the north.	Design Principles REAC oLEMP	year reducing to slight adverse effect in design year
Belhus Lowland Quarry Farmland LLCA	Adverse change in landscape character due to the perception of substantial earthworks, structures, and highway infrastructure along the new transport corridor, resulting in a further reduction in relative tranquillity, although partially in the context of the existing M25.  The impact on the medium sensitivity LLCA would be of moderate magnitude in the opening year and minor magnitude in the design year.	Operation	Punctuating the conspicuous form of the Project route and reinforcing existing landscape character, with characteristic blocks of woodland planting to the south of the new road. New screen planting to integrate modifications to the existing M25 corridor and the new A122 Lower Thames Crossing/M25 junction.	Environmental Masterplan Design Principles REAC oLEMP	Moderate adverse effect in opening year reducing to slight adverse effect in design year

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Visual effects – South of the River Thames</b>					
<b>Bluebell Hill Nitrogen Deposition Compensation Site</b>					
2 Representative Viewpoints	Views to establishing trees and shrubs within the nitrogen deposition compensation site, with potential views to protective guards around the planting.	Operation	Woodland planting within the nitrogen deposition compensation site, with open glades and vistas to maintain variety and interest. Screening of pylons and communications masts due to new woodland planting.	Environmental Masterplan Design Principles REAC oLEMP	Neutral effect in opening year increasing to moderate beneficial effect in design year
<b>Section 1</b>					
1 Representative Viewpoint	Views to the widened A2/M2 corridor and new local distributor roads, two new green bridges and new or replacement highway infrastructure. Increased visibility of the A2/M2 corridor due to the continued absence of vegetation removed during construction.	Operation	New woodland along the A2/M2 corridor to restore screen planting and two green bridges with associated hedgerow, tree and shrub planting. Woodland planting within the nitrogen deposition and ancient woodland compensation sites providing additional screening of the A2/M2 corridor.	Environmental Masterplan Design Principles REAC oLEMP	Very large adverse effect in opening year reducing to large adverse effect in design year
4 Representative Viewpoints					Large adverse effect in opening year reducing to moderate adverse effect in design year
2 Representative Viewpoints 1 Transport route or group					Large adverse effect in opening year reducing to slight beneficial effect in design year
1 Representative Viewpoint					Moderate adverse effect in opening year and design year



Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
2 Representative Viewpoints 1 Residential receptor or group 1 Transport route or group					Moderate adverse effect in opening year reducing to slight adverse effect in design year
1 Residential receptor or group					Moderate adverse effect in opening year reducing to neutral effect in design year
1 Representative Viewpoint					Moderate adverse effect in opening year reducing to slight beneficial effect in design year
1 Representative Viewpoint					Slight adverse effect in opening year increasing to moderate beneficial effect in design year
1 Representative Viewpoint					Neutral effect in opening year increasing to moderate beneficial effect in design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Section 2</b>					
1 Representative Viewpoint	Views to the M2/A2/A122 Lower Thames Crossing junction, including multiple slip roads and structures and new highway infrastructure. Views to the widened A2 corridor and new or replacement highway infrastructure. Increased visibility of the A2 corridor due to the continued absence of vegetation removed during construction.	Operation	Woodland planting to screen the M2/A2/A122 Lower Thames Crossing junction and restore screening of the A2 corridor. Woodland planting within the nitrogen deposition and ancient woodland compensation sites providing additional screening of pylons.	Environmental Masterplan Design Principles REAC oLEMP	Large adverse effect in opening year and design year
1 Representative Viewpoint 1 Residential receptor or group 1 Transport route or group					Large adverse effect in opening year reducing to moderate adverse effect in design year
1 Representative Viewpoint 2 Residential receptors or groups					Large adverse effect in opening year reducing to slight adverse effect in design year
1 Representative Viewpoint 1 Residential receptor or group 1 Transport route or group 1 Other receptor or group					Moderate adverse effect in opening year and design year
4 Representative Viewpoints 3 Residential receptors or groups					Moderate adverse effect in opening year reducing to slight adverse effect in design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
1 Recreational route or group 2 Recreational areas or groups					
1 Transport route or group					Moderate adverse effect in opening year reducing to neutral effect in design year
1 Residential receptor or group					Moderate adverse effect in opening year reducing to slight beneficial effect in design year
1 Representative Viewpoint 1 Recreational route or group					Slight adverse effect in opening year increasing to moderate beneficial effect in design year

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Section 3 and 4</b>					
2 Residential receptors or groups	Views to the upper chalk slopes of the South Portal and the associated cutting, with the cutting appearing as a new linear feature in the landscape. Views to attenuation basins in the dry valley east of the South Portal cutting and to the hilltop landform within Chalk Park east of Gravesend. Continued absence of vegetation at Southern Valley Golf Club and the former Hartshill Nursery.	Operation	Slackening the gradient of the tops of the chalk cutting slopes on the approach to the South Portal to soften the transition with adjoining ground levels in conjunction with natural colonisation of the chalk substrate. Woodland planting on the hilltop landform to reflect other wooded hilltops in the locality. Planting of hedgerows, individual trees and small woodland blocks to soften the appearance of the South Portal cutting slopes and the attenuation basins.	Environmental Masterplan Design Principles REAC oLEMP	Moderate adverse effect in opening year and design year
3 Representative Viewpoints 1 Recreational area or group					Moderate adverse effect in opening year reducing to slight adverse effect in design year
<b>Visual effects – North of the River Thames</b>					
<b>Section 9</b>					
1 Representative Viewpoint	Views to the sculptural landscape mounding at Tilbury Fields. Views to the Project route and North Portal operational access bridge on embankment, Tilbury Viaduct, and associated elevated highway infrastructure and	Operation	Woodland planting on the embankments of the Project route and North Portal operational access bridge to soften the appearance of the earthworks and filter views to highway infrastructure and moving	Environmental Masterplan Design Principles REAC oLEMP	Large adverse effect in opening year and design year
1 Residential receptor or group					Large adverse effect in opening year reducing to moderate adverse effect in design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
2 Representative Viewpoints 1 Residential receptor or group 3 Recreational routes or groups 1 Transport route or group	moving vehicles. Continued absence of vegetation near Readmans Industrial Estate.		vehicles. Shrub planting at the base of Tilbury Viaduct to soften its appearance.		Moderate adverse effect in opening year and design year
2 Representative Viewpoints 1 Residential receptor or group 1 Transport route or group					Moderate adverse effect in opening year reducing to slight adverse effect in design year
<b>Section 10</b>					
1 Residential receptor or group	Views to false cutting slopes along the Project route and the tops of high-sided vehicles and highway infrastructure. Views to the Muckingford Road and Hoford Road green bridges and Brentwood Road overbridge. Continued absence of vegetation at Rainbow Wood and along a watercourse west of Linford.	Operation	Scrub woodland planting along the existing watercourse west of Linford and hedgerows along the base of the false cutting slopes to soften the appearance of the Project route. Woodland planting within the nitrogen deposition and ancient woodland compensation sites providing additional screening of the Project route and pylons.	Environmental Masterplan Design Principles REAC oLEMP	Large adverse effect in opening year and design year
1 Residential receptor or group 2 Recreational routes or groups 1 Transport route or group					Large adverse effect in opening year reducing to moderate adverse effect in design year
5 Representative Viewpoints 8 Residential receptors or groups					Moderate adverse effect in opening year and design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
3 Recreational routes or groups 1 Recreational area or group					
2 Representative Viewpoints 4 Residential receptors or groups 2 Recreational routes or groups 3 Transport routes or groups					Moderate adverse effect in opening year reducing to slight adverse effect in design year
1 Recreational area or group					Moderate adverse effect in opening year reducing to slight beneficial effect in design year
1 Representative Viewpoint					Moderate adverse effect in opening year and moderate beneficial effect in design year
<b>Section 11</b>					
4 Representative Viewpoints 6 Residential receptor or group 2 Transport routes or groups	Views to false cutting slopes along the Project route, the FP79 WCH bridge and Green Lane green bridge. Views to the A13/A1089/A122 Lower Thames Crossing junction,	Operation	Dense woodland planting along the A13 corridor and at the new A13/A1089/A122 Lower Thames Crossing junction to restore screening of the A13	Environmental Masterplan Design Principles REAC oLEMP	Large adverse effect in opening year reducing to moderate adverse effect in design year

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
1 Other receptor or group	including multiple slip roads and structures, new highway infrastructure, and landscape mounds within the junction. Continued absence of vegetation along the A13 and at the existing A13/A1089 junction, with increased visibility of the A13 corridor.		corridor and soften the appearance of earthworks, structures, highway infrastructure and moving vehicles. Hedgerows along the base of the false cutting slopes to soften the appearance of the Project route.		
1 Residential receptor or group					Large adverse effect in opening year reducing to slight adverse effect in design year
1 Representative Viewpoint 3 Residential receptors or groups 2 Transport routes or groups 1 Other receptor or group					Moderate adverse effect in opening year and design year
5 Representative Viewpoints 6 Residential receptors or groups 2 Recreational routes or groups 4 Transport routes or groups 1 Other receptor or group					Moderate adverse effect in opening year reducing to slight adverse effect in design year
<b>Section 12</b>					

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
2 Representative Viewpoints	Views to false cutting slopes along the Project route and the tops of high-sided vehicles and highway infrastructure.	Operation	Rectangular blocks of woodland planting on the Orsett Viaduct approach embankments to soften the appearance of earthworks and the viaduct.  Woodland planting at The Wilderness and along the Project route to help restore a wooded backdrop to views and soften the appearance of the cutting east of North Road.	Environmental Masterplan Design Principles REAC oLEMP	Very large adverse effect in opening year and design year
1 Recreational route or group	Views to the Project route on embankment and the Orsett Fen and Mardyke Viaducts, with elevated highway infrastructure and moving vehicles. Continued absence of vegetation at The Wilderness woodland block and along the Mardyke Way.				Large adverse effect in opening year reducing to moderate adverse effect in design year
1 Representative Viewpoint 1 Residential receptor or group 3 Recreational routes or groups					Moderate adverse effect in opening year and design year
1 Representative Viewpoint 3 Residential receptors or groups 2 Recreational routes or groups					Moderate adverse effect in opening year reducing to slight adverse effect in design year



Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Sections 13 and 14</b>					
1 Representative Viewpoint 1 Recreational route or group	Views to new WCH bridges and the false cutting slopes and landscape mounds along the Project route. Views to the slip roads, structures and landscape mounds at the A122 Lower Thames Crossing/M25 junction. Continued absence of vegetation along the M25, at M25 junction 29 and at Thames Chase Forest Centre, with increased visibility of the M25 corridor.	Operation	Woodland planting at the Thames Chase Forest Centre to restore a wooded character to views. Roadside screen planting along the M25 corridor to soften views of earthworks, highway infrastructure and moving vehicles. Woodland planting within the nitrogen deposition and ancient woodland compensation site providing additional screening of the M25 corridor.	Environmental Masterplan Design Principles REAC oLEMP	Large adverse effect in opening year reducing to moderate adverse effect in design year
3 Representative Viewpoints 1 Residential receptor or group 1 Transport route or group 1 Other receptor or group					Moderate adverse effect in opening year reducing to slight adverse effect in design year
2 Residential receptors or groups					Moderate adverse effect in opening year reducing to slight beneficial effect in design year
1 Representative Viewpoint					Neutral effect in opening year increasing to moderate beneficial effect in design year

**Table 17.4 Summary of likely significant effects detailed in Chapter 8: Terrestrial Biodiversity**

Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 8: Terrestrial Biodiversity</b>					
Shorne and Ashenbank Woods SSSI	Permanent habitat loss at Shorne and Ashenbank Woods SSSI, including the loss of 0.95ha of ancient woodland, totalling 5.85ha. The impact on this national designation would be of minor magnitude.	Construction	As part of the ancient woodland compensation planting design, three blocks of woodland are proposed specifically to offset effects on this SSSI: a 5.0ha block north-west of Shorne Woods, a 9.1ha block immediately north of Shorne Woods, and a 21ha block east of Shorne/Brewers Wood which links into Great Crabbles Wood SSSI to the east. All woodland blocks would be contiguous with existing retained SSSI woodland. Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.	Design Principles REAC	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
Cobham Woods SSSI; Wouldham to Detling Escarpment SSSI	Habitat degradation as a result of increased nitrogen deposition on the sites. The impact on these national designations would be of major magnitude.	Operation	Landscape-scale habitat creation across eight sites north and south of the River Thames that offset habitat degradation through the creation of approximately 240ha of new wildlife-rich habitat. The locations of these areas are designed to link existing retained semi-natural and designated habitats to strengthen the network of designated habitats at a landscape scale.	Design Principles REAC oLEMP	Large adverse
Shorne and Ashenbank Woods SSSI	Habitat degradation as a result of increased nitrogen deposition on the site. The impact on these national designations would be of major magnitude.	Construction and operation		Design Principles REAC	Large adverse
Halling to Trottiscliffe Escarpment SSSI	Habitat degradation as a result of increased nitrogen deposition on the site. The impact on these national designations would be of moderate magnitude.	Operation		Design Principles REAC	Moderate adverse
Ancient woodland habitat across 19 separate sites (17 south of the river and two north of the river)	Habitat degradation as a result of increased nitrogen deposition on the sites. The impact on these national designations would be of minor to major magnitude.	Operation	Landscape-scale habitat creation across eight sites north and south of the River Thames that offset habitat degradation through the creation of approximately 240ha of new wildlife-rich habitat. The locations of these areas are designed to link existing retained semi-natural and	Design Principles REAC	Moderate to very large adverse
Ancient woodland	Habitat degradation as a result of increased nitrogen	Construction and operation		Design Principles	Moderate and large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
habitat across three separate sites (two south of the river and one north of the river)	deposition on the sites. The impact on these national designations would be of moderate to major magnitude.		designated habitats to strengthen the network of designated habitats at a landscape scale. The M2 speed limit enforcement provides mitigation for one of the sites.	REAC	
Claylane Wood ASNW	Loss of irreplaceable ancient woodland habitat totalling 4.2ha. Habitat degradation due to possible ground pollution. The impact on this national designation would be of major magnitude.	Construction	Ancient woodland compensatory planting is proposed, linking the retained area of Claylane Wood to other others of retained ancient and SSSI woodland in the vicinity, such as Shorne Woods. New green bridges would cross the new A122 Lower Thames Crossing, as well as the A2 and HS1, to provide new links between Shorne and Ashenbank Woods, and Jeskyns Community Woodland to the west. New ancient woodland planting is also proposed west of Jeskyns. In total, an area of 48.75ha of	Design Principles REAC	Large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
			<p>woodland planting is designed to compensate for impacts to ancient woodland south of the river. Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.</p>		
<p>Veteran trees south of the River Thames</p>	<p>Three veteran trees would be permanently removed (T41, T133 and T145). The impact on these nationally valued resources would be of minor magnitude.</p>	<p>Construction</p>	<p>Hulks of felled trees and their timber would be relocated into retained woodland. Planting of specimen trees would occur; the location, species and size to be agreed with the SoS in consultation with relevant local bodies. Targeted veteranisation pruning would occur within retained woodland. Years 1–5 of vegetation establishment to be overseen by an</p>	<p>Design Principles REAC</p>	<p>Moderate adverse</p>

Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
			Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.		
Low Street Pit Local Wildlife Site (LWS)	Habitat loss would occur within the LWS totalling 3.5ha. This would result in the associated loss of notable plant and invertebrate populations including the permanent loss of unimproved acid grassland. The impact on this county designation would be of major magnitude.	Construction	The creation of approximately 63ha of replacement habitat planting in close proximity to the existing grassland would be provided, including approximately 5ha of acid grassland creation involving the salvage of soil from the LWS. Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.	Design Principles REAC	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
Blackshots Nature Area LWS	Habitat loss affecting most of the LWS, totalling 12.3ha. Associated loss of important invertebrate populations and nesting habitat for birds. The impact on this county designation would be of major magnitude.	Construction	Replacement habitat planting in close proximity, equating to 40ha of grassland habitat. Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.	Design Principles REAC	Moderate adverse
Rainbow Shaw LWS	Habitat loss of the majority of the LWS totalling 1.2ha, which would be mostly within the Order Limits. Associated loss of ancient woodland. Habitat degradation due to possible pollution events. The impact on this national designation would be of major magnitude.	Construction	Part of the ancient woodland compensation planting proposed north of the river, totalling approximately 32ha. An area of approximately 2.0ha of compensatory woodland would be planted immediately west and south of the retained ancient woodland at Rainbow Shaw. Good practice mitigation including dust	Design Principles REAC	Large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
			suppression and surface water runoff. Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.		
Bridge Woods, Burham LWS	Habitat degradation as a result of increased nitrogen deposition on the sites. The impact on these national designations would be of major magnitude.	Operation	Landscape-scale habitat creation across eight sites north and south of the River Thames that offset habitat degradation through the creation of approximately 240ha of new wildlife-rich habitat.	Design Principles REAC	Moderate adverse
Codham Hall Woods LWS; Ockendon Railsides SINC	Habitat degradation as a result of increased nitrogen deposition on the sites. The impact on these national designations would be of major magnitude.	Construction and operation	The locations of these areas are designed to link existing retained semi-natural and designated habitats to strengthen the network of designated habitats at a landscape scale.	Design Principles REAC	Moderate adverse
Codham Hall Wood LWS and ASNW	Small area of habitat loss in the LWS along the western edge of the site totalling	Construction	Part of the ancient woodland compensation planting	Design Principles REAC	Moderate adverse



Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
	0.2ha. Associated degradation and disturbance. The impact on this national designation would be of minor magnitude.		proposed north of the river, totalling approximately 32ha. An area of approximately 26ha of compensatory woodland would be planted immediately north of Codham Hall Wood at Hole Farm. Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.		
Ancient woodland west of M25 junction 29	Small area of ancient woodland habitat loss at this location totalling 0.2ha. The impact on this nationally valued resource would be of major magnitude.	Construction	Part of the ancient woodland compensation planting proposed north of the river, totalling approximately 32ha. An area of approximately 5ha of compensatory woodland would be planted immediately	Design Principles REAC	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
			<p>west of the affected woodland.</p> <p>Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would be replaced in the next available planting season.</p>		
<p>Veteran trees north of the River Thames</p>	<p>Three veteran trees are to be permanently removed (T362, T363, and T570)</p> <p>The impact on these nationally valued resources would be of minor magnitude.</p>	<p>Construction</p>	<p>Hulks of felled trees and their timber would be relocated into retained woodland. Planting of specimen trees would occur, the location, species and size to be agreed with the SoS in consultation with relevant local bodies. Targeted veteranisation pruning would occur within retained woodland.</p> <p>Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would</p>	<p>Design Principles REAC</p>	<p>Moderate adverse</p>

Receptors	Description of impact	Construction/ operation	Summary of key mitigation / compensation / enhancement	How mitigation is secured in DCO	Significance of residual effect
			be replaced in the next available planting season.		
Loss of habitat used by terrestrial invertebrates and mortality of terrestrial invertebrate assemblages	Habitat loss in this area. The impact would persist on a short-term temporary basis (approximately five years) between the time when habitat clearance is undertaken and the establishment of the newly created habitats. The impact on these county-to nationally-valued habitats would be of moderate magnitude.	Construction	Approximately 105ha of open mosaic habitat would be created along the north of the Thames Estuary, contiguous with key areas of retained habitat supporting nationally important assemblages of invertebrates. In addition to this core measure, smaller stepping stones of open mosaic habitat would be created along the route of the Project to facilitate movement of species through the landscape in a north-south orientation as well as west-east along the Thames Estuary. Years 1–5 of vegetation establishment to be overseen by an Environmental Clerk of Works. Vegetation that failed to establish would	Design Principles REAC	Moderate adverse

<b>Receptors</b>	<b>Description of impact</b>	<b>Construction/ operation</b>	<b>Summary of key mitigation / compensation / enhancement</b>	<b>How mitigation is secured in DCO</b>	<b>Significance of residual effect</b>
			be replaced in the next available planting season.		

**Table 17.5 Summary of likely significant effects detailed in Chapter 10: Geology and Soils**

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 10: Geology and Soils</b>					
Best and most versatile (BMV) land	Construction phase loss of 816.62ha of BMV land during the construction phase. The impact on these very high valued resources would be of major magnitude.	Construction	Soils would be handled and stored to allow their sustainable re-use in line with the Defra Construction Code of Practice for the Sustainable Use of Soil on Construction Sites (2009) and the MAFF Good Practice Guide for Soil Handling (2000).	EMP2 – Requirement 4	Very large adverse
BMV land	Permanent loss of 539.22ha of BMV land following reinstatement of land required temporarily. The impact on these very high valued resources would be of major magnitude.	Construction	Reinstatement of land required temporarily. Soils would be handled and stored to allow their sustainable re-use in line with the Defra Construction Code of Practice for the Sustainable Use of Soil on Construction Sites (2009) and the MAFF Good Practice Guide for Soil Handling (2000).	EMP2 – Requirement 4	Very large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
			Following soil reinstatement there would be a five-year aftercare period during which defects would be corrected.		
Soils supporting designated and non-designated notable habitats	Temporary and permanent impacts on soils supporting designated and non-designated notable habitats. The impact on these High to Low valued resources would be of moderate to minor magnitude.	Construction	Soils would be handled and stored to allow their sustainable re-use in line with the Defra Construction Code of Practice for the Sustainable Use of Soil on Construction Sites (2009) and the MAFF Good Practice Guide for Soil Handling (2000).	EMP2 – Requirement 4	Moderate adverse to neutral

**Table 17.6 Summary of likely significant effects detailed in Chapter 11: Material Assets and Waste**

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 11: Material Assets and Waste</b>					
Landfill capacity	The reduction of landfill capacity in England would be less than 1%. The reduction to study area landfill capacity for inert, non-hazardous and hazardous landfills is above the 1% threshold outlined within DMRB LA 110: Material assets and waste (Highways England, 2019). Between 1-50% of all Project waste would be disposed of outside of the region.	Construction	Application of waste hierarchy and circular economy principles Retention and reuse of excavated materials, concrete from demolition and vegetation Contract targets for diversion of waste from landfill	CoCP REAC oSWMP	Moderate adverse

**Table 17.7 Summary of likely significant effects detailed in Chapter 12: Noise and Vibration**

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 12: Noise and Vibration</b>					
2025 – 237 dwellings and 5 Other Sensitive Receptors (OSRs)  2026 – 10 dwellings and 1 OSR  2027 – 48 dwellings and 1 OSR  2028 – 219 dwellings and 2 OSRs  2029 – 2 dwellings and 1 OSR  2030 – 0 dwellings and 0 OSRs	Temporary moderate to major adverse change in road traffic noise level during the daytime for one or more of the defined construction traffic phases.	Construction	Noise and Vibration Management Plan Good Practice Mitigation and other specific noise controls agreed with local planning authorities	REAC CoCP	Significant adverse
206 receptors along RNTM58 (206)  185 receptors along RNTM38	Temporary moderate to major adverse change in daytime road traffic noise level during the use of strategic diversion routes.	Construction	Noise and Vibration Management Plan Good Practice Mitigation and other specific noise controls	REAC CoCP	Significant adverse



Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
185 receptors along RNTM20			agreed with local planning authorities		
15 dwellings	Temporary moderate to major adverse from vibration during percussive piling	Construction	Noise and Vibration Management Plan	REAC CoCP	Significant adverse
3 dwellings	Temporary moderate to major adverse from vibration during vibratory piling	Construction	Noise and Vibration Management Plan	REAC CoCP	Significant adverse
Noise sensitive receptors Project-wide; 477 dwellings and one OSR with a moderate or greater increase in noise when below a SOAE; 954 dwellings with a minor or greater increase when above a SOAE; Eight dwellings with a moderate or greater increase in noise when above a SOAEL;	Noise sensitive receptors experiencing a noise change (increase) relating to changes in road traffic noise along the Project.	Operation	Development of design alignment Locating the highway within a cutting or false cutting/bund to reduce road traffic. Low noise road surfacing (Thin Surfacing System) Acoustic fencing.	Environmental Masterplan Design Principles REAC	Significant adverse
1,367 dwellings and five OSR along the route of the Project	Noise change (decrease) relating to road traffic noise changes predominantly along the bypassed network.	Operation	n/a	n/a	Significant beneficial

**Table 17.8 Summary of likely significant effects detailed in Chapter 13: Population and Human Health**

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 13: Population and Human Health</b>					
<b>Land use and accessibility effects – South of the River Thames</b>					
Private property and housing	Demolition of four properties south of the River Thames: <ul style="list-style-type: none"> <li>• 1 &amp; 2 Longview, Henhurst Road</li> <li>• White House, Henhurst Road</li> <li>• Marling Cross Lodge, Watling Street</li> </ul> The impact on these private properties, which are of medium sensitivity, would be of major magnitude and permanent.	Construction & operation	Financial compensation	Statutory Compensation Code	Moderate to large adverse
Private recreational facilities	The site of the former Southern Valley Golf Course, which is now closed, would be permanently acquired for the Project. The SVGC is considered to be of low sensitivity, although the magnitude of impact would be major adverse and permanent.	Construction & operation	Financial compensation	Statutory Compensation Code	Moderate adverse
Businesses – affected by property demolition	Businesses affected by property demolition comprise: <ul style="list-style-type: none"> <li>• Depot located off Henhurst Road</li> <li>• Cobham Service Station</li> <li>• Hartshill Nursery and Baylis Landscapes, Thong Lane</li> </ul> The impact on these medium sensitivity businesses would be of major magnitude.	Construction & operation	Financial compensation	Statutory Compensation Code	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Businesses	Three businesses would be subject to temporary possession of land / permanent acquisition of rights or otherwise affected during construction. The scale of construction activities taking place in and around the Inn on the Lake hotel are such that the business may not be operable for several years; engagement with the business is ongoing. The business is considered to be of high sensitivity and the magnitude of impact would be moderate adverse.		Compensation would be payable in accordance with the Statutory Compensation Code	Statutory Compensation Code	Moderate adverse
Agricultural land holdings	Twenty landholdings would experience moderate to very large adverse effects during construction as a result of the temporary possession of land. Following the reinstatement of land by the end of the construction phase, 11 landholdings would experience moderate to very large adverse effects.	Construction	Compensation would be payable in accordance with the Statutory Compensation Code. Consultation with landowners, occupiers and agents would continue as the Project develops to manage and reduce impacts on property owners as far as reasonably possible.	Statutory Compensation Code	Moderate to very large adverse
Footpath NS167	Impacts would be experienced as a result of utility diversion works. There would be a temporary closure of the Public Right of	Construction	Permanent diversion proposed.	Design Principles CoCP REAC	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>Way (PRoW) during construction phase for a period of up to 48 months. To maintain connectivity between Shorne Wood Country Park and residential areas to the west during the construction phase, the Project would aim to install new routes and open these to the public within a month of closing the existing route.</p> <p>Although the length of route has increased by more than 500m and this would therefore constitute a major adverse magnitude of effect in line with DMRB LA 112, the nature of the route is recreational and as such the greater distance may not be perceived as an adverse effect by users (indeed, it may have a health benefit in terms of encouraging levels of physical activity).</p>		<p>Good practice measures, including early community engagement, clear and concise signposting and regular social media updates on the route.</p>		
Footpath NS174	<p>This footpath is to be impacted by construction activities between the A2 and Thong Lane green bridge and would be temporarily closed for a duration of 48 months. A new bridleway is proposed to be created following the eastern edge of Riverview Park, before connecting into a network of proposed routes at Thong Lane. This is to be constructed early in the construction programme.</p> <p>Although the length of route has increased by more than 500m and this</p>	Construction	<p>A new bridleway is proposed to be created following the eastern edge of Riverview Park, before connecting into a network of proposed routes at Thong Lane. This is to be constructed early in the construction</p>	Design Principles CoCP REAC	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>would therefore constitute a major adverse magnitude of effect in line with DMRB LA 112, the nature of the route is recreational and as such the greater distance may not be perceived as an adverse effect by users (indeed, it may have a health benefit in terms of encouraging levels of physical activity).</p>		<p>programme. Good practice measures, including early community engagement, clear and concise signposting and regular social media updates on the route.</p>		
NS164	<p>The route would be affected by utility diversion works requiring temporary closure for four months for gas pipeline diversion works and for two periods of two months for overhead line diversion works. In addition, a section of the existing route that coincides with the southern tunnel entrance compound would need to be closed for the duration of the construction phase.</p> <p>Although the length of route has increased by more than 500m and this would therefore constitute a major adverse magnitude of effect in line with DMRB LA 112, the nature of the route is recreational and as such the greater distance may not be perceived as an adverse effect by users (indeed, it may have a health benefit in terms of encouraging levels of physical activity).</p>	Construction	<p>Alternative recreation routes to the east and south of Shorne would be available for use.</p> <p>Good practice measures, including early community engagement, clear and concise signposting and regular social media updates on the route.</p>	Design Principles CoCP REAC	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	The impact on this medium sensitivity receptor would be of major magnitude.				
NS165	The route would be affected by utility diversion works requiring temporary closure for four months for gas pipeline diversion works and two periods of two months for overhead line diversion works. In addition, a section of the existing route that coincides with the southern tunnel entrance compound would need to be closed for the duration of the LTC construction period. The impact on this medium sensitivity receptor would be of major magnitude.	Construction	Alternative recreation routes to the east and south of Shorne would be available for use. Good practice measures, including early community engagement, clear and concise signposting and regular social media updates on the route.	Design Principles CoCP REAC	Moderate adverse
NG17/1	A section of the existing route would need to be closed permanently to accommodate the A2 eastbound to A122 northbound slip road. The remaining route would be temporarily closed and the western end upgraded to bridleway. The impact on this medium sensitivity receptor would be of major magnitude.	Construction	Good practice measures, including early community engagement, clear and concise signposting and regular social media updates on the route.	Design Principles CoCP REAC	Moderate adverse
Footpath NG7 and 8	Footpath closed during construction of South Portal and Gravesend link. Project	Construction	Good practice measures, including early	CoCP REAC	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	route has been amended to coincide with the Chalk Park landscape. The impact on this medium sensitivity receptor would be of major magnitude.		community engagement, clear and concise signposting and regular social media updates on the route.		
Brewers Road	The route would require temporary closure due to various construction works including demolition of the existing bridge, construction of the replacement structure and construction of local link road between Henhurst Road roundabout and the Thong Lane/Brewers Road roundabout. This would last for approximately 18 months to facilitate demolition of existing bridge and construction of replacement structure. The impact on this very high sensitivity receptor would be of major magnitude.	Construction	The outline Construction Traffic Management Plan contains proposals for minimising disruption to existing users on the public highways network.	CoCP	Very large adverse
Shorne Woods Country Park	Replacement land would be provided immediately adjacent to the east of Shorne Woods Country Park and would be landscaped to match the existing site and use, allowing for the spaces to interlink together and function as one. The new area of woodland to the east would link Shorne Woods with Great Crabbles Wood, thus creating new recreational areas.	Operation	Provision of replacement land	Environmental Masterplan Design Principles oLEMP	Large beneficial

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>The new car park and associated facilities provides additional means of access to the Country Park.</p> <p>A further area of ancient woodland compensation would be provided on land north of Brummelhill Wood and Randall Wood (to the north of Shorne Woods Country Park).</p> <p>Shorne Woods Country Park is of very high sensitivity; the magnitude of impact would be minor beneficial and permanent.</p>				
Jeskyns Community Woodland	<p>It is proposed to upgrade an existing footpath, which would connect into a wider WCH network. A short section of permissive bridleway would be created near to the car park. The land would be returned to its existing use as part of Jeskyns Community Woodland. The impact on this very high sensitivity community land would be of minor magnitude.</p>	Operation	Works to upgrade the existing footpath and creation of section of permissive bridleway.	Environmental Masterplan Design Principles	Moderate beneficial
Michael Gardens Play Area	<p>Permanent works to upgrade the footpath suitable for pedestrian and cyclist use through the site would offer improved access to the wider WCH network. The path would be returned to the existing use.</p> <p>The impact on this very high sensitivity community land would be of minor magnitude.</p>	Operation	Upgrading of footpath for improved access to wider WCH network.	Environmental Masterplan Design Principles	Moderate beneficial



Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Community land	The SVGC site would be replaced with a country park (known as Chalk Park) which would provide a new recreational landscape for local communities. The impact would be of major magnitude.	Operation	Creation of a publicly accessible space (Chalk Park)	Environmental Masterplan Design Principles	Moderate beneficial
Development land to the south of the River Thames	The Project would bring about improved connectivity across the local area and wider region and could strengthen local economic performance and skills, thereby improving productivity and economic competitiveness. Improvements in transport links for residents, visitors and employees would have a moderate magnitude beneficial impact for development land identified to the south of the River Thames.	Operation	n/a	n/a	Very large beneficial
<b>Land use and accessibility effects – North of the River Thames</b>					
Private property and housing	Demolition of 26 properties north of the River Thames as follows: <ul style="list-style-type: none"> <li>• 7, 8, 9 and 10 Woolings Close, Baker Street</li> <li>• 5 and 6 Woolings Row, Baker Street</li> <li>• Murrells Cottage, Stanford Road</li> <li>• Thatched Cottage, Baker Street</li> <li>• Gammon Staples Farmhouse, Baker Street</li> <li>• The Thatches, Stanford Road</li> <li>• 1 and 2 Grays Corner Cottage, Baker Street</li> </ul>	Construction and operation	Financial compensation	Statutory Compensation Code	Large to Very large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<ul style="list-style-type: none"> <li>• 1–2 Whitfield Cottages, Stifford Clays Road</li> <li>• 1–4 Bridge Cottages, Ockendon Road</li> <li>• Larwood Cottage, Ockendon Road</li> <li>• The Rosary, Ockendon Road</li> <li>• Yellow Stock Mews, Ockendon Road</li> <li>• Estate House, Ockendon Road</li> <li>• 1–2 Cherry Orchard Cottages, Ockendon Road</li> <li>• Alde Cottage</li> <li>• Welcome Service Station (residential)</li> </ul> <p>The impact on these private properties, which are defined as being of very high sensitivity, would be of major magnitude.</p>				
Coalhouse Fort	<p>Temporary construction impacts relate primarily to amenity impacts for visitors (as a result of changes in noise, traffic and landscape quality). Potential disturbance impacts from construction traffic may arise due to the use of Princess Margaret Road.</p> <p>Coalhouse Fort is defined as being of very high sensitivity; the impact would be of minor magnitude.</p>	Construction	Construction traffic management and community engagement	CoCP oTMPfC	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Tilbury Fort	Temporary construction impacts relating to amenity impacts for visitors (as a result of changes in noise, traffic and landscape quality). Tilbury Fort is defined as being of very high sensitivity; the impact would be of minor magnitude	Construction	Community engagement	CoCP	Moderate adverse
Upminster Cemetery and South Essex Crematorium	Potential impacts arising from road closures and diversions (notably the temporary closure of Ockendon Road) resulting in increased journey times and changes to accessibility. Upminster Cemetery and South Essex Crematorium is defined as being of very high sensitivity, with the magnitude of impact considered to be minor adverse.	Construction	Measures set out in the oTMPfC. Ongoing engagement. Attendance at Traffic Management Forum meetings.	oTMPfC	Moderate adverse
Treetops and Beacon Hill Post-16 Schools	Impacts on these schools during construction relate primarily to minor and temporary (albeit long-term) changes to accessibility. The schools are assessed as being of very high sensitivity due to the specialist services they provide. The magnitude of impact on these schools during construction is considered to be minor adverse.	Construction	Measures set out in the oTMPfC. Ongoing engagement.	oTMPfC	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Wild Thyme Outdoors	Permanent acquisition of land is required at the southern part of the site for construction of the Project and is likely to lead to extinguishment of the current use of The Wilderness area of woodland by Wild Thyme Outdoors (which operates on an informal word of mouth arrangement with the landowner). Wild Thyme Outdoors is of high sensitivity due to the frequency of use (prior to 2022) and the users of the service (primarily children with special needs). The magnitude of impact is considered to be major adverse, given the loss of a significant part of The Wilderness private woodland, such that the quality / integrity of the site as a location for providing outdoor educational services would be compromised.	Construction and operation	Active engagement with Wild Thyme Outdoors is continuing to identify compensation land / alternative mitigation.	Ongoing engagement	Moderate adverse
Brentwood Enterprise Park	Construction activities which may temporarily impact on businesses at the Brentwood Enterprise Park relate to the connection of the Project with the M25 and A127.  As a result of collaboration with the promoters of Brentwood Enterprise Park, the Order Limits have been revised to allow for potential future collaboration regarding the design of the access from the B186. The Applicant is progressing legal agreements with the promoters of	Construction	Ongoing engagement and progression of legal agreements	Design Principles CoCP	Moderate adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>Brentwood Enterprise Park to manage potential construction interfaces between the Project and the proposed Brentwood Enterprise Park should they both be under construction at the same time. The impact on this very high sensitivity development land would be of minor magnitude.</p>				
<p>Port of Tilbury Freeport Tax Site (part of the Thames Freeport designation)</p>	<p>There is a small overlap between the area identified for permanent land acquisition for the Project and the PoT Freeport Tax Site boundary, comprising a corner of the planned port development areas located to the west of the Lower Thames Crossing tunnel. This land, which would be required to manage the change in levels between the port facilities and the landscaping associated with the Project is a matter of discussion with Port of Tilbury London Limited (PoTLL) and it is anticipated that an agreement will be reached between the two parties. Thames Freeport is of very high sensitivity due to its size; the magnitude of impact is considered to be minor as a result of the proportion of land impacted and the likelihood for the Project not to adversely affect the progression of proposals for the Freeport.</p>	<p>Construction</p>	<p>Ongoing engagement</p>		<p>Moderate adverse</p>

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Businesses – property demolition	Businesses that would be subject to property demolition comprise the Cranham solar farm. The impact on this high sensitivity business would be of major magnitude.	Construction	Financial compensation	Statutory Compensation Code	Large adverse
Businesses – acquisition of land	Orsett Showground would be subject to permanent acquisition of land to enable highway construction, together with the acquisition of permanent rights in association with the diversion of a high-pressure gas pipeline. There would also be temporary possession of land to enable construction of a gas pipeline diversion, together with the acquisition of permanent rights for this area. <ul style="list-style-type: none"> <li>The impact on this very high sensitivity land would be of minor magnitude.</li> </ul>	Construction and operation	Final compensation	Statutory Compensation Code	Moderate adverse
Businesses – indirect impacts	The Manor Farm Shop may experience impacts associated with changes in access during construction as a result of planned closures to Ockendon Road. The impact on this medium sensitivity business would be of moderate magnitude.	Construction	Financial compensation	Statutory Compensation Code	Moderate adverse
Agricultural land holdings	Twenty-one landholdings would experience moderate to very large adverse effects during construction as a result of the temporary possession of land. Following the reinstatement of land	Construction and operation	Compensation would be payable in accordance with the Statutory Compensation	Statutory Compensation Code	Moderate to very large adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	by the end of the construction phase, 13 landholdings would experience moderate to very large adverse effects.		Code. Consultation with landowners, occupiers and agents would continue as the Project develops to manage and reduce impact on property owners as far as reasonably possible.		
BR183	Various closures of sections of the route for various lengths of time. A diversion would allow for continued connectivity between Cranham and villages to the north-east. BR183 is used as a connecting footpath and bridleway between the outskirts of Cranham and Great Warley. The proposed alternative route connecting these locations is shorter by a distance of circa 2km than the existing route.	Construction	Following construction the route would be diverted and upgraded.	Design Principles CoCP REAC	Large beneficial
Thames Chase Culvert	The unofficial route through the culvert connecting the parcels of the Thames Chase Forest on either side of the M25 would be closed. Although the proposed diversion would be a greater distance from the car park at Thames Chase Forest Centre on the western side of the M25 to the Thames Chase Forest parcels on the eastern side	Construction	Due to the high number of users of this route, a diversion is proposed passing along the BR289 on the western side of the M25, before following St	Design Principles CoCP REAC	Moderate beneficial

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	of the motorway, the new route would provide improved user experience. As a recreational route, the increased distance is not considered to be a significant adverse effect.		Marys Lane and linking the two sections of Thames Chase Community Forest.		
FP136	The route coincides with the Project alignment. The section of the route that falls within the Order Limits would be closed for a period of approximately 30 months to facilitate the diversion of utilities in the area and construction of the new FP136 footbridge to carry the route over the Project The impact on this medium sensitivity receptor would be of moderate magnitude.	Construction	The route would be diverted, upgraded and reopened once the FP136 footbridge is operational. The east-west section of FP136 would be surfaced and redesignated as bridleway, connecting to BR219.	Design Principles CoCP REAC	Moderate adverse
BR219	Two temporary closures, or alternative management, for periods of two months would be required to facilitate utilities diversion works. A further temporary closure of the section that falls within the Order Limits would be required for construction of the Project route for a period of 36 months The impact on this medium sensitivity receptor would be of major magnitude.	Construction	Following construction, the route would be upgraded, resurfaced and slightly realigned south of Mardyke prior to reopening. A new bridleway would connect to BR 219 and Green Lane.	Design Principles CoCP REAC	Moderate adverse



Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
FP79	The footpath would be severed by the construction of the Project. Closure would be required to facilitate utilities diversion works and construction of the Project mainline. The impact on this medium sensitivity receptor would be of moderate magnitude.	Construction	During the period of closure, a temporary diversion route would be made available via FP95, a new temporary footpath adjacent to Brentwood Road and the existing farm track opposite High House Lane.	Design Principles CoCP REAC	Moderate adverse
BR58 / FP61	Utility over-head works and road construction works would require temporary closure of these routes for approximately two years. Once the Muckingford Road bridge over the Project is completed a temporary diversion would be created. The impact on this medium sensitivity receptor would be of moderate magnitude.	Construction	The temporary diversion route would be in place until the construction works are complete or until it is safe to reopen the route via the proposed new alignment.	Design Principles CoCP REAC	Moderate beneficial
FP200	The northern end of the route would require temporary closure (60 months) due to utilities protection works and a section of the route would also be permanently closed to facilitate construction of a new viaduct to take the Project route over the Tilbury Loop railway line.	Construction	New proposed routes and surface improvements as part of the Project would be made available prior to closure of the existing FP200 route to provide a	Design Principles CoCP REAC	Moderate beneficial

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	The impact on this medium sensitivity receptor would be of moderate magnitude.		suitable alternative during the construction period. The central and eastern section of the route would be realigned, resurfaced and redesignated as bridleway between Station Road and Coal House Fort.		
FP30	Utility over-head works and road construction works would require temporary closure of the route for approximately two years. Once the new Muckingford Road bridge is completed a temporary diversion would be created with surface improvements. The impact on this medium sensitivity receptor would be of major magnitude.	Construction	The temporary diversion route would be in place until construction works are complete or until it is safe to reopen the route via the proposed new alignment.	Design Principles CoCP REAC	Moderate adverse
FP176	The footpath would be affected by gas pipeline diversion works and other construction activities. A temporary closure is likely to be required for three years The impact on this medium sensitivity receptor would be of major magnitude.	Construction	This route is primarily used for recreational purposes and as such, the longer length would not necessarily constitute an adverse effect.	Design Principles CoCP REAC	Moderate adverse

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
FP231	During the construction period, this footpath would be temporarily closed. The impact on this medium sensitivity receptor would be of major magnitude.	Construction	The route would be realigned via a new route and would be made available after completion of the utilities diversion works (approximately 12 month closure).	Design Principles CoCP REAC	Moderate adverse
B188 Baker Street	Baker Street accessed from the A1013 would be closed to public traffic and used as access for construction vehicles. A diversion route for vehicles to the north of Baker Street would be created. The impact on this very high sensitivity receptor would be of major magnitude.	Construction	A diversion route for vehicles to the north of Baker Street would be created.	Design Principles	Very large adverse
Rectory Road	Construction activities relate to a new bridge to carry Rectory Road over the Project, together with improvement works to the existing Rectory Road. Rectory Road would be closed for approximately seven months until the new bridge structure is open. The impact on this high sensitivity receptor would be of major magnitude.	Construction	Traffic management measures	Design Principles	Large adverse
Ockendon Road	The Project Road southbound passes under Ockendon Road. Due to space constraints, the new bridge structure would need to be built online, so the existing road would need to be closed to allow for construction of the new bridge and diversion of the associated utilities.	Construction	Diversion routes would use Dennis Lane or St Mary's Lane to cross the M25.	Design Principles	Large adverse

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Folkes Lane Woodland	Replacement land would be accessible from the existing site and from Folkes Lane and Beredens Lane via the existing footbridge over the M25 and would include new woodland planting. The replacement land would serve the multi-purpose of public open space, woodland planting, and community woodland (as part of the new Hole Farm community woodland) over a greater land area. The impact on this very high sensitivity receptor would be of minor magnitude.	Operation	Replacement land would be provided.	Environmental Masterplan Design Principles oLEMP	Moderate beneficial
Thames Chase Community Forest	There are two areas of replacement land: one to the north and one to the south of the existing Thames Chase Community Forest; both areas are on the western side of the M25. The replacement land would be designed to match the existing Thames Chase Community Forest's characteristics and would be developed in collaboration with stakeholders. The replacement land would be accessed through the existing site and internal footpath network of the Thames Chase Community Forest, with an additional access from the new footbridge over the M25 reconnecting Thames Chase Community Forest to the Land of the Fanns and the wider environment. The replacement land would also be located closer to existing residential areas,	Operation	Replacement land would be provided which would be more accessible through the existing site and internal footpath network.	Environmental Masterplan Design Principles oLEMP	Moderate beneficial

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>thereby enabling people to more easily access the site. Proposed improvements to the wider WCH network also provide access from Ockendon Road and Clay Tye Road, with further opportunities to provide access to Thames Chase Community Forest to the north of the site from St Mary's Lane. The impact on this very high sensitivity community land would be of minor magnitude.</p>				
<p>Ron Evans Memorial Field</p>	<p>The replacement land proposes landscape works to match the existing site and its use and allow spaces to interlink together and function as one. The replacement land would be equally as accessible as the existing site for the wider community and would be accessed through the existing site and from Long Lane and Fairfield Way. A further additional access point from Stifford Clays Road would be further developed in consultation with stakeholders. The replacement provision is of better quality due to being further from the current road infrastructure. The impact on this high sensitivity community land would be of minor magnitude.</p>	<p>Operation</p>	<p>Replacement land of greater area and improved characteristics would be provided.</p>	<p>Environmental Masterplan Design Principles oLEMP</p>	<p>Moderate beneficial</p>

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Development land to the north of the Thames	The Project would bring about improved connectivity across the local area and wider region and could strengthen local economic performance and skills, thereby improving productivity and economic competitiveness.  Improvements in transport links for residents, visitors and employees would have a moderate magnitude beneficial impact for development land identified to the north of the River Thames.	Operation	n/a	n/a	Very large beneficial
<b>Human health outcomes</b>					
Effects are reported as health outcomes. Only positive, negative and significant health outcomes have been shown in this table					
Traffic-related severance	The potential 'barrier effect' associated with road traffic can be linked to people's health and wellbeing, with the potential to affect quality of life and discourage trip-making, which can impact on mental wellbeing particularly for older populations who may have less choice around mode of transport and route. A number of the wards identified as potentially experiencing a severance effect contain higher proportions of more sensitive groups, for example older people, people in low income households and children.	Construction	Measures to reduce and restrict construction vehicle movements.	oTMPfC FCTP	Negative for sensitive populations (not significant)

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Access to green space and outdoor recreation	<p>Health outcomes associated with changes to green space and outdoor recreation are considered to relate primarily to mental health and wellbeing. Sensitive populations include users of existing areas of green space and outdoor recreation assets, children and young people, people in low-income households, people without access to private transport, people with mental health condition, pedestrians and cyclists and older people.</p> <p>The assessment of impacts on population health is considered to be <b>negative</b>, although it would not be significant in terms of overall population health</p>	Construction	There are instances where diversion routes would be created either prior to, or within a short time period of existing routes closing to enable residents to be able to access areas of green space.	Design Principles CoCP	Negative health outcome (not significant)
Road safety	The health outcome for users of the local and strategic road network as a result of driver stress during the construction phase is assessed as <b>negative</b> (but not significant).	Construction	A variety of measures are proposed to manage the impacts of construction traffic on the road network and thereby reduce adverse impacts for local residents arising from driver stress or frustration.	oTMPfC FCTP CoCP	Negative health outcome for driver stress (not significant)

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Noise and vibration	Adverse effects may be experienced by sensitive populations including older people, children, people with pre-existing health conditions/disabilities and shift workers. Many people within these groups are likely to be within their homes for longer periods of time and therefore exposed to construction noise for more of the time. People may experience noise effects differentially within a population and even relatively small changes in noise levels can have a disproportionate effect on people's wellbeing / quality of life.	Construction	A range of mitigation measures have been set out in the CoCP (Application Document 6.3, ES Appendix 2.2) to ensure the effective management of site-based construction noise and to appropriately manage construction traffic.	CoCP	The health outcome for affected communities and sensitive populations as a result of changes in noise levels during construction is assessed as <b>negative and significant</b> .
Work and training	The number of people that would experience beneficial changes as a result of the creation of new employment and training opportunities is high – supporting more than 22,000 jobs in the areas to the south and north of the River Thames, with 45% of employees to be from within 20 miles of the Project route	Construction	n/a	Skills, Education and Employment Strategy	The health outcome for affected communities / populations during construction is considered to be <b>positive and significant</b> .
Housing and community services	Impacts associated with property loss and the need for relocation as a result of the Project causes disturbance to people's lives, which can in turn create stress and anxiety. The sensitivity of a population depends on factors including age (with older people often being more worried and finding it difficult to adapt) as well as younger groups (for example	Construction	Residents are able to claim various types of financial compensation if they are directly affected by property loss or blight.	Statutory Compensation Code	Health impacts associated with loss of private property and associated change in sense of community are likely to be primarily associated with mental wellbeing.



Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>families with school age children may face challenges if there is a need to move schools or if there is an increase in journey times).</p> <p>Communities affected by loss of a cluster of due to permanent land acquisition (notably Baker Street and North Ockendon), which are more rural in nature, may find relocation more difficult due to well established community networks and lack of choice regarding alternatives premises. Effects are likely to be compounded by issues of uncertainty regarding likelihood and timescale.</p>				<p>The health outcome for affected communities / populations during construction is considered to be <b>negative</b> but not significant.</p>
Mental health and wellbeing	<p>Positive effects may result from the construction phase including job creation, the introduction of skills and training programmes and a comprehensive education programme. These activities may particularly benefit some of the most sensitive populations (for example people in low-income households and the long-term unemployed) and thereby help to reduce inequalities.</p> <p>Negative effects may be experienced particularly in relation to people’s sense of control and resilience. While effects would be experienced differentially across communities, due to a range of individual factors, the baseline data suggests that less-resilient groups are</p>	Construction	Community engagement	CoCP	<p>Sensitive populations relate to communities located in close proximity to construction routes and activities as well as populations within and outside of these communities with a high sensitivity to mental health and wellbeing impacts. Health outcomes for these groups are described as both</p>

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	present in higher proportions within certain wards along the Project route. Negative effects are likely to be compounded by issues of uncertainty regarding likelihood and timescale				<b>positive and negative.</b> Both positive and negative health outcomes are likely to be <b>significant.</b>
Accessibility	There would be improvements in accessibility to varying degrees for different types of services and facilities for wards across the study area. Improvements to accessibility would have a beneficial effect for both car and public transport users due to improvements in journey time and reliability on the road network.	Operation	n/a	n/a	The health outcome for both the general population and sensitive populations (identified as children and young people, older people, people in low-income households and people without access to private transport as well as people with disabilities who may also be car users, those who may be experiencing rural isolation, carers and workers in key settings (such as healthcare, education, care homes)) in relation to changes in accessibility is considered to be

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
					<b>positive</b> and <b>significant</b> in terms of overall population health.
Access to green space and outdoor recreation	Health outcomes associated with changes to green space and outdoor recreation relate both to physical and mental health and wellbeing. The new green spaces would encourage more people to undertake physical activity and be connected to nature. New areas of green space are located in close proximity, and are well connected to, areas of high deprivation such as communities to the east of Gravesend and communities in the vicinity of Tilbury.	Operation	n/a	n/a	Health outcomes are considered to be <b>positive</b> and <b>significant</b> in terms of overall population health.
Active travel	A wide range of improvements are proposed as part of the Project design, improving connectivity, filling missing links in the PRoW network, and enhancing the safety of routes through the provision of shared pedestrian-cycle tracks along key routes. Potentially affected communities and populations include residents within wards potentially affected by changes to the PRoW network, people in low-income households, children and young people, women, those without access to private transport and pedestrians / cyclists.	Operation	n/a	n/a	The health outcome for affected communities / sensitive populations as a result of changes in active travel during Project operation is assessed as <b>positive</b> and <b>significant</b> .

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Affordability	The road user charging strategy for the Project is aligned with that for the Dartford Crossing, including current discounts and exemptions. Residents from Thurrock and Gravesham would be eligible for a Local Resident Discount Scheme (LRDS). The benefits of the Project support the future economic development and transformation of the Lower Thames area. Promoting access to employment and wider economic benefits may help to reduce inequality.	Operation	n/a	n/a	The health outcome for affected communities / sensitive populations as a result of changes in affordability during operation of the Project is assessed as <b>positive</b> as a result of increased access to opportunity, although not significant in terms of health outcomes.
Noise and vibration	There are predicted to be both improvements and worsenings in noise levels during the operation of the Project. The population exposed to potential changes in noise levels (both positive and negative) across the Project is high. A series of embedded and essential mitigation measures have been identified.	Operation	Embedded measures as well as measures such as acoustic barriers and low noise surfacing	Design principles REAC	<b>Negative</b> health outcomes associated with increases in noise levels greater than 3dB are identified in a number of locations. Whilst noise effects can be experienced differentially amongst a population, worsenings could potentially result in

Receptors	Description of impact	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
					adverse health effects including increases in annoyance and sleep disturbance. <b>Positive</b> health outcomes (associated with reductions in noise levels) are identified in other locations.
Work and training	The Project is likely to enable wider economic impacts, such as people moving to more or less productive jobs and agglomeration based on dynamic clustering (businesses moving closer to one another) in the Lower Thames local area and wider region. Such impacts can be expected to increase productivity as businesses benefit from agglomeration through dynamic clustering, better job matching and lower costs due to the re-organisation of their business activities.	Operation	n/a	n/a	The health outcome for affected communities / populations during operation is considered to be <b>positive</b> and <b>significant</b> .
Mental health and wellbeing	Negative effects may continue in relation to people's sense of control over their physical environment (although for the majority of people, these effects are likely to lessen over time as the Project becomes embedded in people's lives and mitigation measures, for example landscaping and planting, mature). While	Operation	Community engagement		Health outcomes are therefore described as both <b>positive</b> and <b>negative</b> . Both positive and negative health

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	<p>effects would be experienced differentially across a community, due to a range of individual factors, the baseline data suggests that less-resilient groups are present in higher proportions within certain wards along the Project route. Detailed design measures would incorporate recommendations from the National Highways Suicide Prevention Toolkit; it is noted that a number of local authorities through which the Project route passes have higher than average suicide rates.</p> <p>Equally, there are potential positive effects including legacy effects associated with job creation and the introduction of skills and training programmes.</p>				<p>outcomes are likely to be <b>significant</b>.</p>

**Table 17.9 Summary of likely significant effects detailed in Chapter 14: Road Drainage and the Water Environment**

Receptors	Description of impact	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 14: Road Drainage and the Water Environment</b>					
High importance Mardyke West Tributary catchment	The Project would provide additional storage to attenuate highway runoff and thereby reduce rates of runoff to the Mardyke West Tributary. This would reduce baseline flood risk in this catchment (high importance), which would be a moderate beneficial magnitude of impact.	Operation	n/a	n/a	Moderate beneficial

**Table 17.10 Summary of likely significant effects detailed in Chapter 16: Cumulative Effects Assessment**

Receptors	Description of effects	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<b>Chapter 16: Cumulative Effects Assessment</b>					
<b>Intra-project effects</b>					
Shorne, Cobham and Luddesdown ward	Receptors in the area immediately around the M2/A2/A122 Lower Thames Crossing junction where demolition, adverse effects on access, and adverse construction phase dust and emissions, noise, visual and human health effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors within the residential areas on the eastern edge of Gravesend where temporary adverse construction phase dust and emissions, noise and visual effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Very large adverse
	Receptors along Thong Lane and Thong village where permanent loss of property and effects on access would combine with temporary adverse construction phase dust and emissions, noise and visual effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Very large adverse
	Receptors to the west and south-west of Shorne where temporary adverse construction phase dust and emissions, noise and visual effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors along the A226 Gravesend Road where temporary adverse construction phase dust and emissions, noise and visual effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse



Receptors	Description of effects	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Higham ward	Receptors on the western edge of Strood and east of M2 junction 1 where temporary adverse construction phase dust and emissions, noise and visual effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
Singlewell ward	Receptors located along the southern edge of Singlewell, close to the A2 where there would be demolition, changes to access during construction combined with temporary adverse construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
Riverview ward	Receptors located on the eastern edge of Riverview Park where there would be combined temporary adverse construction phase dust and emissions, noise and visual effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
Westcourt ward	Receptors located on and around Thong Lane where there would be combined temporary adverse construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
Chalk ward	Receptors located along the eastern side of Chalk, Lower Higham Road and Church Lane where there would be combined temporary adverse construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
East Tilbury ward	Receptors located to the west of East Tilbury and Linford where there would be	Construction	No additional mitigation measures	n/a	Large adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	direct effects on access, combined with temporary adverse construction phase dust and emissions, noise, visual and human health effects.		beyond those proposed in the topic chapters.		
	Receptors located on the southern edge of East Tilbury where there would be direct effects on access, combined with temporary adverse construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors located on the eastern edge of West Tilbury where there would be combined adverse effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
	Receptors located around Church Road where there would be combined adverse effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
Tilbury Riverside and Thurrock Park ward	Receptors located around Ferry Road, Calcutta Road and Dock Road where construction phase air quality, noise, visual and human health effects combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse

Receptors	Description of effects	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Chadwell St Mary ward	Receptors on the northern and north-eastern edge of Chadwell St Mary where there would be combined adverse effects from construction phase dust and emissions, noise, vibration, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors to the north of Orsett Heath where there would be adverse effects from changes to access combined with construction phase dust and emissions, noise, vibration, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors on High House Lane where there would be adverse effects from changes to access combined with construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
Little Thurrock Blackshots ward	Receptors located on the northern and eastern edge of Grays where there would be adverse combined effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
Orsett ward	Receptors in and around Baker Street where demolition, adverse effects on access, and adverse construction phase dust and emissions, noise, visual and human health effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Very large adverse

Receptors	Description of effects	Construction/operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	Receptors on Stanford Road where demolition, adverse effects on access, and adverse construction phase dust and emissions, noise, visual and human health effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Very large adverse
	Receptors on Stifford Clays Road where demolition and adverse construction phase dust and emissions, noise, visual and human health effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Very large adverse
	Receptors on Hornsby Lane where there would be adverse combined effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors at the Whitecroft where there would be adverse combined effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors at the western edge of Orsett where there would be adverse combined effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
	Receptors located to the north of the ward where there would be adverse combined effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Ockendon ward	Receptors around the northern edge of South Ockendon where there would be adverse effects from changes to access combined with construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors around North Road and Dennis Road where there would be adverse effects from combined construction phase dust and emissions, noise, and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
Upminster ward	Receptors on Ockendon Road where demolition, changes to access and adverse construction phase dust and emissions, noise, visual and human health effects would combine.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Very large adverse
	Receptors in and around North Ockendon where there would be adverse combined effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
	Receptors on St Marys Lane where there would be adverse combined effects from construction phase dust and emissions, noise, visual and human health effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
Cranham ward	Receptors located on the northern and eastern edge of Cranham where there would be adverse combined effects from construction phase dust and emissions, noise and visual effects.	Construction	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Shorne, Cobham and Luddesdown ward	Receptors on the eastern edge of Gravesend where adverse visual effects would combine with adverse road traffic noise effects, deterioration in air quality and human health effects.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors in and around Thong village where adverse visual effects would combine with adverse road traffic noise effects, deterioration in air quality and human health effects.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors to the south of the A2 around Henhurst where adverse visual effects would combine with adverse road traffic noise effects and deterioration in air quality.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
Higham ward	Receptors located east of the M2 junction 1 on the western edge of Strood where adverse air quality, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
Singlewell ward	Residential receptors located on the southern edge of Gravesend close to the existing A2 where adverse air quality, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
Riverview ward	Receptors located along Thong Lane where adverse air quality, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Westcourt ward	Residential receptors located along the eastern edge of Gravesend at Thong Lane and Rochester Road where adverse air quality, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
East Tilbury ward	Receptors located along the southern edge of East Tilbury where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors located along the western edge of East Tilbury and Linford where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
	Receptors located along the eastern edge of West Tilbury where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
	Receptors located on and around Muckingford Road where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
	Receptors located near Low Street Lane where adverse air quality, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Chadwell St Mary ward	Receptors located on the northern and north-eastern edge of Chadwell St Mary where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors located to the north of Orsett Heath where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors located on High House Lane where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
Orsett ward	Receptors located in and around Baker Street where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors located on Hornsby Lane where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
	Receptors located at the Whitecroft where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse



Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	Receptors located at the western edge of Orsett where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
	Receptors located on Stifford Clays Road where adverse air quality, noise, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
	Receptors located to the north of the ward where adverse air quality, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
Ockendon ward	Receptors located around the northern edge of South Ockendon where adverse visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Large adverse
Upminster ward	Receptors located around St Marys Lane and around the A122 Lower Thames Crossing/M25 junction and Ockendon Road where adverse air quality, visual and human health effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse
Surrounding wards within Medway: Cuxton and Halling Strood South	Along the A228 in Cuxton and Halling ward where adverse air quality and noise would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Strood North Strood Rural					
Surrounding wards within Gravesham: <ul style="list-style-type: none"> <li>• Woodlands</li> <li>• Riverside</li> <li>• Northfleet South</li> <li>• Istead Rise</li> <li>• Painters Ash</li> </ul>	Some receptors in Painter’s Ash ward where beneficial air quality and noise effects would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate beneficial
Wards south of the Project in Maidstone District and Tonbridge and Malling District: <ul style="list-style-type: none"> <li>• Boxley</li> <li>• Aylesford North and Walderslade</li> <li>• Burham and Wouldham</li> <li>• Aylesford South</li> <li>• Ditton</li> <li>• Larkfield South</li> <li>• West Malling and Leybourne Ward</li> </ul>	Along the A228 and A229 where adverse air quality and noise would combine.	Operation	No additional mitigation measures beyond those proposed in the topic chapters.	n/a	Moderate adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
<ul style="list-style-type: none"> <li>Downs and Mereworth Ward</li> <li>Wrotham, Ightham and Stansted Ward</li> <li>Snodland East and Ham Hill Ward</li> </ul>					
<b>Inter-project effects</b>					
Cultural heritage	Cumulative temporary and permanent effects on designated heritage assets, due to changes to the settings of heritage assets that affect their value. The assets affected comprise Tilbury Fort scheduled monument, Causewayed Enclosure and Anglo-Saxon Cemetery 500m ENE of Heath Place scheduled monument, West Tilbury Conservation Area, East Tilbury Conservation Area, listed buildings located within and near the conservation areas.	Construction and Operation	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
	Cumulative permanent effects on archaeology and historic landscapes adjacent to the Project and physically impacted by the short-listed developments, due to a greater proportion of the important archaeological resource of the area being removed during construction and increased change to the nature of the historic	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	landscape in this area than caused by the construction of the Project in isolation.				
	Cumulative permanent effects on the historic landscape would remain in the Orsett Fen area, due to the increased scale of change from the multiple developments.	Operation	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
Landscape and visual	Cumulative temporary effects on landscape receptors (marine landscape character of the River Thames, Higham Arable Farmland (sub area Chalk) LLCA and the Tilbury Marshes LLCA) and visual receptors within the Zone of Influence (Zol), including housing on the edge of Riverview Park, Gravesend, Saxon Shore Way Long Distance Path and Two Forts Way Coastal Path due to combined landscape and visual impact.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate and Large adverse
	Cumulative permanent effects on landscape character of the Higham Arable Farmland (sub area Chalk) LLCA.	Operation	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	Cumulative temporary effects on landscape and visual receptors within the Zol of the Gravesend waterfront location, including the marine landscape character of the River Thames and the Tilbury Marshes LLCA and visual receptors along Saxon Shore Way Long Distance Path and Two Forts Way Coastal Path.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
	Cumulative temporary and permanent effects on landscape and visual receptors within the Zol in the vicinity of Tilbury, including the marine character of the Thames Estuary and Tilbury Marshes LLCA and visual receptors along the eastern edge of Tilbury, Two Forts Way Coastal Path and National Cycle Network Route 13.	Construction and Operation	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
	Potential for Thurrock Council site allocations for mixed use or residential development to generate cumulative temporary and permanent effects on landscape (West Tilbury Urban Fringe LLCA, White Croft/Orsett Heath LLCA, Orsett Lowland Farmland LLCA and Belhus Lowland Quarry Farmland LLCA) and visual receptors within the Zol, given the scale of the proposals in proximity to the Project.	Construction and Operation	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Undefined adverse (due to limited available information for the development ) - Significant

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	Cumulative temporary and permanent effects on landscape (Thurrock Reclaimed Fen (sub area Mardyke) LLCA) and visual receptors within the Zol (including views from the Mardyke Way), in relation to Medebridge solar farm and Bulphan solar farm, grouped together in proximity to the Project.	Construction and Operation	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
	Cumulative temporary and permanent landscape and visual effects for receptors in the Zol in relation to the proposed development at Codham Hall Farm, Brentwood Enterprise Park and engineering works on land opposite Upminster Trading Park.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
Terrestrial biodiversity	Cumulative permanent loss of reptile and terrestrial invertebrate habitat from construction of the Project and other developments.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
Geology and soils	Cumulative permanent loss of BMV agricultural land from construction of the Project and other developments.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Very large adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
Material assets and waste	Cumulative permanent reduction in regional landfill capacity from construction of the Project and other developments.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
Population and human health	Potential temporary cumulative effects in relation to access to services and facilities.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse
	Potential temporary cumulative benefits in relation to employment creation during construction.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate beneficial
	Potential temporary cumulative effects on human health in relation to environmental changes, including noise, visual impact, and other factors.	Construction	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate adverse

Receptors	Description of effects	Construction/ operation	Summary of key mitigation	How mitigation is secured in DCO	Significance of residual effect
	Cumulative permanent benefits in relation to proposals for new employment sites and potential increased accessibility for businesses and employment.	Operation	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate beneficial
Road drainage and water environment	Cumulative permanent effects to flood risk in combination with the TE2100 project for receptors located on the defended floodplain of the River Thames.	Operation	No additional mitigation measures beyond those proposed in the topic chapters for this Project have been identified.	n/a	Moderate beneficial



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